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conference

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A WELCOME FROM THE CONVENORS

On behalf of the Organising Committee, it is our great pleasure to welcome all conference participants to the second SMEs in a Global Economy Conference.

The conference theme is 'Sustaining SME Innovation, Competitiveness and Development in the Global Economy', which is of considerable contemporary relevance for the SME sectors of the East Asian economies as well as globally.

The conference is a truly international one, with participants from some 10 different countries in Asia and Europe.

All papers included in the conference proceedings were subject to a peer review, specifically in the form of a blind review by two scholars. After the completion of this process some 44 papers were accepted. The papers included cover a number of issues that are of interest to SME researchers, practitioners and policy makers. The quality of the papers, the diversity of the issues covered, and their contemporary relevance auger well for an informative, stimulating and highly productive exchange of views.

The success of any conference fundamentally depends upon the generous time and administrative and financial assistance provided by a number of people. In particular we wish to express our thanks to:

- The conference administrative assistant, Sonya McKay, for her tireless efforts, enthusiasm and professionalism in the administration of this conference under considerable pressure and the need to meet tight deadlines;
- The former International Business Research Institute, especially its former Director Professor Tim Turpin for his enthusiastic support of the conference during its embryonic stage;
- The Faculty of Commerce and Department of Economics, University of Wollongong for financial and other assistance provided;
- The Centre for SME Research and Development and assistance provided by its members;
- Kavoos Mohannak, James Nguyen and Elias Sanidas for assistance in reviewing the papers submitted;
- The session chairs, discussants and, most importantly, paper contributors.

We hope you enjoy the conference and your brief stay in Wollongong.

Associate Professor Charles Harvie
Conference co-convenor and co-editor

Dr Boon Chye-Lee
Conference co-convenor and co-editor

A COMPARATIVE ANALYSIS OF INFORMATION TECHNOLOGY, INTERNET AND BUYER-SUPPLIER RELATIONSHIPS IN THE TURKISH AUTOMOTIVE INDUSTRY

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ABSTRACT

Automotive industry is one of the major industries in which the Internet and information technologies may affect the whole supply chain and transform the sector. This paper focuses on the changing patterns of supply chain management and the effects of web based information technology on buyer supplier relationships in the Turkish automotive industry by examining the current developments and crises in Turkey. The current international business environments require innovation across the entire business processes and supply chains are the key factor in many business processes. Supply chain management can reach beyond the boundaries of a single company to share the information between suppliers, manufacturers, distributors and retailers. This is where the information technology and today Internet plays a central role. The results of the study support most of the arguments given above.

KEY WORDS

Supply Chain, Internet, Collaboration, Automotive Industry, Turkey

INTRODUCTION

Buyer-supplier relationships play an important role in manufacturing strategy of an organization and its ability to respond to dynamic and unpredictable change in industries where new business models supplant old ones. The current international business environments require innovation across the entire business processes. [1] Supply chains are the key factor in many business processes. Relationships through the supply chain can be simple if they involve the purchase of commodities or more complex if they involve specialty products obtainable only from a limited number of suppliers market and the willingness of both parties to assume some level of risk. The ways which organizations manage their supply chains have been changing over the past two decades. Until the mid-1980's transactions between buyers and sellers tended to rely on adversarial relationships which is an arm's length approach and is often characterized by lack of trust between the supplier and the customer and can be described as a win-lose situation. On the other hand relationships in the 1990's rely more on trust derived from collaboration and information sharing. [2] Supply chain management can reach beyond the boundaries of a single company to share the information between suppliers, manufacturers, distributors and retailers. This is where the

information technology and today Internet plays a central role. With the growth of web-based electronic commerce there is an evolution in supply chain towards online communities. GE's trading process network (TPN), the recent collaboration between the big three automakers in the USA in launching the automotive network exchange (ANX) [1] and the extranet of Harley-Davidson, h-dnet that lets dealers file warranty claims, check recall status and submit financial statements [3] are some examples of such communities.

WEB BASED TECHNOLOGIES, COLLABORATION AND SUPPLY CHAIN MANAGEMENT

Historically, electronic communications in the auto industry were driven by separate applications. Engineering, procurement, manufacture and finance functions each had their own proprietary protocols, which resulted in a supplier needing multiple proprietary protocols to communicate with just one customer. Factor in that most suppliers do business with more than one automaker and often with other suppliers and one can begin to fathom the complex inter-connections that were required to do business with each other. [4]

Value chain management and, in particular, collaborative event planning and management, supported by electronic commerce, enable substantial improvements to total performance and cost without inhibiting innovation and enterprise. Electronic commerce is already revolutionizing the means by which markets are developed, potential customers attracted and value chain partners co-coordinated. Value chain restructuring needs to precede the application of electronic commerce to achieve maximum competitiveness. [5]

Business partners and customers connect together through the Internet to participate in commercial trading and participate in communications and interaction. Each of these areas has a set of strategic activities and issues. Opportunities for creating value occur at each of the boundaries. The Web enables all suppliers in a supply chain to identify and coordinate data transfers with each other. For example research laboratories, distributors and end users can all swap information on new product developments and other issues within these settings [1] The biggest supply chain payoff lies at allowing companies to slash inventories, improve on-time deliveries to customers and shorten the order-to-cash cycle, the time that passes between when a customer places an order and the other collects payment for it [6]

Today, much of the reluctance to interface with other firms in supply chains is breaking down. The change in attitude is due to variety of factors including just-in-time (JIT) programs, electronic data interchange, and point-of sale data sharing programs. Each factor made traditional logistics managers realize that there is more to be gained by working with other supply chain firms than there is to lose. For example, one of the greatest barriers to JIT was the fear that sharing production information with vendors would hurt a company by revealing its production-planning [14]. The growth of the Internet has presented supply chains with many significant opportunities for cost reduction and service improvements. These opportunities include:

- On-line vendor catalogs from which buyers can find, select, and order items directly from suppliers without any human contact
- The ability to track shipments using a wide variety of modes including truck, rail, and air transport
- The ability to contact vendors or buyers regarding customer service problems from late deliveries, stock-outs, alterations in scheduled shipment dates, late arrivals, and a wide variety of other service issues

- The ability to reserve space in public warehouses for anticipated deliveries to market locations
- The ability to schedule outbound shipments from private and public distribution centers on a 24-hour basis
- The ability to provide 7-day/24-hour worldwide customer service
- The ability to receive orders from international customers
- The ability to check the status of orders placed with vendors
- The ability to place bids on projects issued by government and industry buyers
- The ability to notify vendors of changes in configurations in products that are produced to order
- The ability to pay invoices electronically and to check outstanding debit balances
- The ability to track equipment locations including rail cars, trucks, and material handling equipment
- The ability to directly communicate with vendors, customers, etc. regarding supply issues on a 7-day/24-hour basis via E-mail
- The ability to schedule pickups and deliveries
- The ability to be more responsive to customer service problems
- The ability to reduce service costs and response time.

A brief example of supply chain management and internet is ANX, the Automotive Exchange Network that established by the big three auto makers in USA. In 1995, this all came to head for a committee of Automotive Industry Action Group (AIAG) volunteers. It was agreed among this small group of automakers and suppliers that the existing legacy communications environment was complex, costly and inflexible. Furthermore, tightly coupled, just-in-time practices required much higher levels of reliability and round-the-clock availability, and the need to produce better products. In shorter cycle times required an automaker to circulate sensitive design information electronically to hundreds of system and subsystem suppliers. But they knew also that the public internet would not meet their needs, because its performance was not consistent and guaranteed security of mission-critical data was unachievable. ANX supports Virtual Private Networks (VPN) and what is unique about ANX business model is that it is user-centric rather than provider centric. [4] The trend towards increased outsourcing has led the automakers to become more dependent on their supplier network. They are now pursuing more intensive and interactive relationships with their suppliers, collaborating in areas such as new product development, supplier development and information sharing on a range of issues. With suppliers being given greater responsibility they are also sharing more of the risks in the development of new models [7].

Doran [8] presents a case study showing buyer supplier-relationships in automotive industry and the “Nissan way” commercial relationships. Ikeda Hoover Ltd (IHL) is a joint venture between Ikeda Bussan Ltd (Japan) and Johnson Controls (USA) which was established in 1986 to synchronously supply seats to Nissan UK plant. The Nissan way of supply chain management is characterized by long term relationships, mutual dependence, supplier development of parts and systems and supplier and Nissan having similar quality concepts. Suppliers to Nissan are expected to employ continuous improvement techniques, to take total

responsibility for the delivery of zero defects and to develop quality systems that accommodate such requirements.

In recent years US automakers have moved towards closer relationships with their suppliers. In particular, Ford and Chrysler have moved away from historically adversarial dealings with suppliers toward relationships which are long term and are characterized by rich flows of information for joint projects such as product development and technical assistant. This transformation has been seen by the popular press and by the managers making this change as an imitation of the Japanese, and as a move away from traditional American practice. [9]

A SHORT REVIEW OF TURKISH AUTOMOTIVE INDUSTRY

The Turkish automotive assembly industry was established as a result of the convergence of national and international interests in the mid 1950s. On the one hand, as domestic demand increased the government supported the establishment of the automotive assembly industry in line with the import substitution policy to save foreign exchange. On the other hand, the mid 1950s were also the beginning of the globalization of the world automotive industry "that saw the expansion and relocation of many operations, particularly assembly, across national boundaries" [12]

Motor vehicle production in Turkey first started in 1954 with the establishment of "Turk Willys Overland Limited Ortakligi" (Turkish Willys Overland Ltd. Partnership) which produced pick-ups and jeeps for the Army. In 1961 the first Turkish automobile was produced as a prototype by the Turkish Railways Factory, in Eskisehir, Turkey under the name *Devrim* (Revolution). In these years the production of Devrim was not possible because of the lack of component industry for automobiles. [11] Although the demand for automobiles was low in 1966 the mass production of *Anadol* brand cars started with a local content level of 53%. These first cars were based on a design by Reliant in the UK. In the following three years TOFAS-Fiat and OYAK-Renault were formed through joint-ventures with licensing agreements in 1968 and 1969, respectively. Assemblers were highly dependent on both the state for protection, and the transnational corporations (TNCs) for technology. The high level of technological dependency on licensers not only prevented the industry from undertaking export activities (as these activities were limited with licensing agreements, a typical condition of TNC), but also in turn prevented them from developing their own technology to compete in the international markets.

After 1980 the Turkish automotive industry was gradually exposed to foreign competition through the removal of protective barriers. This policy change had major repercussions on the Turkish automotive assembly industry, and in particular for automobile production. To cope with increasing foreign competition both assemblers and suppliers started to upgrade their production processes to increase quality, productivity and reduce costs.

Towards the end of the 1980s the import liberalization decisions made them felt more strongly. In addition manufacturers started to consider the possible effects of the Customs Union. As a result they have moved to restructure their production systems to cope with the increasing competition. Industry capacity increased 3 times between 1991 and 1994, while the number of new designs doubled. [12]

Table 1.Automotive Manufacturers in Turkey, 2000

		*SALES**	*Emp.***
1	*Oyak Renault (P.Cars)*	*$563.571.148,59*	*4035*
2	*Ford Otosan (HçTrucks, Minibuses and P.Cars)*	*$471.083.489,63*	*4129*
3	*Tofaº Türk (Fiat-P.Cars)*	*$371.719.109,63*	*5520*
4	*Mercedes-Benz Türk (H.Trucks and Buses)*	*$352.829.034,07*	*3501*
5	*Opel Türkiye (P.Cars)****	*$316.297.546,80*	*329*
6	*Hyundai-Assan (P.Cars, Minibuses)*	*$118.978.229,57*	*807*
7	*BMC (H.Trucks,Minibuses)*	*$116.127.407,41*	*2434*
8	*Uzel Makine (F.Tractors)*	*$105.482.045,93*	*1884*
9	*TEMSA (Mitsubishi-Buses, Minibuses)*	*$105.380.994,07*	*1526*
10	*Karsan Peugeot (Minibuses)*	*$90.458.199,26*	*989*
11	*Anadolu Isuzu (Minibuses)*	*$81.014.842,22*	*677*
12	*Türk Traktör (F.Tractors)*	*$71.152.844,08*	*968*
13	*MAN (H.Trucks and Buses)*	*$71.053.542,96*	*1705*
14	*ASKAM (Formerly Chrysler-H.Trucks)*	*$70.110.190,90*	*539*
15	*Toyota Türkiye (P.Cars)*	*$68.204.408,29*	*670*
16	*Otoyol (H.Trucks, Buses, Minibuses)*	*$65.265.280,74*	*1276*
17	*Otokar (Land Rover-Pick Up and Minibuses)*	*$56.156.409,63*	*512*
18	*Anadolu Honda (P.Cars)*	*$49.578.676,30*	*441*

**Data of Istanbul Chamber of Industry 500 and Capital 500, Turkey for year 2000*
***OSD (Automotive Manufacturers Association), 2001 Statistics*
****OPEL Turkiye closed its assembly line in 2001*

The demand for automobiles increased 25% annually by the 1990's and both manufacturers and suppliers made gradual investments in order to respond to this stable demand. With heavy investments on capacity, especially investments in new technology, design and R&D were accelerated. In 1994 3 new firms, Toyota, Hyundai and Honda started their investments in Turkey. After the highest level of production in 1993, because of the financial crisis in 1994 and the global crisis at the second half of 1998, there were serious decreases in capacity usage rates. This rate had increased to 48% in 2000 from 32% in 1999 for automobiles. This may be explained by the increase of imported cars. [13] Table 2 shows the numbers of automobiles manufactured in Turkey and of imports.

Table 2.Turkish Automotive Market (x1000)

	Production	*%*	*Import*	*%*
1992	*316*	*80*	*78*	*20*
1993	*412*	*75*	*136*	*25*
1994	*231*	*85*	*39*	*15*
1995	*241*	*86*	*40*	*14*
1996	*248*	*72*	*95*	*28*
1997	*313*	*60*	*206*	*40*
1998	*297*	*62*	*181*	*38*
1999	*227*	*56*	*175*	*44*
2000	*319*	*48*	*340*	*52*
*2001**	*130*	*50*	*130*	*50*

**Expected, Source: OSD (Automotive Manufacturers Association) Report 2001/7*

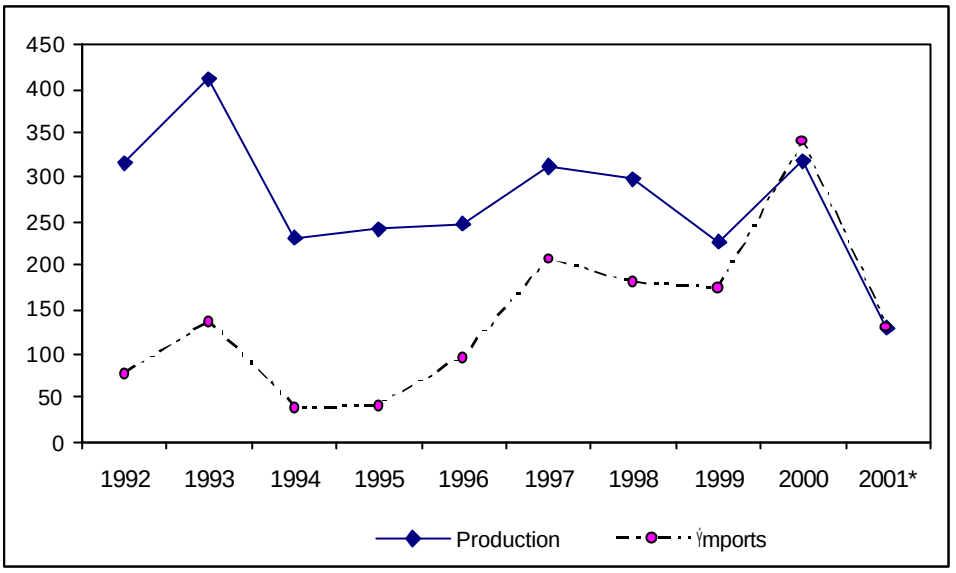

Figure 1.Imports and production in Turkish Automotive Industry (1992-2001)

Sales and imports reached to the highest level in 2000 because of the economic policies and low level consumer credit interest rates. But two economic crises one after the other, November 2000 and February 2001 collapsed the Turkish automotive industry. In 2000, import rate increased 95 % and 340.000 vehicles were imported for USD 5 Billion. A recent report of OSD (Automotive Manufacturers Association) sees the increases in import rates as the major factor of these two crises. Although there is a significant increase in exports, because of the insufficient domestic market and demand, automotive industry has 40% idle capacity for the year 2001. According to OSD, governments should not encourage investments for capacity and those target the domestic market, control the imports and decrease the high rates of taxes (between 50-100 % for passenger cars) at least for <1.600 cc cars in order to increase the national market. [10]

RESEARCH METHODOLOGY

This study focuses on the changing patterns of supply chain relationships in Turkish automotive industry. In this context, a questionnaire (see Appendix) was sent to 256 automotive manufacturers and suppliers (25 percent of 1248 firms, taken from the list of OSD (Automotive Manufacturers Association, Turkey) located in Marmara region, Turkey where the concentration of automotive industry is the highest. Between July 2001 and February 2002 we got totally 69 questionnaires (27 percent of selected 256 firms), including 17 automotive manufacturers and 52 part makers. Because of the results of November 2000 and February 2001 financial crises in Turkey and its effects on automotive industry, it was hard to get information concerning both automotive manufacturers and part makers. Most of the respondent firms are SME's excluding the auto manufacturers and some first tier suppliers. 55 percent of the suppliers have less than 50 employees, 25 percent have 50-100 employees and 15 percent have 100-500 employees and only 5 percent have more than 500 employees.

We analyzed the results separating automotive manufacturers and part makers. Based on the literature about supply chain management and Internet, two main propositions are generated;

"From 1995 to 2000 buyer-supplier relations in Turkish Automotive Industry have changed through a more collaborative pattern." and

"From 1995 to 2000 increasing use of information technology and the Internet have caused a more collaborative relationship between automotive manufacturers and their suppliers in Turkey."

The results are analyzed statistically but instead of making severe comments depending on these results, we partly relied on some qualitative arguments and comments of respondents.

Results

Information Technology and the Internet

In order to examine the use of various information technologies and the changes in the industry, responses were gathered on a five-interval scale for information technologies including PC, Internet, Email, Intranet, Extranet, ERP and EDI for years the 1995 and 2000. (Appendix, Part 1). The higher numbers indicate that these technologies are used more than the lower values. The results are shown at Table 3.

Table 3.Changes in Information Technologies used between 1995 and 2000

*IT**	*For Year 1995*			*For Year 2000***		
	N	*Mean*	*Std. Dev.*	*N*	*Mean*	*Std. Dev.*
PC	*58*	*2,5690*	*1,1564*	*68*	*4,5588*	*,7606*
Email	*56*	*1,6250*	*1,0882*	*65*	*4,2923*	*1,0112*
Internet	*56*	*1,5179*	*,9907*	*67*	*3,7015*	*1,1012*
Intranet	*49*	*1,3878*	*,9750*	*59*	*3,3898*	*1,6507*
EDI	*50*	*1,5200*	*1,0736*	*56*	*3,1429*	*1,3133*
ERP	*45*	*1,6444*	*,9806*	*51*	*3,0392*	*1,4961*
Extranet	*48*	*1,2083*	*,6510*	*58*	*2,4310*	*1,4156*

**Ranks are sorted by descending means for year 2000.*
***P<0.001 for all means. (Wilcoxon Signed Ranks Test)*

Table 4.Changes in Information Technologies used between 1995 and 2000 (Manufacturers and Supplier)

Information Technology		*1995*			*2000*		
		N	*Mean**	*Std. Dev.*	*N*	*Mean**	*Std. Dev.*
EDI	*Man.*	*12*	*1,5833*	*,9962*	*15*	*3,2667*	*1,2799*
	Sup.	*38*	*1,5000*	*1,1089*	*41*	*3,0976*	*1,3380*
Internet	*Man.*	*14*	*1,2857*	*,8254*	*17*	*3,4118*	*,9393*
	Sup.	*42*	*1,5952*	*1,0373*	*50*	*3,8000*	*1,1429*
PC	*Man.*	*14*	*2,5000*	*,9405*	*17*	*4,6471*	*,4926*
	Sup.	*44*	*2,5909*	*1,2260*	*51*	*4,5294*	*,8331*
Extranet	*Man.*	*12*	*1,0833*	*,2887*	*14*	*2,2857*	*1,3260*
	Sup.	*36*	*1,2500*	*,7319*	*44*	*2,4773*	*1,4546*
Intranet	*Man.*	*12*	*1,0833*	*,2887*	*15*	*3,4000*	*1,6388*
	Sup.	*37*	*1,4865*	*1,0960*	*44*	*3,3864*	*1,6735*
ERP	*Man.*	*10*	*2,0000*	*1,0541*	*13*	*3,4615*	*1,5064*
	Sup.	*35*	*1,5429*	*,9500*	*38*	*2,8947*	*1,4849*
Email	*Man.*	*14*	*1,5714*	*,9376*	*17*	*4,6471*	*,7859*
	Sup.	*42*	*1,6429*	*1,1438*	*48*	*4,1667*	*1,0586*

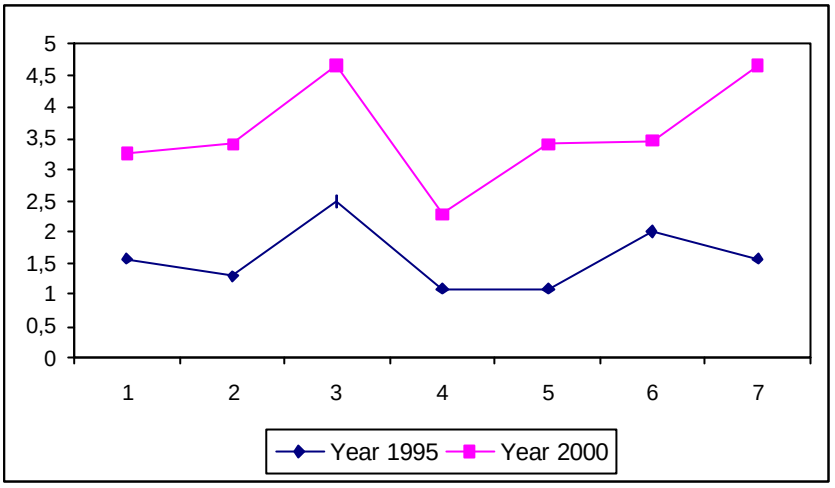

Figure 2.Information Technology for Manufacturers

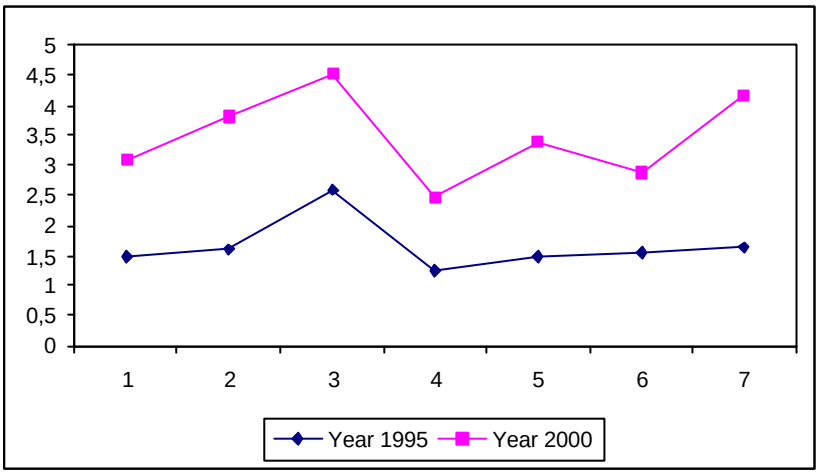

Figure 3.Information Technology for Suppliers

These results show that information technologies are being heavily used by automobile manufacturers and part makers, but this is generally true only for intra firm purposes. Technologies for inter firm networking and namely for supply chain management have lower means comparing with intra firm technologies. There is no significant difference between automotive manufacturers and component makers. ($p>0.05$, t-test for equality of means in each case)

Aim of Using Information Technology and Achievement

Table 5 presents the reasons for using IT and achieving these goals. (Appendix Part 2) The higher numbers mean high level of importance and achievement. Ranks are sorted by descending means for importance.

Table 5.Reason for using IT and achieving these goals

Reason	*Importance*		*Achieving*	
	N	*Mean*	*N*	*Mean*
Speeding up the processes	*56*	*4,1607*	*62*	*3,6290*
Increase efficiency through empowering employees	*56*	*4,0714*	*63*	*3,5556*
Using email instead of traditional communication devices	*58*	*4,0000*	*64*	*3,7344*
Using internet as a promotion device	*57*	*3,9649*	*63*	*3,6349*
Follow the developments of the industry	*55*	*3,9636*	*61*	*3,6885*
Share hardware like printers etc.	*55*	*3,9273*	*62*	*4,0000*
Cost effectiveness	*55*	*3,8909*	*62*	*3,4677*
Reach the technological level of competitors	*54*	*3,8704*	*59*	*3,3390*
Internal Coordination	*56*	*3,7500*	*62*	*3,4516*
Responsiveness	*55*	*3,4909*	*62*	*3,2742*
Coordination with suppliers	*55*	*3,4364*	*60*	*3,0500*

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Table 6.Reason for using IT and achieving the goals (Manufacturers and Supplier)

		Importance			*Achieving*		
		N	*Mean*	*St.Dev.*	*N*	*Mean*	*St.Dev*
Internal Coordination	*Man.*	*15*	*3,3333*	*1,3973*	*17*	*3,5882*	*,6183*
	Sup.	*41*	*3,9024*	*1,1791*	*45*	*3,4000*	*1,0745*
Coordination with suppliers	*Man.*	*14*	*3,2857*	*1,4899*	*16*	*3,2500*	*1,0000*
	Sup.	*41*	*3,4878*	*1,2272*	*44*	*2,9773*	*1,0227*
Responsiveness	*Man.*	*15*	*3,4667*	*1,3558*	*17*	*3,2941*	*,9196*
	Sup.	*40*	*3,5000*	*1,0860*	*45*	*3,2667*	*1,0745*
Cost effectiveness	*Man.*	*13*	*3,8462*	*1,5191*	*16*	*3,9375*	*,6801*
	Sup.	*42*	*3,9048*	*1,1221*	*46*	*3,3043*	*1,1327*
Speeding up the processes	*Man.*	*13*	*4,0000*	*1,5811*	*16*	*3,9375*	*,8539*
	Sup.	*43*	*4,2093*	*1,0814*	*46*	*3,5217*	*1,0486*
Reach the technological level of competitors	*Man.*	*13*	*3,4615*	*1,2659*	*16*	*3,4375*	*,8921*
	Sup.	*41*	*4,0000*	*1,0488*	*43*	*3,3023*	*1,0127*
Follow the developments of the industry	*Man.*	*14*	*3,5000*	*1,2247*	*17*	*3,3529*	*,8618*
	Sup.	*41*	*4,1220*	*1,0294*	*44*	*3,8182*	*,8963*
Increase efficiency through empowering employees	*Man.*	*14*	*3,7143*	*1,3260*	*17*	*3,7059*	*,9852*
	Sup.	*42*	*4,1905*	*1,1313*	*46*	*3,5000*	*1,0274*
Using email instead of traditional communication devices	*Man.*	*14*	*3,7857*	*1,3688*	*17*	*3,8235*	*,9510*
	Sup.	*44*	*4,0682*	*1,1891*	*47*	*3,7021*	*1,1212*
Share hardware like printers etc.	*Man.*	*14*	*3,6429*	*1,2774*	*17*	*3,8824*	*,9275*
	Sup.	*41*	*4,0244*	*1,1065*	*45*	*4,0444*	*,9282*
Using internet as a promotion device	*Man.*	*14*	*3,3571*	*1,5495*	*16*	*3,8750*	*1,0247*
	Sup.	*43*	*4,1628*	*1,3080*	*47*	*3,5532*	*1,1943*

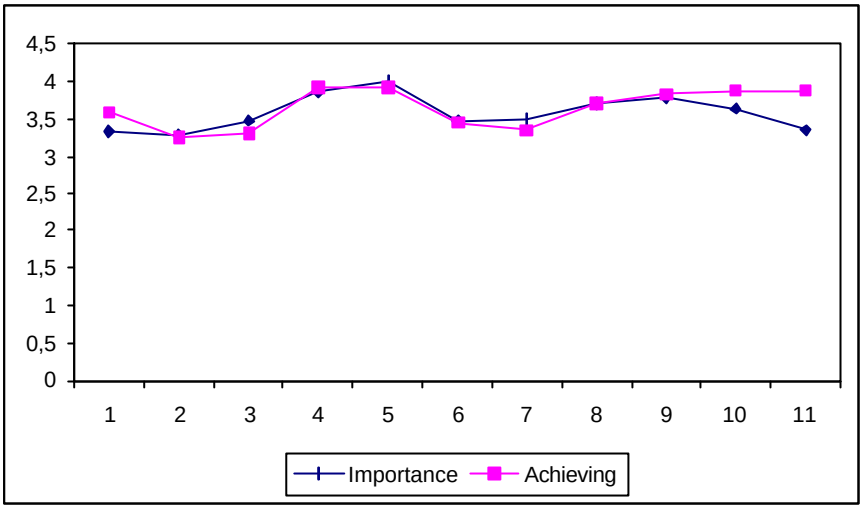

Figure 4.Importance and Achieving of IT (Manufacturers)

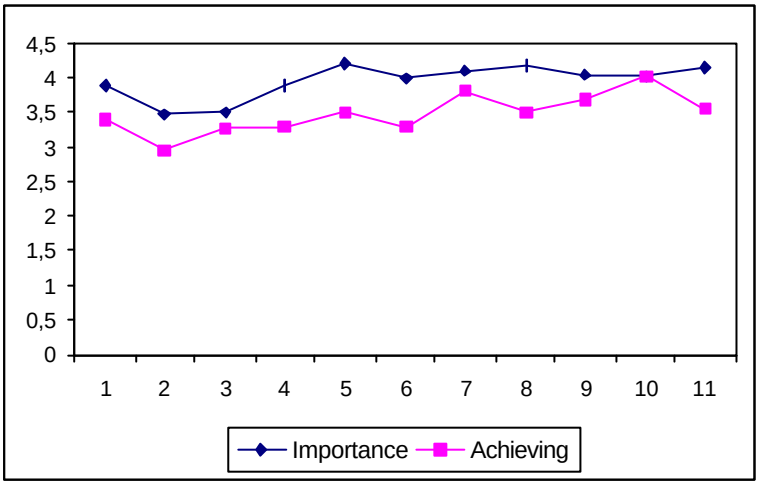

Figure 5.Importance and Achieving of IT (Suppliers)

We can also see from these results that responsiveness and coordination with suppliers have lower levels of importance and achieving compared to other several reasons of adapting information technologies. It can also be seen that achieving the aims have lower means (excluding sharing some hardware) than the importance of the statements. Manufacturers and suppliers have similar means excluding "achieving cost effectiveness". ($p<0.05$, t-test for equality of means for this statement) Auto manufacturers achieved cost effectiveness more than component makers.

Problems of IT Adaptation

Table 7 shows the factors effecting efficient use of various information technologies separated by manufacturers and suppliers (see appendix Part 3 for the questions). Higher values mean that respondents agree with the statement.

Table 7. IT adaptation Problems

		N	Mean	St.Dev.
1.Resistance to new technology	*Man.*	*17*	*3,0588*	*,7475*
	Sup.	*50*	*2,6600*	*1,0422*
2.Poor choose decision of technology	*Man.*	*17*	*2,9412*	*,8269*
	Sup.	*48*	*2,8750*	*1,3148*
3.Insufficient IT infrastructure of suppliers	*Man.*	*17*	*3,5882*	*1,2776*
	Sup.	*50*	*3,5200*	*1,2656*
4.Security problems for Internet	*Man.*	*17*	*3,2353***	*,8314*
	Sup.	*50*	*2,3200***	*1,0962*
5.Lack of communication between IT Personnel and end users	*Man.*	*17*	*3,3529*	*,9963*
	Sup.	*50*	*2,8400*	*1,0568*
6.Insufficient knowledge level of users	*Man.*	*17*	*3,0000*	*1,2748*
	Sup.	*50*	*3,1200*	*1,1542*
7.Investing to technology unconsciously	*Man.*	*17*	*3,0588*	*,8993*
	Sup.	*50*	*2,8400*	*1,0759*
8.Investing to technology since it exists at competitors	*Man.*	*16*	*2,3125*	*1,3022*
	Sup.	*48*	*2,1458*	*1,2202*
9.Lack of top management support	*Man.*	*17*	*3,0000*	*1,2247*
	Sup.	*50*	*2,7600*	*1,4365*
10.Lack of knowledge sharing for employees	*Man.*	*17*	*3,1176***	*1,0537*
	Sup.	*50*	*2,1200***	*1,0999*
11.Lack of foreign language	*Man.*	*17*	*3,1176*	*1,0537*
	Sup.	*50*	*3,0600*	*1,4201*
12.Difficulties to find qualified IT personnel	*Man.*	*17*	*3,0588*	*1,0880*
	Sup.	*50*	*2,9200*	*1,2095*
13.Lack of following the actual developments	*Man.*	*17*	*3,4706**	*,9432*
	Sup.	*50*	*2,7800**	*1,2824*

**p<0.05 **p<0.01 (Independent sample t-test for equality of means)*

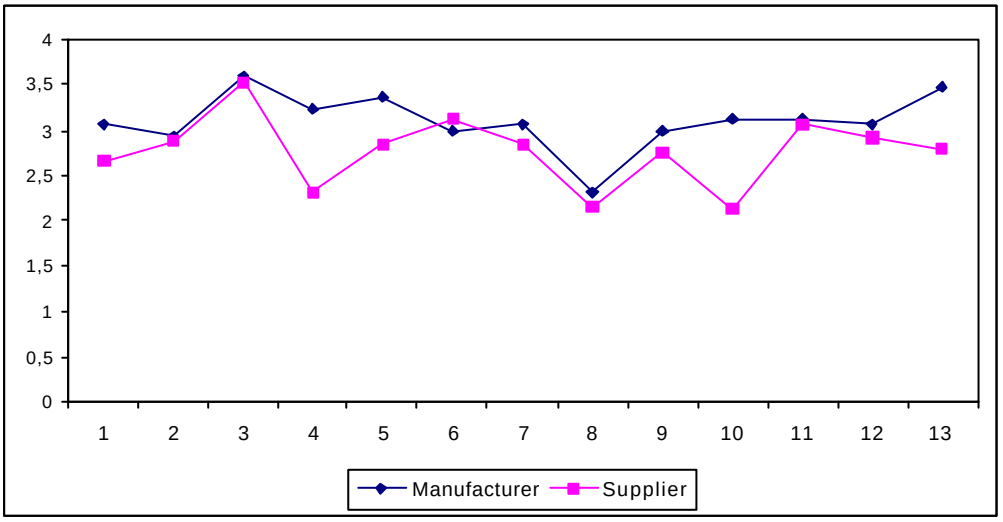

Figure 6.IT Adaptation problems

There are significant differences between manufacturers and suppliers at three factors. These are "lack of knowledge sharing for employees" ($p<0.001$), "lack of following the actual developments" ($p<0.05$) and "security problems for Internet" ($p<0.01$). Lack of knowledge sharing and IT security are more important problems for manufacturers.

Important Factors for Buyer-Supplier Relations

Analysis of supplier relations and the change of some important factors are shown in the Table 8 (see appendix Part 4 for the questions). Ranks are sorted by descending means for year 2000. Wilcoxon Signed Ranks Test is used to see the change within this time period.

Table 8.Changing relationships with suppliers

Factor	*For Year 1995*		*For Year 2000*	
	N	*Mean*	*N*	*Mean*
Importance of on time delivery	*57*	*3,8070*	*66*	*4,3030*
Importance of Product Quality	*57*	*3,5965*	*66*	*4,3030*
Cost of Product	*56*	*3,5893*	*65*	*4,1538*
Response to changing demand	*57*	*3,2281*	*66*	*4,1212*
Importance of Quality Control	*57*	*3,1754*	*66*	*3,9848*
Innovation and technological collaboration	*56*	*3,0357*	*65*	*3,7846*
Adapting information technologies	*56*	*2,5893*	*64*	*3,7031*
R&D	*54*	*2,8889*	*64*	*3,6719*
*Geographic location***	*56*	*3,3571*	*64*	*3,4688*

***Change is significant for all cases (P<0.001) (Wilcoxon Signed Ranks Test) excluding "geographic location" (P>0.05)*

Table 9.Changing relationships with suppliers

		1995			*2000*		
		N	*Mean*	*St.dev.*	*N*	*Mean*	*St.Dev.*
1.Importance of Quality Control	*Man.*	*13*	*3,4615*	*1,1266*	*17*	*4,0588*	*,8269*
	Sup.	*44*	*3,0909*	*1,3086*	*49*	*3,9592*	*1,2410*
2.Product Quality	*Man.*	*13*	*3,5385*	*1,1266*	*17*	*4,5294*	*,6243*
	Sup.	*44*	*3,6136*	*1,1855*	*49*	*4,2245*	*1,1230*
3.Product Cost	*Man.*	*13*	*3,7692*	*1,0127*	*17*	*4,2353*	*,9701*
	Sup.	*43*	*3,5349*	*1,1619*	*48*	*4,1250*	*1,1416*
4.R&D	*Man.*	*13*	*3,0769*	*1,0377*	*17*	*3,6471*	*1,1695*
	Sup.	*41*	*2,8293*	*1,3398*	*47*	*3,6809*	*1,2355*
5.Response to changing demand	*Man.*	*13*	*3,1538*	*1,2810*	*17*	*4,2941*	*1,0467*
	Sup.	*44*	*3,2500*	*1,1023*	*49*	*4,0612*	*1,1256*
6.On time Delivery	*Man.*	*13*	*3,8462*	*1,0682*	*17*	*4,5882*	*,6183*
	Sup.	*44*	*3,7955*	*1,1326*	*49*	*4,2041*	*1,1177*
7.Geographic location	*Man.*	*13*	*3,1538*	*,8987*	*17*	*3,4706*	*1,0073*
	Sup.	*43*	*3,4186*	*1,0962*	*47*	*3,4681*	*1,1582*
8.Innovation and technological collaboration	*Man.*	*13*	*3,4615*	*1,0500*	*17*	*4,1765*	*,9510*
	Sup.	*43*	*2,9070*	*1,2876*	*48*	*3,6458*	*1,2631*
9.Adapting information technologies	*Man.*	*12*	*2,8333*	*,7177*	*16*	*3,9375*	*,7719*
	Sup.	*44*	*2,5227*	*1,3380*	*48*	*3,6250*	*1,2312*

Automotive manufacturers and part makers take the factors given in the table into consideration while evaluating their suppliers. An important result is the geographic location of a supplier. This factor was an important factor in 1995, but in 2000 it is the least important one among other factors. There is no significant difference between automotive manufacturers and part makers. (p>0.05, t-test for equality of means in each case)

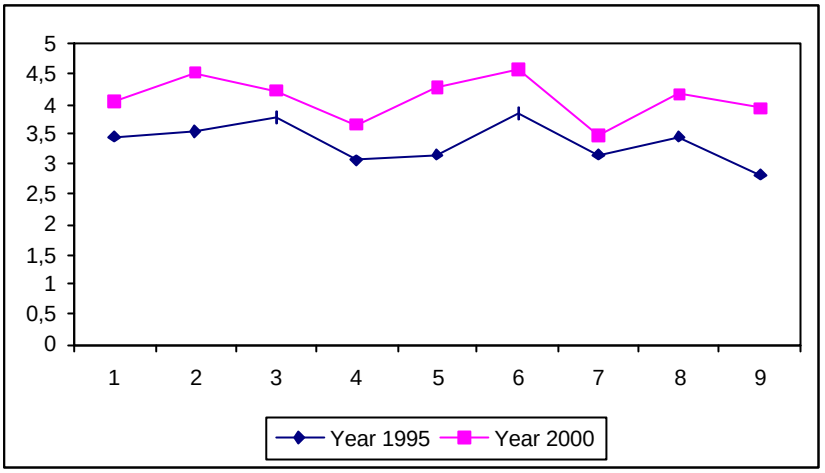

Figure 7.Important factors in Buyer-Supplier Relations (Manufacturers)

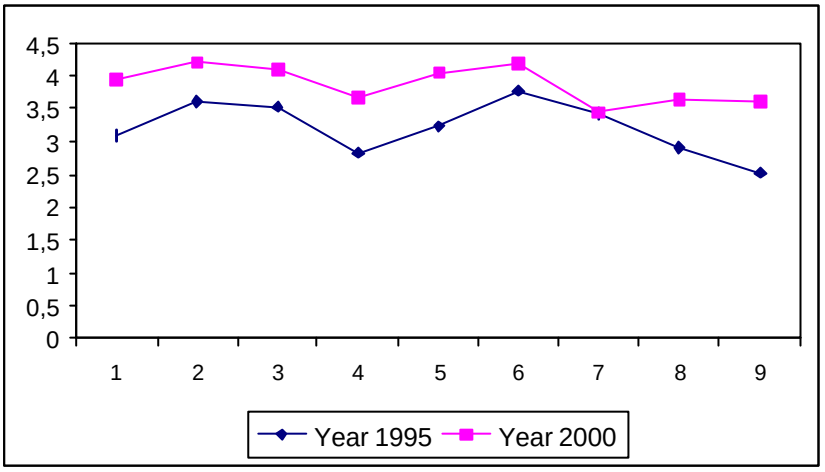

Figure 8.Important factors in Buyer-Supplier Relations (Suppliers)

Changing Patterns of Relationships with Suppliers

Table 10 summarizes the changing pattern of supply chain relations according to selected factors. In this section, respondents chose one alternative among three for each statement. (see appendix Part 5 for the questions related with supply chain management).

Table 10.Changing relationships with suppliers

		1995			2000		
		N	Mean	St.Dev.	N	Mean	St.Dev
1.Number of the suppliers, 1=Buying from many suppliers, 3=Buying from one supplier	Man.	14	1,7143	0,6112	14	2,3571	0,7449
	Sup.	47	2,0000	0,7223	50	1,9600	0,7548
2.Price and Other Factors, 1=Price of the part is the most important factor, 3=Factors other than price are more important	Man.	12	2,6667	0,4924	16	2,0000	0,3651
	Sup.	45	2,5111	0,6613	50	2,0400	0,402
3.Period of the relationship, 1=Short term, 3=Long Term	Man.	13	1,3077	0,6304	17	2,7647	0,5623
	Sup.	45	2,0444	0,8516	51	2,8235	0,4339
4.Decision making and application, 1=Written, 3=Mostly not written	Man.	12	1,75	0,6216	17	1,0588	0,2425
	Sup.	46	2,0217	0,8297	50	1,2600	0,5272
5.Control of the parts, 1=100% control, 3=Less than 50% control	Man.	13	2,2308	0,725	16	2,0625	0,8539
	Sup.	44	2,25	0,7813	49	1,5918	0,7337
6.Trust level, 1=Orders should be written, 3=Orders should not be written	Man.	11	1,8182	0,7508	17	1,7059	0,5879
	Sup.	44	1,5909	0,6583	50	1,5600	0,644
7.Risk sharing about the costs, 1=Least, 3=Most	Man.	12	2,1667	0,9374	16	2,0625	0,4425
	Sup.	45	2,1111	0,804	49	1,8776	0,6962
8.Flexibility, 1=Very detailed procedures, 3=Procedures are adjusted due to the long term relationships	Man.	12	2,0000	0,9535	17	1,7647	0,8314
	Sup.	44	1,5682	0,6611	50	1,7800	0,8154
9.Technology Transfer, 1=Rare, 3=Often	Man.	10	2,0000	0,8165	17	2,1765	0,7276
	Sup.	44	1,6364	0,7182	48	2,1458	0,7143
10.Communication Channels, 1=Formal communication, 3=Informal communication	Man.	11	2,2727	0,6467	14	2,1429	0,663
	Sup.	44	1,8182	0,7241	49	1,7347	0,6382

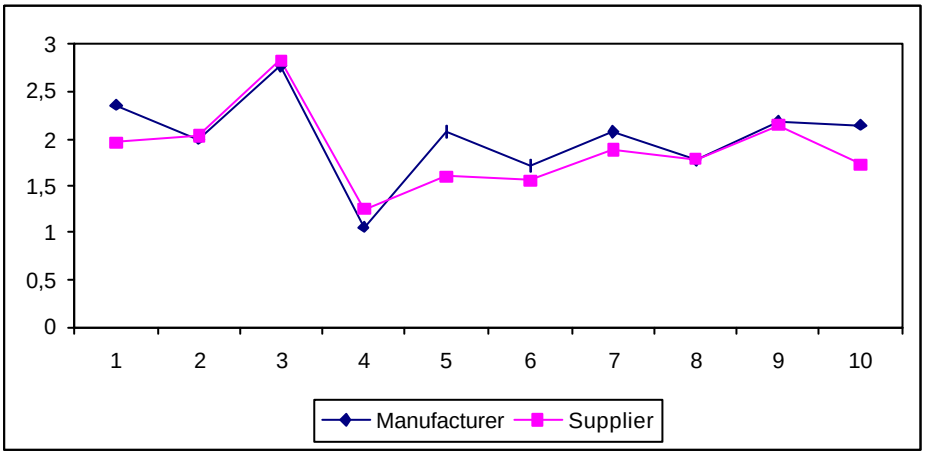

Figure 8. Changing Patterns of Relationships (2000)

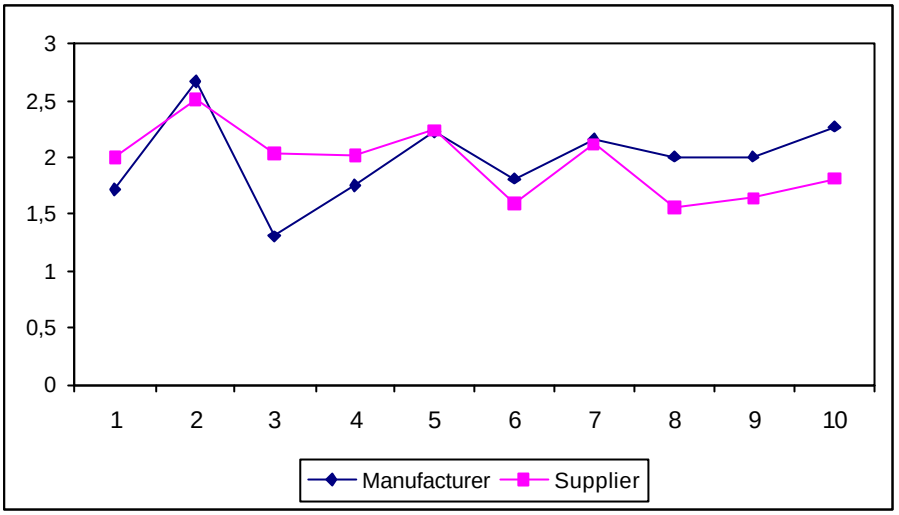

Figure 9.Changing Patterns of Relationships (1995)

General Statements on Internet and Supply Chain Management

Table 11 presents the opinions of managers about IT, Internet and supply chain management and the future of buyer supplier relationships by taking developments in the IT sector into consideration (see appendix Part 6 for the questions). It can be briefly seen that Internet and web based technologies will continue to spread in the sector, and managers think that IT, especially the Internet will shape the supply chain management in the near future. Ranks are sorted by descending means for importance. Higher values mean that respondents agree with the statement.

Table 11.Statements about IT and the Internet

*Statement***	*N*	*Mean**	*St.Dev.*
We will use more Internet in the near future	*64*	*4,2500*	*,8165*
Internet has positive contributions to the employees	*67*	*4,2090*	*,7694*
Internet eliminates many procedures of supply chain	*64*	*4,0469*	*,8807*
Internet will speed up our activities	*64*	*4,0469*	*,7854*
Mostly the Manufacturing company benefits rather than supplier from Electronic commerce	*63*	*3,9683*	*,9327*
Electronic commerce will force suppliers to be more integrative with manufacturers	*63*	*3,7460*	*,9153*
Internet forces more collaborative relationships with suppliers and manufacturers	*62*	*3,7419*	*,7668*
Internet has the potential to transform the supply chain management	*65*	*3,7385*	*,9727*
One of the most important reasons of barriers against Electronic commerce development is insufficient knowledge levels of suppliers.	*65*	*3,6923*	*1,0447*
Electronic commerce will improve customer relationships.	*63*	*3,4603*	*,9474*
Electronic commerce decreases the supply costs	*62*	*3,3226*	*1,0523*
Our current internet infrastructure is not enough to integrate with our suppliers	*64*	*3,1719*	*1,2157*

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Table 12.Statements about IT and the Internet (Manufacturers and Suppliers)

1.Electronic commerce decreases the supply costs	*Man.*	*15*	*3,2000*	*1,0142*
	Sup.	*47*	*3,3617*	*1,0719*
2.Internet has positive contributions to the employees	*Man.*	*17*	*4,1765*	*1,1311*
	Sup.	*50*	*4,2200*	*,6158*
3.Internet has the potential to transform the supply chain management	*Man.*	*17*	*3,5882*	*1,1213*
	Sup.	*48*	*3,7917*	*,9216*
4.Our current internet infrastructure is not enough to integrate with our suppliers	*Man.*	*16*	*3,6250*	*1,2583*
	Sup.	*48*	*3,0208*	*1,1758*
5.Mostly the Manufacturing company benefits rather than supplier from Electronic commerce	*Man.*	*16*	*3,5000*	*,9661*
	Sup.	*47*	*4,1277*	*,8752*
6.Electronic commerce will force suppliers to be more integrative with manufacturers	*Man.*	*16*	*3,6250*	*,9574*
	Sup.	*47*	*3,7872*	*,9074*
7.Electronic commerce will improve customer relationships.	*Man.*	*14*	*3,2857*	*1,0690*
	Sup.	*49*	*3,5102*	*,9157*
8.Internet forces more collaborative relationships with suppliers and manufacturers	*Man.*	*15*	*3,6667*	*,9759*
	Sup.	*47*	*3,7660*	*,6982*
9.Internet eliminates many procedures of supply chain	*Man.*	*15*	*3,9333*	*,7988*
	Sup.	*49*	*4,0816*	*,9091*
10.Internet will speed up our activities	*Man.*	*16*	*3,8750*	*,8062*
	Sup.	*48*	*4,1042*	*,7784*
11.We will use more Internet in the near future	*Man.*	*16*	*3,6875*	*,9465*
	Sup.	*48*	*4,4375*	*,6812*
12.One of the most important barriers against Electronic commerce development is insufficient knowledge levels of suppliers.	*Man.*	*16*	*3,6875*	*,9465*
	Sup.	*49*	*3,6939*	*1,0841*

Here again we can see that using IT for collaborative purposes have lower rates comparing with individual Internet usage. By the way, despite this conclusion, the signs of using IT for more collaborative purposes in the near future can be seen from the results below. There are two significant differences between big automotive manufacturers and part makers in this section. Suppliers state that they will use more Internet in the near future than automotive manufacturers. (Mean 4,4375 for suppliers, 3,6875 for automotive manufacturers, $p<0.001$ One-way ANOVA) This is because the suppliers are newly adapting web technologies compared with automotive manufacturers. Suppliers believe that mostly the big manufacturers will benefit from the developments of IT and Internet. (Mean 4,1277 for suppliers, 3,5000 for automotive manufacturers, $p<0.05$ One-way ANOVA)

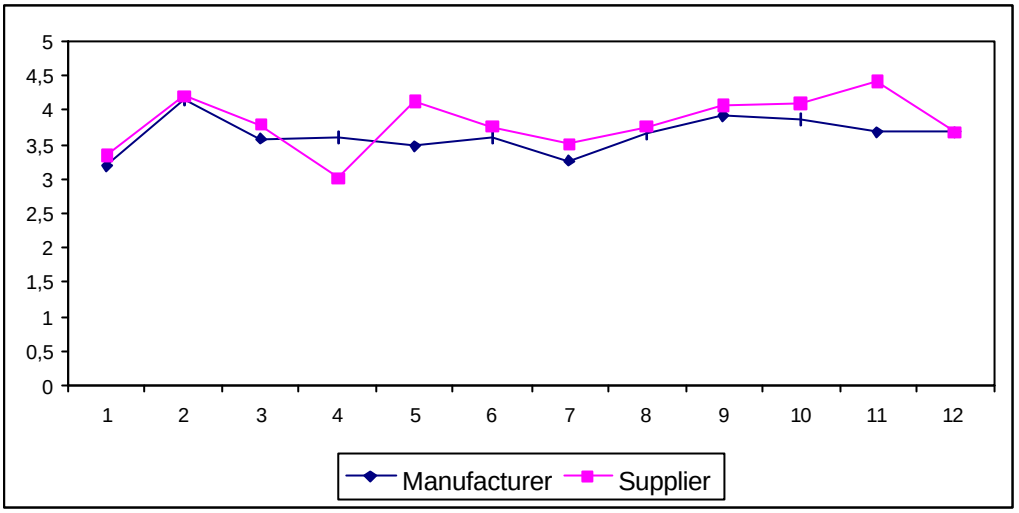

Figure 10. General Statements on Internet and Supply Chain Management

Most of the respondents state that their relations with supplier change towards a more collaborative way. Table 13 and 14 shows the results relating to the changing way of relations and IT.

Table 13.Changing way of relations

	Frequency	*Valid Percent*
More competitive	*7*	*10,6*
More collaborative	*53*	*80,3*
Don't change	*6*	*9,1*
Total	*66*	*100,0*

Table 14.Effect of IT on buyer supplier relations

	Fr.	*%*
Caused to be more collaborative	*32*	*53,3*
Caused to be partly collaborative	*16*	*26,7*
Has no important effect	*5*	*8,3*
Caused to be partly competitive	*3*	*5,0*
Caused to be more competitive	*4*	*6,7*

According to table 14 Most of the respondents think that IT will cause a more collaborative buyer-supplier relationship. Table 15 shows the satisfaction level of manufacturers at their relations with suppliers. Most of the manufacturers are partly pleased with their relations between suppliers. There is no significant difference between suppliers and manufacturers.

Table 15.Satisfaction Level of Supplier Relations

	Fr.	*%*
Satisfied	*24*	*36,9*
Not satisfied	*3*	*4,6*
Partly satisfied	*38*	*58,5*

18 of 65 firms have Internet connection with their suppliers while the rest, 47 firms don't. There is a significant difference between automotive manufacturers and suppliers. (Pearson

Chi-Square 8,644, $p<0.05$) 9 of 17 automotive manufacturers have Internet connection with their suppliers.

DISCUSSION

The results given in Table 8, 9 and 10 support the first proposition briefly. According to these results, there are two significant results supporting the first proposition. Automotive manufacturers care more about quality and other factors than the cost of a component. And it can also be said that the trust level between buyers and suppliers has developed within 5 years. Although it is not statistically significant, there is a clear sign that automotive manufacturers are working with less suppliers in 2000 compared to 1995. It can be said that the first proposition,

"From 1995 to 2000 buyer-supplier relations in Turkish Automotive Industry have changed through a more collaborative pattern"

is supported by the available data and in general the findings are in conformity with literature in the area.

On the other hand according to these results, it is not easy to accept statistically the second proposition with the data available. But in general terms, we can say at least most of the findings support the proposition "From 1995 to 2000 increasing use of information technology and the Internet have caused a more collaborative relationship between automotive manufacturers and their suppliers."

Literature and research in the area of information technology and supply chain management alleges that web based technologies will improve and spread the use of information technology to connect buyer and supplier in order to speed up their relations, share knowledge and cause more collaborative supply chain management. Some of our findings support the propositions determined partly and some say that the Turkish automotive industry needs time to be connected through web based networks and to benefit from the results of high level connectivity. Most of the respondents think that the Internet and IT affect on their supplier relations is towards collaboration. Again their relations are changing from a competitive pattern towards partnership. More than half of the big automotive manufacturers have internet connections with their suppliers. And the trend of suppliers is through more effective Internet use. On the other hand, when we examine the current situation, it is seen that generally firms use IT for purposes other than inter firm connections. But the changing way of relations and IT use and its significance may help us to assert that within a few years connectivity will spread out automotive manufacturers. The developments in the network technologies will accelerate this trend. Automotive manufacturers see the "Insufficient IT infrastructure of suppliers" as an important information technology adaptation problem. This result shows us, as it is mentioned above; one of the main reasons for lack of inter-firm linkages between suppliers and automotive manufacturers is the insufficient IT infrastructure of suppliers. Cheaper software and hardware and developments in the network technologies will enable suppliers establish suitable infrastructure to connect with the automotive manufacturers.

CONCLUSION

This research examines one of the most important aspects of the Turkish automotive industry, the supply chain management and information technology relations. It takes a period of 5 years into consideration, so we can make some suggestions by analyzing the historical development in the industry. On the other hand, timing of the research brings out some

problems. This research was executed in the second half of 2001, when Turkey and automotive industry was in a big economic and financial crisis. The situation of IT investments and of supply chain relations was effected directly from the current crisis. In this study we examined automotive manufacturers and part makers together and pointed out some important findings about differences between two when necessary. Possibly, a research analyzing these two groups separately, asking different questions and combine the findings may have more accurate and useful results. But, we believe that the findings of this paper will be helpful for the further researches in this field.

REFERENCES

[1] Graham Gary, Hardaker Glenn, Supply-chain management across the Internet, International Journal of Physical Distribution & Logistics Management, Vol. 30 No. 3/4, 2000, 286-295

[2] Hoyt James, Huq Faizul, From arms-length to collaborative relationships in the supply chain: An evolutionary process, International Journal of Physical Distribution & Logistics Management, Vol. 30 No. 9, 2000, 750-764

[3] Kalin Sari, the Fast Line, CIO WebBusiness Magazine, April 1, 1998, http://www.cio.com/archive /webbusiness/040198_harley.html

[4] Kalogeridis Carla, Internet Generation Next, ActionLINE, March, 2000, http//www.anx.com/ downloads/actionline1.pdf

[5] McGuffog Tom, Wadsley Nick, The general principles of value chain management, Supply Chain Management: An International Journal Volume 4. Number 5. 1999, 218-225

[6] C.Koch, The Big Payoff, CIO Magazine October 1, 2000.
http://www2.cio.com/archive/10100_payoff_content.html

[7] McIvor R.T., Humpreys P.K., McAleer W.E, European car makers and their suppliers: changes at the interface, European Business Review Volume 98, Number 2, 1998, 87-99

[8] Doran Desmond, Synchronous supply: an automotive case study, European Business Review, Volume 13, Number 2, 2001, 114-120

[9] However, it is argued that evidence indicates that many of the features of these so-called "Japanese-style" customer-supplier relationships were present in the US auto industry before 1920. Helper Susan, Hochfelder David, 'Japanese Style' supplier relationships in the American auto industry, 1895-1920, 187-214. Ed.Shiba Tako, Shimotoni Masahiro, Beyond the firm: Business groups in international and historical perspective, (Oxford University Press, Newyork, 1997)

[10] OSD (Automotive Manufacturers Association) Current situation of Turkish automotive industry, (Türkiye'deki otomotiv sanayiinin durumu) Report 2001/7

[11] Ünüsan Çaðatay, An emprical examination of vertical quasi-integration in Turkish automobile distribution, (Faculty of Economics and Administrative Sciences, Konya, 1993)

[12] Güleº H.Kürºat, The Impact Of Advanced Manufacturing Technologies On Buyer-Supplier Relationships In The Turkish Automotive Industry, Unpublished Doctoral Dissertation, The University Of Leeds, School Of Business And Economic Studies, 1996

[13] “Draft report for automotive industry” (Otomotiv Sanayi Sektörü Rapor Taslaðý) Istanbul Chamber of Industry, Branch of Profession Committees, July 2001

[14] Lancioni Richard A., Michael F. Smith, Terence A. Oliva, The Role Of The Internet in Supply Chain Management, Industrial Marketing Management, 29, 2000, pp.45–56

APPENDIX: Questionnaire

In this survey we used a questionnaire which includes mostly Likert type scales about statements given about supply chain relations and the Internet. In these scales, smaller numbers have negative, higher numbers have positive meanings (i.e, 1=Strongly disagree, 5=Strongly agree or 1=Not important, 5=Very important).

Part 1.Information Technologies used

IT	***1995***	***2000***
EDI	*Five Scale From 1=Not at all to 5=Very Much*	*Five Scale From 1=Not at all to 5=Very Much*
Internet		
PC		
Extranet		
Intranet		
ERP		
Email		

Part 2.Goal of IT use and achieving these goals

Factor	***Goal of Using IT***	***Achieving the goal***
Internal Coordination	*Five Scale From 1=Not important to 5=Very Important*	*Five Scale From 1=Not at all to 5=Very Succesful*
Coordination with suppliers		
Responsiveness		
Cost effectiveness		
Speeding up the processes		
Reach the technological level of competitors		
Follow the developments of the industry		
Increase efficiency through empowering employees		
Using email instead of traditional communication devices		
Share hardware like printers etc.		
Using internet as a promotion device		

Part 3.Reasons for poor IT adaptation

Factors effecting IT adaptation	***Importance level of the factor***
Resistance to new technology	*Five Scale From 1=Not important to 5=Very Important*
Poor choose decision of technology	
Insufficient IT infrastructure of suppliers	
Security problems for Internet	
Lack of communication between IT Personnel and end users	
Insufficient knowledge level of users	
Investing to technology unconsciously	
Investing to technology since it exists at competitors	
Lack of top management support	
Lack of knowledge sharing for employees	
Lack of foreign language	
Difficulties to find qualified IT personnel	
Lack of following the actual developments	

Part 4.Changing Relations with Suppliers

Feature of Supplier	***1995***	***2000***
Importance of Quality Control	*Five Scale From 1=Not important to 5=Very Important*	*Five Scale From 1=Not at all to 5=Very Much*
Importance of Product Quality		
Cost of Product		
R&D		
Response to changing demand		
Importance of on time delivery		
Geographic location		
Innovation and technological collaboration		
Adapting information technologies		

Part 5.Some Issues about Buyer-Supplier Relationships

Issues about SCM	***1995***	***2000***
1.Number of the suppliers	*1=Buying from many suppliers, 3=Buying from one supplier*	*1=Buying from many suppliers, 3=Buying from one supplier*
2.Price and Other Factors	*1=Price of the part is the most important factor, 3=Factors other than price are more important*	*1=Price of the part is the most important factor, 3=Factors other than price are more important*
3.Period of the relationship	*1=Short term, 3=Long Term*	*1=Short term, 3=Long Term*
4.Decision making and application	*1=Written, 3=Mostly not written*	*1=Written, 3=Mostly not written*
5.Control of the parts	*1=100% control, 3=Less than 50% control*	*1=100% control, 3=Less than 50% control*
6.Trust level	*1=Orders should be written, 3=Orders should not be written*	*1=Orders should be written, 3=Orders should not be written*
7.Risk sharing about the costs	*1=Least, 3=Most*	*1=Least, 3=Most*
8.Flexibility	*1=Very detailed procedures, 3=Procedures are adjusted due to the long term relationships*	*1=Very detailed procedures, 3=Procedures are adjusted due to the long term relationships*
9.Technology Transfer	*1=Rare, 3=Often*	*1=Rare, 3=Often*
10.Communication Channels	*1=Formal communication, 3=Informal communication*	*1=Formal communication, 3=Informal communication*

Part 6.General statements about Internet and E-Commerce

Statement	***Agreement***
Electronic commerce decreases the supply costs	*Five Scale From 1=Strongly Disagree to 5=strongly agree*
Internet has positive contributions to the employees	
Internet has the potential to transform the supply chain management	
Our current internet infrastructure is not enough to integrate with our suppliers	
Mostly the Manufacturing company benefits rather than supplier from Electronic commerce	
Electronic commerce will force suppliers to be more integrative with manufacturers	
Electronic commerce will improve customer relationships.	
Internet forces more collaborative relationships with suppliers and manufacturers	
Internet eliminates many procedures of supply chain	
Internet will speed up our activities	
We will use more Internet in the near future	
One of the most important barriers against Electronic commerce development is insufficient knowledge levels of suppliers.	

Part 7. Multiple choice questions

**Which direction do your relations with suppliers change?*	*More competitive, More collaborative, None*
**Do you have a web based connection with your suppliers?*	*Yes, No*
**Do you have any cooperation with your competitors?*	*Yes, No*
**What is the general effect of information technologies on your relations with suppliers?*	*Forced to be more collaborative,* *Forced to be partly collaborative* *Have no significant effect* *Forced to be partly competitive* *Forced to be more competitive*

EVALUATING THE KNOWLEDGE ASSETS OF INNOVATIVE COMPANIES

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ABSTRACT

In the current post-industrial society, knowledge is recognised as a primary source of a company's wealth. However knowledge assets are much more difficult to identify and measure than are the physical assets with which we are much more familiar. (Boisot 1998) As a company's innovative capacity may be dependent upon its ability to take advantage of its knowledge assets, it is important to be able to identify and measure those assets. While large companies can afford extensive knowledge management projects, there is a acute need for a method by which managers in smaller organisations can easily and reliably locate and quantify the components of their knowledge assets in order to maximise their potential for innovation.

This paper will begin by defining the concept of knowledge elements within the three functions of the knowledge life cycle. This cycle will then be integrated into the well-known four modes of knowledge conversion between tacit and explicit knowledge as proposed by Nonaka (1995).

The paper will then describe the identification, from the literature, of measurable, knowledge elements that will give a balance view of knowledge assets across the integrated model. It will then discuss way by which managers can determine the value of these elements in their companies and compare them with other indicators of innovation.

INTRODUCTION

Knowledge has long been recognised as a valuable resource for organisational growth and sustained competitive advantage, especially for organisations competing in an uncertain environment (Miller & Shamsie 1987). In the current post-industrial society, knowledge is recognised as a primary source of a company's wealth. However knowledge assets are much more difficult to identify and measure than are the physical assets with which we are much more familiar. (Boisot 1998) As a company's innovative capacity may be dependent upon its ability to take advantage of its knowledge assets, it is important to be able to identify and measure those assets. While large companies can afford extensive knowledge management projects, there is a acute need for a method by which managers in smaller organisations can easily and reliably locate, quantify and compare their knowledge assets in order to maximise their potential for innovation.

The paper will begin with an overview of current thinking on the topic of Knowledge Management (KM). It will then introduce the three *functions* of the knowledge life cycle (Bhatt 2000, Tan 2000), the four *modes* of conversion between tacit and explicit knowledge

(Nonaka 1995) and the five knowledge enabling (Von Krogh 2000). The research, reported here, aims to identify, from the literature, a set of knowledge elements that will give a balanced view of knowledge assets across the four *modes* and five *enablers*. An integrated model, which is the result of research to date by the authors, will then be defined. This model combines the functions of the knowledge life cycle and Nonaka's knowledge creation spiral with the notion of I-Space, which has been used to classify information across three dimensions, to form a new model of K-Space, which can be used to classify the knowledge elements. The paper will present this model and discuss the appropriateness of a set of knowledge elements, as a means of measuring the knowledge asset of an organisation. It is suggested that the measure be verified by test the outcomes against established indicators of innovation. The purpose of this research is to determine a practical way by which managers can determine the value of their knowledge assets and track the growth or decline of knowledge in their companies.

KNOWLEDGE MANAGEMENT, TECHNOLOGY AND INNOVATION

Knowledge management is a topic that is being addressed by many academic fields including psychology, business, information technology, economics and many more. KM is clearly an interdisciplinary research area and cross-functional in practice where there is disagreement as to whether KM should be considered a technical issue, a human resources issue, a procedural issue or a part of strategic management (Bollinger & Smith 2001). It is undeniable that advances in information and communication technologies have heightened the interest in knowledge as a strategic resource (McLure, Wasko & Faraj 2000) and knowledge management could be viewed as the latest in a long line of applications of technology for the provision of business solutions in organisations (Bollinger & Smith 2001). However, as Choo (1998) observes, the question of how organisations can use information and communication technologies for KM is much harder to answer than it sounds.

In this paper knowledge management is defined as a set of organisational activities that positively influence knowledge creation, assisting relationships and communication between people, as well as the diffusion of local knowledge through the organisation and across the organisational boundary (Von et al 2000). Information and communication technologies can be considered as drivers or enablers of KM. The authors come from the field of information systems and will therefore emphasise the role of information and communication technologies in these activities while recognising that there are other, non-technical perspectives on KM as defined.

As with researchers in most fields the authors assume the existence of some relationship between innovation and knowledge management. It is the newest information technologies that hold the most potential for innovation in an era characterised by knowledge as the critical resource for business activity (Malhotra 2001). Globalisation, created by new IT, has placed businesses everywhere in a new and different competitive situation where knowledgeable, effective behaviour can provide a competitive edge. In this climate enterprises have turned to explicit and systematic knowledge management (KM) to develop the intellectual capital needed to succeed (Wiig 1999). The so-called "productivity paradox" was based on research into the older IT and showed no relationship whatever between computer expenders and company performance (Ives 1994). The disconnect between IT expenditures and the firms organizational performance may change with an economic transition from an era of competitive advantage based on information to one based on knowledge creation (Malhotra 2000).

Much research in KM grapples with the perceived need to pin down the "soft" concept of knowledge just as has been down with the firmer concepts of "data" and "information". A way forward has been to classify organisational knowledge into two forms "tacit" and "explicit" (Nonaka 1995, Von et al 2000; Kakabads & Kouzmin 2001; Earl 2001). Identifying activities and technology that convert knowledge from one form to another, i.e. tacit to tacit, tacit to explicit, explicit to explicit or explicit to tacit, is significant for two reasons:

1. the activities and technologies, that create and transfer knowledge, are relatively easy to find and hence measure,
2. when seeking to retrieve lost knowledge, eg when employees leave the organisation, activities and technologies can be identifies to capture and manage their knowledge by making it explicit.

Small and medium-sized enterprises (SME) are often a fertile environment for knowledge creation and transfer and hence innovation. Companies who have effective ways to manage their knowledge are much better prepared to face any changes in new economy, and thereby be innovative (Harari, 1994; Nonaka, 1994; West, 1992) and better decide how to invest and to compete (Carneir 2000). SMEs are then suitable sites for the study, and adoption, of KM.

RESEARCH DESIGN AND METHOD

This research is being conducted in two phases. The first phase consists of a literature review and development of a suitable model. The model will be developed and justified in this paper, together with a body of literature used to classify knowledge-converting activities and identify practical knowledge elements to be inserted into the model.

The second phase of the research, which will involve an extensive empirical study, aims to develop a practical indicator of knowledge growth in organisations. This study will use the relationship between knowledge management and innovation to test if there is merit in pursuing a balance in the set of activities converting knowledge between the tacit and explicit forms as has been shown in Japanese companies (Von et al 2000). The paper will discuss preliminary progress on this phase with the development of a suitable set of measurable knowledge elements.

BACKGROUND CONCEPTS

The aim of this first phase of the research is to identify aspects of sound knowledge management theory that could be used to provide an integrated framework for identifying different forms of knowledge and measuring the growth of knowledge in an organisation. The K-Space (knowledge space) model is the result of that research. The contributing theories, and the justification for their integration into the K-Space model, are now presented.

The Life-cycle of Knowledge

Knowledge can be considered to pass through a number of function or phases in a cyclic fashion. The most commonly accepted are the creation, transferring and management as shown in Figure 1 (Bhatt 2000). The core function for organisations in this cycle is management, as it could be said that without management the creation and transfer of knowledge has no direction. Management may be defined in different ways, but common to

most definitions used in KM is that knowledge management implies directing, supporting and enabling processes that may be inherently uncontrollable or stifled by heavy-handed direction.(Von Krogh et al 2000).

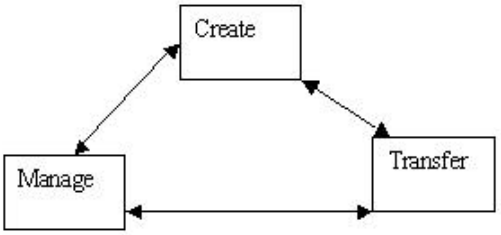

Figure 1 The Knowledge Life Cycle.

In the life cycle of knowledge, "knowledge management" is seen as a set of organisational activities that positively influence knowledge creation and assist relationships and conversations between people as well as the diffusion of knowledge inside or outside organization. In the context of knowledge, management is, in part, an enabling process so that "knowledge enablers" have been defined as follows:

Knowledge enablers

According to Von Krogh et al (2000 p8) there are five knowledge enablers:

1. Instil knowledge vision cycle (IKVC)
2. Manage conversation cycle (MCC)
3. Mobilize knowledge activist cycle (MKAC)
4. Create the right context cycle (CRCC)
5. Globalise local knowledge cycle (GLKC)

Knowledge enablers work in cycles to create and transfer knowledge because knowledge enabling should be thought of in an evolutionary manner, always aimed at continuously improving knowledge, creating and realising the potential of the company. This list is a practical set of processes that can be used in our research and emphasises the importance of the cyclic nature of knowledge processes.

The four modes of knowledge conversion

Nonaka's two-dimensional model for the creation of knowledge, shown in Figure 2, is based on the idea that the constant interaction between tacit and explicit knowledge produces or creates new knowledge. Tacit knowledge is highly personal and hard to formalise, making it difficult to communicate or to share with others (Nonaka 1995 p8). Explicit knowledge is knowledge can be easily processed by a computer, transmitted electronically or stored in database (Nonaka 1995 p9). Explicit knowledge is knowledge that has been externalised and exists in knowledge artefacts. Tacit knowledge, on the other hand, is knowledge embodied within the minds of individual organisational members. Nonaka named the four modes by which these two forms of knowledge interact as shown in Figure 2. Socialization is the process of converting tacit to tacit knowledge. Externalisation is the process of converting tacit to explicit knowledge. Combination is the process of converting explicit to explicit and Internalisation is the process of converting explicit to tacit.

This has led to the knowledge creation spiral of Nonaka and Takeuchi (1995) which views organisational knowledge creation as a process involving a continual interplay between the explicit and tacit dimensions of knowledge, cycling through the modes. In addition four levels of carriers of knowledge in organizations area are assumed, namely individual, group, organisational and interorganisational. The spiral moves and expands as it moves between these levels.

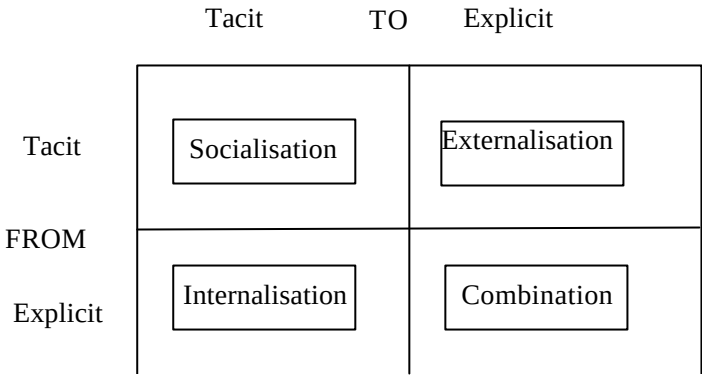

Figure 2 Four modes of knowledge conversion

Knowledge elements

For the purpose of this research, knowledge elements are defined as activities that managers use to manage knowledge in their organisation. These knowledge elements can be classified into four main categories by their support for the modes of conversion between tacit and explicit knowledge. Knowledge elements thus are a set of activities, which can be classified as

- Socialisation elements
- Externalisation elements
- Combination elements
- Internalisation elements

Furthermore, each element can act as a force to move knowledge between the two different forms, tacit and explicit, and the five different knowledge enabler cycles described above. The four modes and five enabling cycles give 20 different categories and it is our assertion that a balanced assessment of these, offer a pragmatic basis for measuring the knowledge creation value of an organisation. One objective of this research is to test the theory that innovation is best enabled by using all four different knowledge creation modes as equally possible (Nonaka 1995). To reach this objective requires a means of identifying and determining the value of knowledge elements.

It is planned to conducted empirical research to create and evaluate a survey instrument that could be used in organisations to determine the cumulative value of its knowledge elements and track these over time. Standard Deviation will be used a measure of how widely values are dispersed from the average value (the mean). The resulting measure of knowledge assets will be validated against established indicators of innovation such as that provided by the Ander Drejer model shown in Figure 3, especially this model is defined innovation management in disruptive technology change situation. The expectation, based on the definition of innovation of Nonaka discussed above is that company Y will be more

innovation than company X if it has a lower standard deviation of the value of knowledge elements average across the different modes.

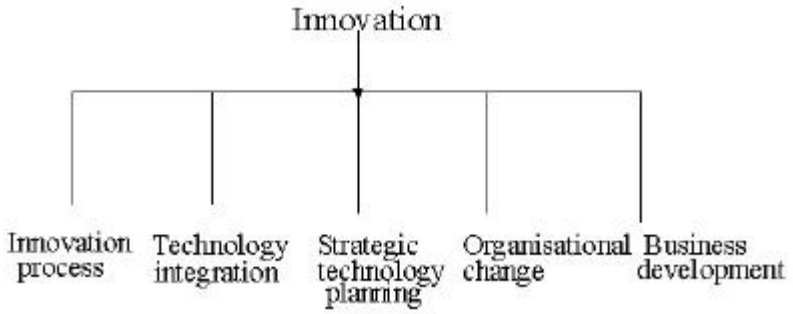

Figure 3 Innovation measures (Ander Drejer model)

An attempt has already been made by the authors to create a balanced list of knowledge elements but it was found that a more formal model was required if the survey instrument used to collect data on these elements was to yield a meaningful outcome. A solution was found in a spatial representation of knowledge elements as follows.

DEVELOPING THE K-SPACE MODEL

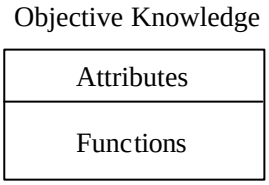

Figure 4: Knowledge as an object

Knowledge as an Object in 3D.

In order to formalise this work is has been found helpful to consider knowledge as an object which can move in space. In the information systems paradigm an object has attributes and functions as shown in Figure 4. The functions, which affect knowledge, are the knowledge elements, as defined above, and the attributes are the properties along the tacit to explicit dimension.

The object moves through space driven by the effect of force. Mathematically space is a cube with three-dimensions. Any object in space can be identified by its position; hence the properties of knowledge are the values on the dimensions of that space. Each of the four modes of knowledge creation (Figure 2) has been represented as a two-dimension rectangle and can be considered as a plane in space as show in Figure 5.

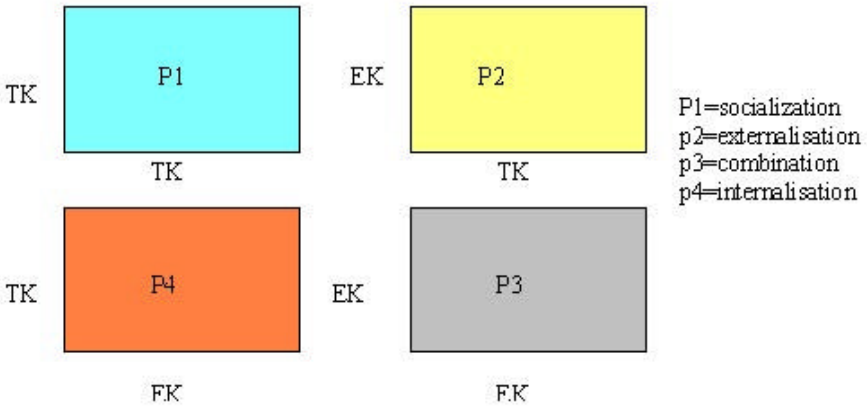

Figure 5 Nonaka's four modes as planes

It has been found to be relatively easy to classify knowledge elements into one of these four planes. The next step is to incorporate the dynamics of the five knowledge enablers. An information system perspective raises three issues: the challenge to codify and formalise, the need to communicate, share and transmit and the importance of retaining context when doing these. These provide three dimensions for a spatial representation of the knowledge enablers.

The Information space

Support for the view of knowledge as an object in space comes from the analogous concept of I-Space, which was developed by Boisot (95; 98) for information. I-Space is a cube, shown in Figure 6) that brings together the three essential dimensions of information; codification, diffusion and abstraction, with an associated scale that ranges from codified to uncodified, from diffused to undiffused and from abstract to concrete (Shariq 1998).

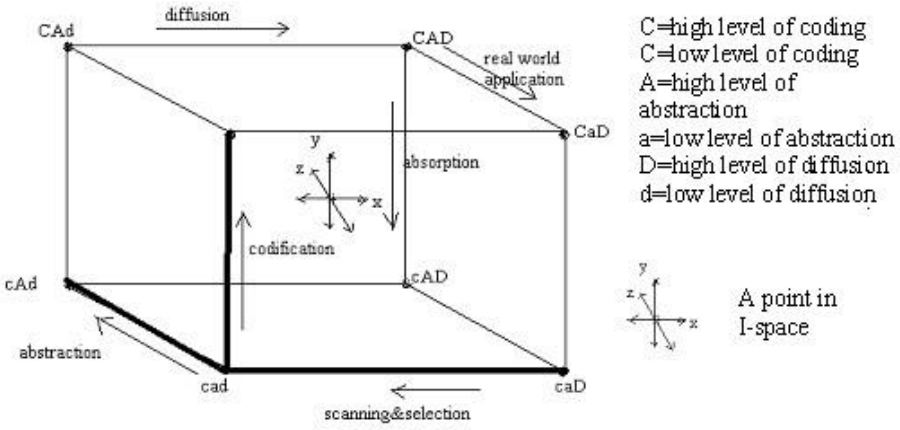

Figure 6: The dimensions of I-Space (Ashford 1997)

From I-Space to K-Space: Knowledge and information

The concept of knowledge elements, as defined above, is now imposed onto the I-Space model to create a corresponding model for knowledge objects, the K-Space. This involves a

mapping of the dimensions of tacit and explicit knowledge elements onto the dimensions of information in the I-space, ie: codification, diffusion and abstraction. There are many similarities in the processes associated with knowledge and information. Both can be shared (Eschenfelder et al 1998, Cook 1999, Byrne 2000) ,codified (Haldin-Herrgard 2000)) and encapsulated (Hildreth, et al 2000), Ohr 2000, Baster et al 2001).

In information systems terms, knowledge results from the processing of information just as information is a processing of data (Hasan 2001). However knowledge could result form the processing of data where the result is new knowledge and there is a constant dynamic of interchange between all three: data, information and knowledge (Callioni 2002). For the purposes of building a model of K-Space we content that the processes of sharing, abstracting and codifying information can be transferred to the concept of knowledge with some restrictions on the meaning of information and meaning of knowledge. In particular the importance of context is a feature that distinguishes knowledge from information. (Brakensiek 2002, Leonard & Sensiper 1998). Context is added to information through utility, as knowledge is often defined as information in action (Sveiby 1997).

Utility as the context of knowledge

Utility is defined as the outcome of the management of knowledge. Utility and context distinguish knowledge from information. Knowledge affects the organisation at different levels including operational performance, the way that employees do their jobs and the way that the managers make their decisions. The utility of knowledge transcends organisational boundaries, to the life of employees and into society.

Knowledge increases proficiency in the performance of complex cognitive tasks (Wyman et al 1998). Moreover, sharing knowledge affects team knowledge, as result the team attitude becomes much more focussed on information sharing, transactive memory, group learning and cognitive consensus (Mohammed & Dumville 2001). Costly errors are caused when knowledge is not shared (Hoopes & Postrel 1999). Competitive advantage (Yli-Renko et al 2001), the influence of decisions *(*Borg 2001) and effective management of the change (Coffman 2000) are the result of knowledge exploitation. The current emphasis on knowledge management is greatly shifting the way which employees do their work and the way which leadership is defined (Tyson 1999). Knowledge helps employees to reduce the cycle time of doing their jobs (Lynn 2000). Indeed the ultimate utility of knowledge management in organisations is innovation.

Mapping the forms of knowledge onto the dimensions of information

As shown in Figure 6, the dimensions of information in I-Space are represented as the level of coding (C=high and c=low), the level of abstraction (A=high and a=low) and the level of diffusion (D=high and d=low). These will now be discussed in terms of knowledge rather than information by adding the concepts of utility and context.

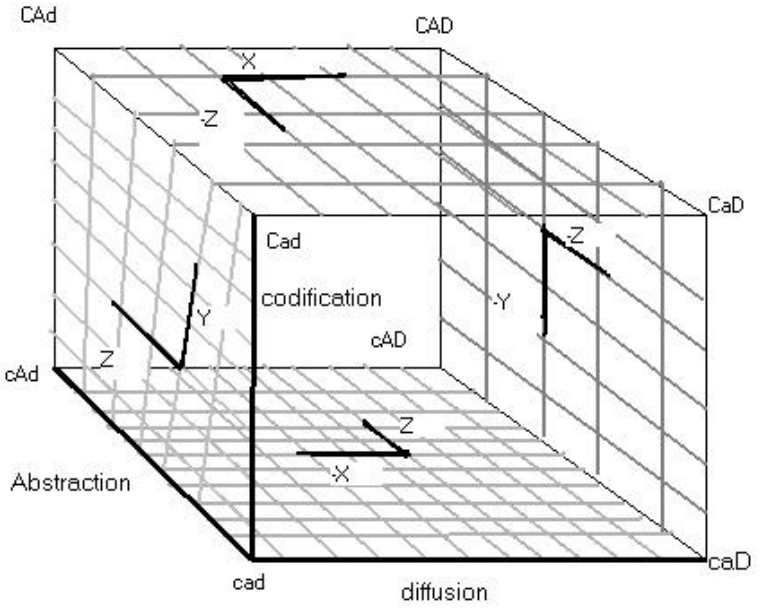

Figure 7: The K-Space with dimensions of Codification, Diffusion and Abstraction

Codification: The height of the cube represents codification, which relates to the level of classification, aggregation and analysis (Ashford 1997). The need for codification is enhanced by information technology and varies with managerial level. There is a positive relation between high technology use and a manager's ability to

- Answer the common questions of "who", "where" and "when" (Choo 2000).
- Change the methods used to manage the organization for innovation (Gray 2001, Abraham & Knight 2001).
- Increase performance (Sircar et al 2000).

Based on this, management theory suggested that managers with the greatest ability to interpret codified knowledge should be at the highest level of the organisation.

Diffusion: can be defined as the availability of information and knowledge for sharing, transmission and interchanging inside and outside organisation.

Abstraction can be defined as tendency of information or data to be free of the context of the community.

THE PLACE OF TACIT AND EXPLICIT KNOWLEDGE IN THE K-SPACE

Nonaka's four modes of knowledge conversion are based on the idea that knowledge is created as a result of interaction between tacit and explicit knowledge. In our model, the categories of tacit and explicit are further divided into two forms, based on the extent of diffusion and shown in Table 1.

	Diffusion	
Knowledge form	**D (high)**	**d (low)**
Tacit		
Explicit		
Semi-Tacit		
Semi-Explicit		

Table 1:Forms of knowledge based on diffusion

Nonaka's four tradition modes of knowledge conversion occupy faces on the K-Space cube. The bottom face of the cube embraces the socialization plane (p1), tacit to tacit. The left side of the cube embraces the externalisation plane (p2), tacit to explicit. The top face of the cube embraces the combination plane (p3), explicit to explicit. The right side of the cube embraces the internalisation plane (p4). In all of Nonaka's forms the codification dimension is small even for explicit knowledge. (Walter Swap; Dorothy Leonard; Mimi Shields; Lisa Abrams; 2001).

Tacit knowledge in both forms is represented on the bottom face of cube. The points [cad,cAd,cAD,caD] delineate the tacit plane and the diffusion dimension distinguishes whether a knowledge element is semi or complete tacit. The level of abstraction determines by how much knowledge is proper removed from its context. When knowledge is removed from its context more understanding is needed and knowledge is little more than information. We use "capital A" [cAd,cAD] for knowledge in its proper context. We are currently looking for knowledge enablers that will allow the organization to recreate the right context for codified knowledge.

The prefix "semi" extends the classical definitions of **tacit** and **explicit** from Nonaka's work (1995) where **tacit** knowledge is highly personal and difficult to share but not impossible and **explicit** knowledge is easily processed and transmitted. Tacit knowledge, which is undiffused, is highly **tacit.** In contrast if tacit knowledge is highly diffused it can be thought of as **semi-tacit** as it takes on a more overt form, as it is more widely known. On the other hand, **explicit** knowledge, which is undiffused is only **semi-explicit** or relatively private.

Nonaka (1995) segmented tacit knowledge into two dimensions: the technical dimension and the cognitive dimension where the technical dimension is much easier to diffuse than the cognitive one. Hence technology enables highly diffused tacit knowledge, i.e. "semi-tacit" knowledge that is easier to convert to an explicit form. On the other hand, completely tacit knowledge is less diffused when it is contained in mental models, beliefs and perceptions. This type of knowledge is not easy to diffuse by technology until it is codified.

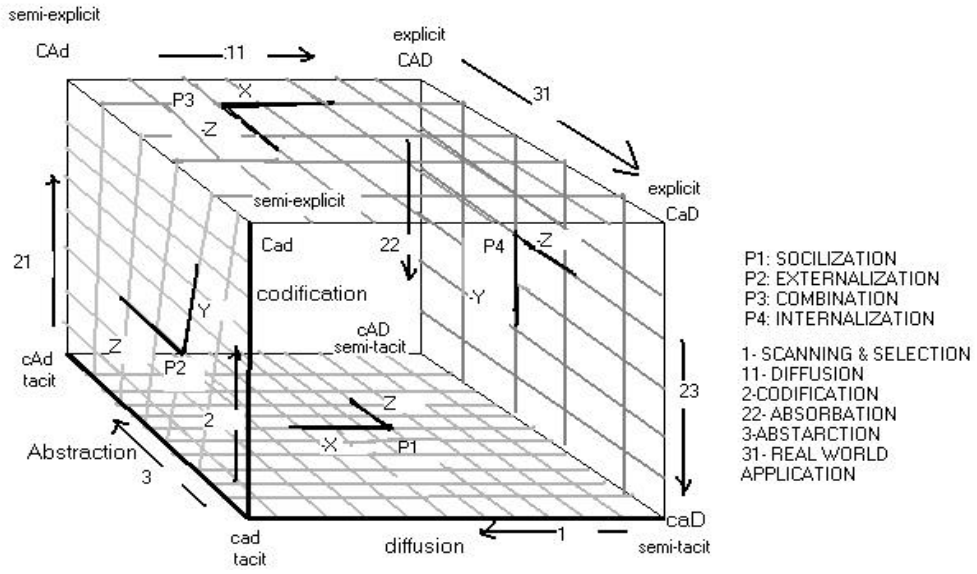

Figure 8: K-Space showing the four planes on cube

Explicit knowledge in both forms are represented in the top of the K-Space (P3) delineated by the points [Cad,CAd,CaD,CAD]. The diffusion dimension determines whether the knowledge element is semi or complete explicit and the abstraction dimension give the degree of context. This is so often the problem with information stored in traditional technical database systems where the context of the data is lost. The codification dimension in all forms on this plane is high, a quality that often distinguishes between tacit and explicit knowledge elements (Marwick 2001).

The right face of the cube (P4) knowledge represents the internalisation process and can often be treated as explicit knowledge or even information (CaD,Cad, cad,caD) that is internalised by people and becomes tacit by their interpretation. Technologies that aid this function are the Internet, knowledge repositories or specialised information systems, which can often add some element of contextual information. Knowledge without context will not added any value to organisations (Merlyn & Välikangas 1998).

KNOWLEDGE CREATION AND THE LOCATION OF KNOWLEDGE ELEMENTS IN K-SPACE

The knowledge creation spiral described by Nonaka cycles around the cube as shown in Figure 9. The cycle may be started at different points and take different paths. These correspond to the five different knowledge enablers described earlier. The "instil knowledge vision cycle" (IKVC), is one of those cycles which could start from (caD) or (cad). The "manage conversation cycle" (MCC) would probably start at the socialisation plane because this cycle is more related to generating knowledge from sharing between people.

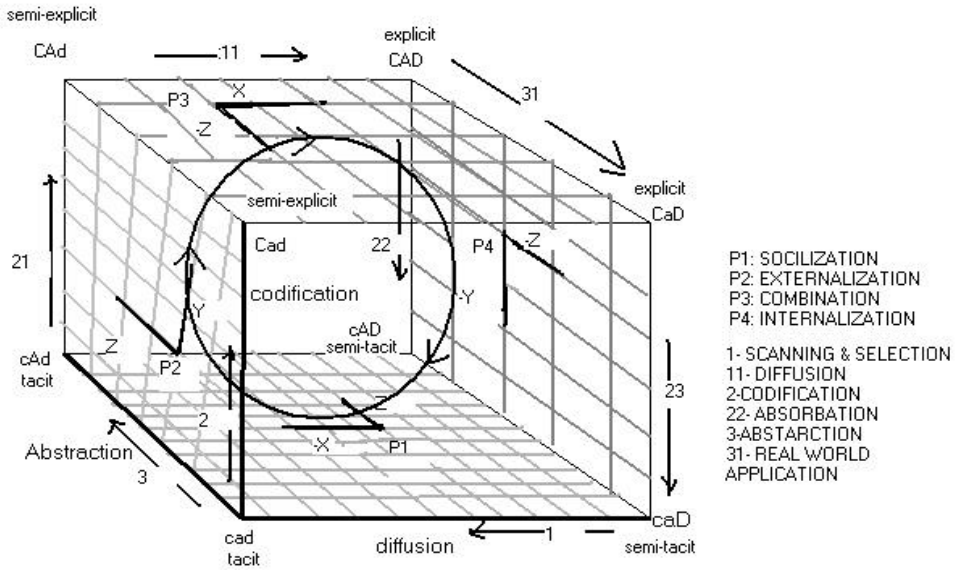

Figure 9 Knowledge enabling cycles in K-Space

The positions of elements on these planes are proving to be very important in determining where the knowledge elements are located. A practical set of knowledge elements is currently being refined. The first step in this process is to choose a balanced set of elements in each of the four planes equivalent to Nonaka's four mode of knowledge creation. The next step is to identify these elements within the five knowledge-enabling processes. Some examples will now be given, firstly of elements, and tools to support them, in the four planes and then two examples of knowledge elements within the "instil knowledge vision cycle" (IKVC) knowledge enabler that are positioned on different planes.

Plane 1 in K-Space (**socialisation**) represents the processing of converting knowledge from tacit to tacit forms. Knowledge elements located in this plane would be items that encourage participation in conversions between people. There may be techniques for including people with variety of educational backgrounds, ages, professional skills and functional responsibilities in a conversation or identifying the rituals that encourage entering conversation (Von et al 2000). Knowledge elements in this plane would need systems that assist people in scanning knowledge or provide patterns or schemas to help people make sense of tacit knowledge.

Plane 2 in K-Space (**externalisation**) is the processing of converting tacit to explicit knowledge, with the starting point of tacit knowledge very undiffused. These processes could be strongly affected by two dimensions: abstraction and codification. As the codification dimension increases tacit knowledge is easily converted to explicit without other processing. Thus any function that helps codification, such as sorting, classification and justifying would be located towards the top of this plane. Lower on this plane are functions more akin to prototyping. Here knowledge can be converted from tacit to explicit in a trial and error mode using computer aided design tools, case tools or end-user programming environments which do not necessarily yield a complete application.

Plane 3 in K-Space (**combination**) is the process of systematizing the concepts in a knowledge repository (Nonaka 1995). The coordinates of diffusion and abstraction determine the position of a knowledge element on this plane, as the codification is usually high. Most traditional information systems therefore play a significant role.

Plane 4 in K-Space (**internalisation**) is the processing of knowledge from explicit to tacit. This plane is the antithesis of plane 2, with the diffusion value high as the explicit knowledge is easily transmitted through electronic systems. Knowledge elements found here vary in their degree of codification and abstraction. In the process of becoming tacit the knowledge losses its degree of classification and increases its degree of context. Internets, Intranets and Portals may play roles to support knowledge elements here.

IKVC Example 1. "Dedication to direction" is one knowledge element that can contribute to the knowledge enabler: the "instil knowledge vision cycle". In this approach, the vision of company is created from knowledge, which is highly specified and managers carefully and deliberately construct an explicit road map depicting the way to achieve their knowledge vision. When the vision is highly specified, the people in organisation can create and share knowledge in a highly codified form that is easy to convert into the electronic form of a machine as text or data. Therefore **"dedication to direction"** can be classified as a "combination" knowledge element in Plane 3.

IKVC Example 2. "Commitment to generativity" in organisations is another knowledge element that can contribute to the knowledge enabler: the "instil knowledge vision cycle". Here the organisational vision is shared among employees who play a major role in helping the organisation to be successful (Hodgkinson 2002.). This approach to determining the knowledge vision results in new thinking, new ideas, phrasing and actions from the people (Von Krogh & Roos, 1997). Consequently, the vision is created from human knowledge, which is difficult to formalise into codes or rules. Generativity in organisation can be accomplished by stimulating the employees to consider how information is conceptualised in the organisational context. A knowledge creation and sharing process among them leads to diffuse knowledge that is the property of humans, and not necessarily authenticated. The conceptualisation of this form of knowledge is a changeable process, depending on source and context. Knowledge created from documents, the Internet or any highly diffused resource is transferred to teams or groups and then it can be converted to individual human knowledge. Therefore, "commitment to generativity in organisation" can be classified as a "socialisation" knowledge element in Plane 1.

These two examples from the same knowledge enabling cycle illustrate the diversity that exists in the range of candidates for the set of knowledge elements. Determining a comprehensive, yet workable, set of knowledge elements is the challenge of this research

CONCLUSION

The K-Space model explains the concepts of Nonaka's (1995) four knowledge creation processes and the five knowledge enablers of Von Krogh et al (2000 p8), which are widely accepted as a valid basis for knowledge management theory. The K-Space model is providing us with a formal framework for locating and giving a utility value to knowledge elements with a dynamic, contextual environment. These knowledge elements or manager activities are supported by human and technology tools that make knowledge management an integral part of the work process.

The next phase of the research will be to survey managers in organisations from different industries to both confirm and refine our set of representation knowledge elements and to place them on the K-Space. The survey instrument is currently being design to cover all areas of the K-Space. A triangulation method will synthesize results from three different questionnaires for business managers, IT managers and employees. This analysis will provide us with a balanced set of knowledge elements in the four by five (20) categories. Furthermore, managers and IT managers will be interviewed to see what are the most common tools they used in their company to manage innovation and knowledge and what they think the processes of innovation and knowledge management mean for them. The count of knowledge elements (KE) will be used as a measure of the knowledge assets of the company. A measure of innovation, as mentioned above, will also be determined and used to calibrate the measure of knowledge assets in each company. We anticipate that these measures will vary with industry.

Once the measure is calibrated it can be used in businesses as a measure of their overall knowledge assets. It will also be used to determine the extent to which these assets are balanced across the four modes and five knowledge enablers and to identify any knowledge gaps. The latter will be measured as (abs(total number of KE in a category – number of KE they already have in that category)).

Organisation can identify what tools can be used to support the identified knowledge elements gaps in the organisation. Some companies have a variety of knowledge management tools in their organisation such as e-mail, the Internet, intranets and libraries but not all adequately support a balanced view of knowledge management process. This can be done in any organisation and would be particularly useful in SMEs where the process of knowledge management is often not well understood.

REFERENCES

Ashford J. (1997) An information-space model for the development and application of computer–based tools in information creation and dissemination, *Journal of Documentation* 53/ 4

Baster G. Prabhudev K. Jude S. E. (2001) Business Components case Study of Bankers Trust Australia Limited, *Communications of the ACM* 44/5 92.

Bhatt G. D (2000) ;Organizing knowledge in the knowledge development cycle, *Journal of Knowledge Management*, 4/1 15-26.

Boisot M. (1998) *Knowledge Assets,* Oxford Press.

Bollinger A. S. and Smith R.D. (2001) Managing organisational knowledge as a strategic asset, *Journal of Knowledge Management* 5/1 8-18.

Brakensiek J.C. (2002) Knowledge management for EHS professionals *Occupational Health and Safety*; Waco; Jan 2002;

Byrne R. (2001) Employees: Capital or Commodity? *The Learning Organisation* 8/1

Callioni P. (2002) Keynote address, KM Standards Challenge, Australian Standards International.

Carneir A. (2000) How does knowledge management influence innovation and competitiveness? *Journal of Knowledge Management*, 4/2 2000 pp. 87-98

Choo C.W. (1998) *The Knowing Organisation*, Oxford University Press, New York.

Coffman P. (2000) Networking know-how: Integral knowledge management (KM) and the energy multinational; *Oil & Gas Journal, Tulsa*, 4-7.

Drejer A. (2002) Situation for innovation management: towards a contingency model, *European Journal of Innovation Management* 5/1 4-17.

Cook P (1999) I heard it through the grapevine: making knowledge management work by learning to share knowledge skills and experience, *Industrial and Commercial Training* 31/3.

Earl M. (2001) Knowledge management strategies Toward A Taxonomy, *Journal of Management Information System* 18/1 215-233.

Eschenfelder K. Heckman R. and Sawyer S. (1998) The distribution of computing the knowledge markets of distributed technical support specialists, *Information Technology & People* 11/2.

Haldin-Herrgard T. (2000) Difficulties in diffusion of tacit knowledge in organizations Journal of Intellectual Capital 1/4

Hasan H. (2001) Knowledge Creation in Organisations: The Role of Computer-based KMS; *European Conference on Knowledge Management 2001*

Hildreth P. Kimble C. and Wright P. (2000) Communities of practice in the distributed international environment, *Journal of Knowledge Management* 4/1

Hoopes D. G., Postrel S. (1999) Shared knowledge, glitches, and product development performance, *Strategic Management Journal*, 20/ 9 837-865.

Ives B. (1994) Probing the Productivity Paradox, *MIS Quarterly* 18 21-24

Kakabads N.K., Kouzmin A. (2001) *From Tacit Knowledge to Knowledge Management: Leveraging Invisible Assets*,

Leonard D. Sensiper, S. (1998) The role of tacit knowledge in group innovation, *California Management Review*, 40/3 112-132.

Lynn G. (2000) Knowledge management in new product teams: Practices and outcomes, *IEEE Transactions on Engineering Management* 47/ 2, pg. 22

Marwick A.D. (2001) Knowledge management technology, *IBM System Journal* 40/ 4

McLure Wasko M. and Faraj S. (2000) "It is what one does": why people participate and help other in electronic communities of practice, *Journal of Strategic Information Systems*, 9 155-173.

Merlyn P.R., Välikangas L (1998) From information technology to knowledge technology: taking the user into consideration, *Journal of Knowledge Management* 2/2

Mohammed S., Dumville B.C. (2001) Team mental models in a team knowledge framework: expanding theory and measurement across disciplinary boundaries, *Journal of Organizational Behavior* 22/2 89-106

Nonaka I. (1995) *The Knowledge–creating Company*; New York, Oxford University Press.

Nonaka I. and Takeuchi H. (1995) *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York.

Ohr S. (2000) An overview :packaging issues-packaging plays key role in portable wireless, *Electronic Engineering Times* p83

Sircar S., Turnbow J. L. and Bordoloi B. (2000) A framework for assessing the relationship between information technology investment and firm performance, *Journal of Management Information Systems*, Spring 2000

Swan W. Newell S. and Robertson M. (2000) The diffusion, design and social shaping of production management information systems in Europe, *Information Technology and People* 13/1

Swap W., Leonard D., Shields M., Abrams L. (2001) Using mentoring and storytelling to transfer knowledge in the workplace *Journal of Management Information Systems*; Armonk; Summer 2001.

Tan J. (2000) Managing knowledge: how to do it--a practical case study *The British Journal of Administrative Management*, 19; 12-14.

Tyson S. (1999) How HR knowledge contributes to organizational performance, *Human Resource Management Journal*, 9/3, 42-52

Von G. Kazuo I. and Nonaka I (2000) *Enabling Knowledge Creation*

Wiig K. M. (1993) *Knowledge Management Foundations: Thinking about Thinking – How People and Organizations Create, Represent, and Use Knowledge,* Schema Press, Arlington, TX, USA,

Wyman B.G., Randel J.M. (1998) The relation of knowledge organization to performance of a complex cognitive task, *Applied Cognitive Psychology* 12/ 3 251-264

Yli-Renko H., Autio E., Harry J., Sapienza H.J. (2001) Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms; *Strategic Management Journal,* 22/ 6-7 587-613.

INFORMATION AND COMMUNICATIONS TECHNOLOGY IN ASIA PACIFIC COUNTRIES: IMPLICATIONS FOR SMALL AND MEDIUM ENTERPRISES IN MALAYSIA

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ABSTRACT

Information communications and technology (ICT) is transforming the environment in which SMEs operate and changing the paradigms of value creation, customer satisfaction and business effectiveness. This paper attempts to explore global and Asia Pacific ICT usage and the major factors influencing SMEs. It focuses particularly on Malaysia where the development of ICT usage amongst SMEs is one of the main policy agenda of the Malaysian government. It describes a survey of SMEs in north and eastern peninsula Malaysia 1999-2000.

INTRODUCTION

Many refer to Information and Communications Technology (ICT) as another revolution, which is a driving force transforming economic, business, commercial activities and socio-political changes in a borderless world. ICT covers hardware, software, telecommunications, digital and database management and other information processing techniques/technologies used in computer- and/or electronic-based information systems. ICT is also described as the materials, digital resources, virtual and psychical data or technical knowledge that are processed in a meaningful way to a potential user and that posses values to affect a potential user's future behavior or decision (Davis and Olson 1985). Nowadays, the words, phrases and acronyms such as ICT, Internet, e-commerce, k-economy and knowledge-based information are in wide currency as the importance of information as a business resource is increasingly accepted. While the words are often used interchangeably, many consider information technology and the Internet are sub-sets of ICT and that e-commerce is a business utilization of ICT (see for instance, Moha Asri 2001 and Beal 2000). However, the definition of ecommerce is vague; some confine it to cases where there is electronic payment (Williams 1999:12) others use it more broadly (Williams 1999:1). In the paper the broad definition is used: e-commerce is the utilization of ICT for business purposes. There are dimensions of this phenomenon that can be further presented in view of accelerating process of trade, investment, finance and more significantly information technology across national boundaries. It is seen as reaching at a point where a small ticking drop anywhere in the globe, may and can trigger a stock crash, a recession, or a massive movement of capital and foreign exchange from one border to another. It is within this framework that

globalisation and information is not simply confined to trade, investment and financial flows. It is now also extended to the flows of technology, businesses, services, ideas and persons.

At the same time, it has been increasingly recognized that the development and prosperity of small and medium enterprises (SMEs) within this global information and communication technology environment is becoming ever more important and more vital to any economy, not least to the economies in the Asia Pacific countries. SMEs will increasingly not have many alternative but to confront a number of issues and challenges rising from global information and communication technology. It is reported that the growth of Internet use by American small businesses has been inexorable and the Small Business Administration has predicted that 85 percent of them will be conducting business 'over the Internet' by 2002 (Williams 2000:2). The trend seems to be even more fundamental than the many advantages and opportunities ICT open ups for SMEs, such as expanding their geographical market (Lituchy and Rail 2000, Mc Donagh and Prothero 2000). Many have expressed confidence that SMEs would be dramatically transformed and would fast adapt to meet the new situation. They argue that SMEs and their activities will be more global, highly dependent on information and knowledge-based activities, Internet, cyberspace in the overall so-called "digital era of information and communication technology". Nonetheless, some pessimistic views are expressed since many SMEs are hampered by their low capital ratio and low productivity which results in the slowness of traditional SMEs to utilize ICT. Global information and communication technology development provides great challenges for SMEs in a number of aspects concerning their survival, changes, prosperity as well as policies and strategies. This paper attempts to address the development of ICT in Asian Pacific countries and its implications for SMEs with special reference to the case of Malaysia.

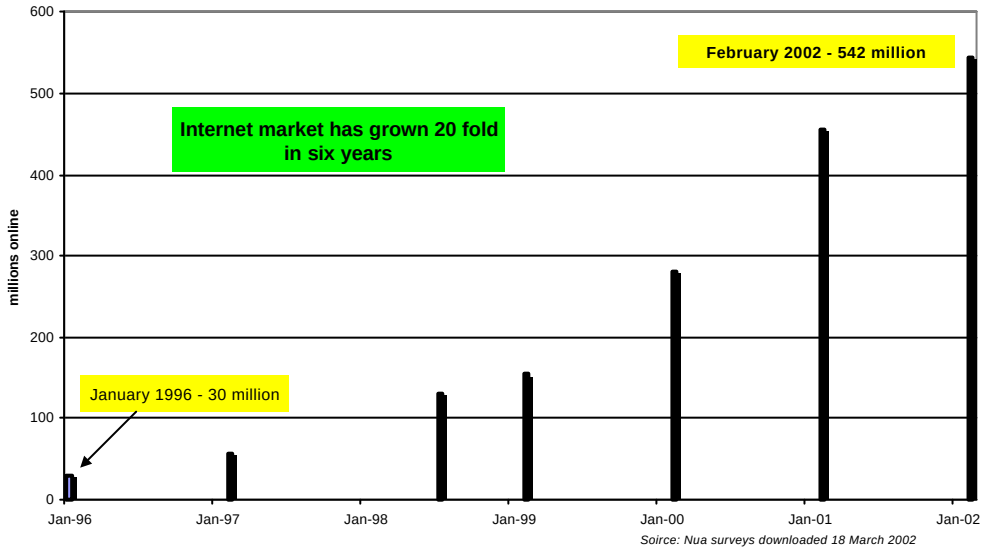
ICT IN ASIA PACIFIC REGION

The development of global ICT, particularly the Internet, has been extremely swift and e-commerce is rapidly emerging as a key component of business practice, certainly in the United States. In 1998, for instance, the retail income from Internet in the United States was US$8 billion but increased to US$18.6 billion in 1999. It was expected to reach US$80 billion by the year 2003 (Beal 2001). It was also recorded that from about one quarter of the enterprises in Europe are involved in e-commerce activities in 1999, it increased to more than two-third in the year 2000. ElectricNews.Net has estimated that European B2B e-commerce will grow from $500 billion in 2002 to $2,300 billion in 2005 while Gartner forecasts that global e-commerce revenues will increase from $1,930 to $8,530 over the same period (Nua2000b). Moreover, It is widely acknowledged that e-commerce is driving massive restructuring of information-intense and service-oriented industries. These include entertainment, banking, travel, advertising, gaming, stock trading and utilities. One of the most significant applications of ICT nowadays is the widespread use of Internet for commerce and business activities even in traditional industries. This process is accelerated in industries where the product or service is largely digital, and new forms of products and services are being generated, and this provides entirely new ways of delivering value to the customer. Often businesses or enterprises that are relatively consumer-focused will want to bypass intermediaries and sell directly to customers. E-commerce has the least impact when physical goods are delivered and

the only major task is to gather or reconcile the flow of goods and information. Moreover, Internet and specifically intranets are becoming the core backbone for the emerging electronic workplace.

In many countries in the Asia Pacific the Internet has moved to the forefront of popular culture and seized public consciousness. South Korea is an interesting example of pro-active government policy aimed at developing e-commerce and ICT usage (MOCIE 2000). The government has put forward a "e-commerce roadmap" (KT 2001a and Kim Deok-Hyon 2001a) in order "to lay foundation for eKorea, knowledge-based society (KH 2001a). In addition, President Kim Dae-jung pledged 10 trillion Won (US$7.8 billion) in August 2001 to support R&D in key next generation sectors such as ICT, biotechnology, nanotechnology, environment technology and cultural technology. The aim is to make Korea a leader in ICT in Asia (Kim Mi-Hui 2001).

Figure 1: Trend of Internet Worldwide (1996-2002)



Source: ***http://www.nua.ie/surveys/how_many_online/world.html***
Downloaded 18 March 2002

Meanwhile, based upon surveys compiled by the Irish company Nua (Figure 1), the global Internet market – the number of people connected to the Internet – has grown 20-fold over the last six years, from 30 million at the beginning of 1996 to 542 million in February 2002. Although there are methodological and definitional issues (Beal 2001) it is clear that the growth has been explosive.

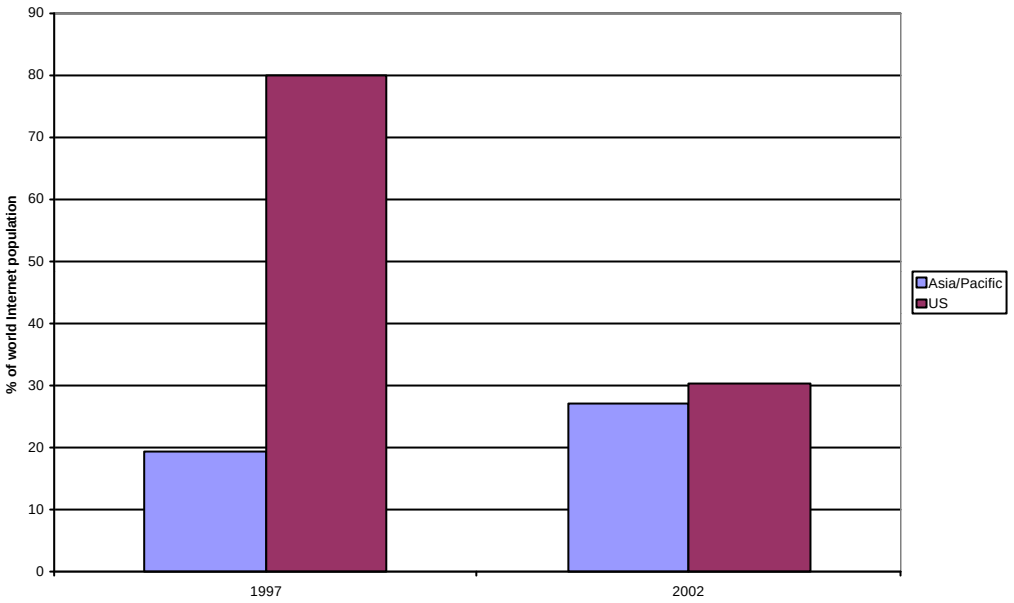
Table 1 Distribution of Internet Users by Region (2002)

	Number *(million)*	Share (%)
World Total	544.20	100.0
Africa	4.15	0.8
Asia/Pacific	157.49	28.9
Europe	171.35	31.5
Middle East	4.65	0.9
Canada & USA	181.23	33.3
Latin America	25.33	4.7

Source: Nua- <http://www.nua.ie/surveys/how_many_online/>; Downloaded 18 March 2002

Table 1 shows that this Internet market is currently divided almost equally between Asia/Pacific, Europe and North America, with only a small part elsewhere; Africa has just 0.8% of global Internet users. In the early days the United States had the lion's share of Internet connections but that dominance is fading although it is still has by far the largest number (Figure 2). Within the Asia/Pacific itself (which by this definition includes Australia and New Zealand) there is considerable variance in the number of users, connectivity rate and growth. Table 2 shows online numbers and connectivity rate (the percentage of the population connected to the Internet) for the major Asia/Pacific economies in 1997 and 2002. Date for the world and for the United States is included for comparison. According to this table, which utilizes the latest comprehensive data available, Japan still leads the region in terms of numbers, though not in connectivity. However, a recent report claims that China has leapt to the lead with "56.6 million households with access to the Internet", some 5.5% of the population (Nua 2002a). Whatever the precise number of Chinese connected to the Internet may be it is clear that China, and more broadly the Chinese-language area (i.e. including Hong Kong and Taiwan), will be the major Internet market in the Asia Pacific if not now, then fairly soon. Moreover, just has China has overtaken the United States as a mobile phone market it a relatively short space of time it will also become the largest Internet market in the world. The implications of that for business, including SMEs, is profound.

Figure 2: Asia Pacific catches up with US in share of world Internet population, 1997-2002



Source: *Source: Adopted from Nua, downloaded on 19 March 2002 <(http://www.nua.com/surveys/how_online/index.html>*

In terms of connectivity rate the salient points from Table 2 are

- Connectivity is highest in the more developed economies – Australia, New Zealand, the 'city states' of Singapore and Hong Kong SAR, Taiwan and South Korea.
- The connectivity rates in these economies is at advanced world levels and matches that of the United States
- Japan's rate is lower than might be expected from her general level of economic development and technology leadership
- The larger, and less developed counties, such as China, Indonesia, Philippines and Thailand have broadly similar national rates, about 2% to 5%. However, these national averages mask considerable variation and urban rates can be quite high. Coastal urban China, in particular, could be considered as a separate, medium developed, Internet market
- Malaysia occupies a medium position, but will probably achieve advanced Internet connectivity rate, say 50%+, in a couple of years.

Table 2: Internet Connectivity in Asia Pacific Countries 1997-2002

Area	Number *(millions)*		Connectivity rate *(% of population)*	
	1997	2002	1997	2002
World	70.0	544.2	1.7	9.0
Australia	1.2	10.6	6.7	54.4
China	0.2	33.7	0.0	2.7
Hong Kong	0.5	4.3	7.9	59.0
Indonesia	0.1	4.4	-	1.9
Japan	8.0	49.7	6.3	39.2
Malaysia	0.1	3.7	0.7	17.0
New Zealand	0.3	2.0	9.1	49.9
Philippines	0.1	2.0	-	2.5
Singapore	0.5	2.3	14.7	50.8
South Korea	0.7	22.2	1.5	46.4
Taiwan	1.7	11.6	7.7	51.9
Thailand	0.1	1.2	-	2.0
Total A/P	13.5	147.7	na	na
US	56.0	164.1	21.0	58.5
Share of world Internet population				
Asia/Pacific	19.3	27.1	na	na
US	80.0	30.2	na	na

Source: Adopted from Nua, downloaded on 19 March 2002 <(http://www.nua.com/surveys/how_online/index.html>
Notes: Dates are approximate and refer to the surveys nearest to the beginning of 1997 and to February 2002. 'Asia/Pacific refers to the sum of the specified countries and so differs slightly from the definition in Table 1

The Role of Government

ICT era is marked with the use of the Internet by government and its agencies to conduct its internal business, to communicate with citizens and the world at large. Of particular relevance in this context is the government's use of ICT to interact with business as a purchaser and supplier of goods and services and as a source of regulation and facilitation. Governments are also moving towards the electronic collection of customs data and duty, and taxes A survey conducted by World Market Research Centre 2001 found that Asia Pacific countries such as Australia, Singapore, Taiwan are among the top countries in 'e-government' (see Table 3). Malaysia, though ranked 16 overall, was fourth in the region.

Table 3: Asia Pacific Countries in Global E-government rankings

rank	*country*	*%*
1	US	57.2
2	Taiwan	52.5
3	Australia	50.7
8	Singapore	43.4
16	Malaysia	39.0
26	New Zealand	36.8
38	Japan	34.9
47	South Korea	33.4
52	Philippines	32.8
53	Vietnam	32.8
56	Brunei	32.7
71	Thailand	30.8
83	China	30.2
87	Lao PDR	30.0
88	Indonesia	30.0
91	Cambodia	29.6
119	Myanmar	26.8

Note: Hong Kong is not included in this survey
Source: World markets Research Centre (WMRC) 2001
http://www.worldmarketsanalysis.com/pdf/e-govreport.pdf

Infrastructure Developments

Infrastructure market, especially as regards bandwidth, is still experiencing high growth and looks set to continue to grow. The networking equipment market consists of four main categories - networking communications, voice communications, personal communications, and public network communications. A robust outlook for the telecommunications networking equipment market worldwide which is growing at an rate of 8.3 percent per annum is expected to reach US$400 billion by the year 2003. By 2002, the world personal communications market is the fastest growing item which is predicted to grow to approximately US$59 billion (Gartner 1999). Traditional public telephone infrastructure and new public data infrastructure is expected to increase by 8.8 percent per annum amounting to US$156 billion in the same year (see Table 4). The report emphasizes that during the next five years, telecommunications monopolies will steadily move towards oligopolies, managed competition and open competition much of which will be driven by global and multinational enterprises. Meanwhile, trends are moving towards more broadband networks which will dominate the communications scene. These include integrated broadband capabilities such as real-time video streaming and conferencing and real-time digital audio and voice.

Table 4: Distribution of global spending projection on equipment network

Type of Equipment	Spending Forecast (US$ billion)	
	1997	2002
Public wireless network	75	156
Private data network	23	59
Private voice network	48	61
Public voice network	76	69
Public data network	10	15
Other network equipment	17	49

Source: Ministry of Entrepreneurs Development 1999, Report on Global IT Usage (unpublished): Kuala Lumpur

The expansion of the global ICT market is driven by both growth in ICT usage, as described above, and the development of new ICT services. These include ICT service-providers which are now competitively developing innovative packages and many of them are beginning to penetrate the SME market. In a survey carried out by Information Week Research, 200 ICT managers of large and small companies in the USA spend an average of 20 percent of their annual ICT budgets on ICT services. In order to match customer demand for support services as well as to be innovative in creating a new mechanism for product sales, businesses, enterprises and vendors have been involved in increasing mergers and acquisitions. As the global trend of ICT is rapidly growing, competition is reaching new heights. As a result many regard ICT no longer merely as a tool of process efficiency and effectiveness, but as a determinant of survival and prosperity. In this connection, ICT decisions will be driven by the ability of vendors and information system organizations to transform cost improvements in basic technologies to business value-added tools. Likewise, the global trend in ICT driving the primary focus of ICT investment towards value creation and business effectiveness, where a new form of dynamic enterprise will appear that uses its knowledge assets to innovate rapidly and seize market opportunities. Increased consumer access to information has also driven enterprises to focus on core competencies by which they excel and offer a broader range of products and services.

Recent high turnover in the ICT labour market provides opportunities for enterprises and businesses that are previously having less competent and qualified ICT professionals. To compete effectively, enterprises have to invest time and efforts to attract these professionals into their firms. A report noted that the annual turnover of ICT professionals in the USA and Europe have traditionally been from 6 percent to 10 percent and from 2 percent to 5 percent respectively. However, in the past two years, turnover has risen to an alarming rate of 15 percent and this trend is not expected to change for the next four to five years (Ministry of Entrepreneurs Development 2000). Last but not least, the development of networking computing activities also plays its role in the use of ICT that will steadily become the new platform for ICT application. Network computing is an evolved client/server application architecture with dynamic application deployment, execution and management. Network computing can drive down total cost of ownership in some cases, but it will be the business benefits, not the cost implications, that will drive network computing investments. Ultimately, network computing enterprises will spend more on ICT. Without network computing, however, enterprises will still spend heavily on ICT but achieve less in the long run

for every dollar. This means that network computing is a reduction in the incremental cost of expanding capabilities. Nonetheless, network computing practices are still at an outset, even though it is an emerging market. Some businesses and enterprises around the globe have already investing quite considerably on network computing technology, even though this technology is still in an early stage. This investment is expected to grow in the next few years as enterprises and businesses seek to achieve a strategic business advantage out of the current trends that will directly benefit their future revenue statistics. Indeed, the mentioned factors will have multiplier effects on businesses and enterprises and surely the ICT applications will be growing up to a point when it will suggest a note for possible caution. After this point, real use of the ICT in terms of effective e-commerce will not be automatically grow.

The Role of SMEs

SMEs have a very important role in bringing about the benefits of ICT. Just as there is a 'digital divide' amongst the population at large, so in the business world there is a divide between those firms that are firmly based on ICT utilization, and have high productivity, and those who don't have ICT, or whilst they may posses ICT but perhaps do not exploit it properly (The United States Department of Commerce, 2000a). There is a further dimension to the status of SMEs in the era of e-commerce. Almost all e-commerce firms start off with few employees, even for most successful enterprises. Therefore, many believe that within the ICT era, many enterprises including SMEs are small compared with the past, because there is a tendency that they downsized their operations and outsource many functions to other firms in a network of partnerships and alliances. In the USA, the importance of SMEs as an incubator of ideas and innovation is wide recognised (Hlava 1999). Due to this recognition, big businesses which normally use more ICT, frequently have an incentive to develop relationships with SMEs and in doing so upgrade their ICT capacity.

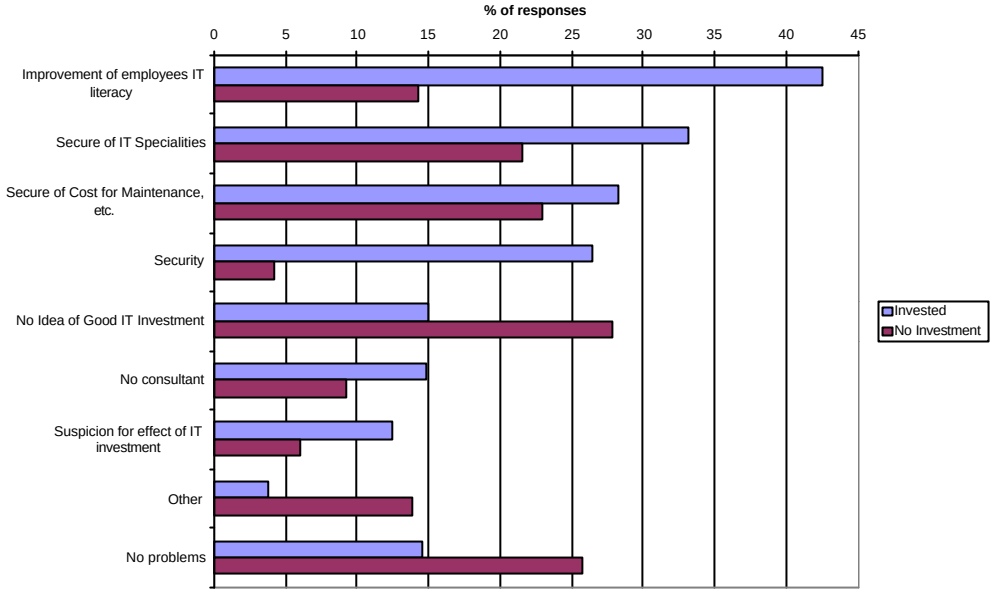
Table 5: SME's Diffusion rate of ICT tools in Japan

IT Tools	Rate of Use (Percent)
Personal Computer	60
E-mail	60
Website	40
Network among firms via internet	20
CAD/CAM (in manufacturing)	10

Source: METI 2001

ICT usage amongst Asian SMEs varies widely. The Singapore government provides a number of incentives and infrastructure development to upgrade training and technical capabilities in upgrading the use of ICT among SMEs. Recent figures in Japan shows that SMEs are far from utilizing ICT fully – only 60% in a Ministry of Economy, Trade and Industry survey used PCs (Table 5). On the other hand, although SMEs in Japan generally recognized the need to participate in the ICT revolution they encountered problems ranging from lack of ICT skills among staff to a lack of knowledge by management of how to utilize ICT (Fig 3). If SMEs in Japan find utilizing ICT fraught with difficulties and uncertainties, what of SMEs in less developed parts of the region such as Malaysia?

Fig 3: Problems encountered by Japanese SMEs introducing ICT



Source: METI 2001:Fig 1

DEVELOPMENT OF ICT INDUSTRY IN MALAYSIA

The development of ICT usage in SMEs is very much influenced by the overall direction of the ICT industry in Malaysia as well as the advancement of global ICT trends. This is despite the fact that individual enterprises or entrepreneurs, skilled employees, size and resource of individual SMEs, vendors' support services, type of ICT and type of industry are equally noted to be important in influencing SMEs to utilize ICT (see Moha Asri 2001). Structurally, Malaysia is intensifying her efforts to build a strong foundation for the ICT industry to achieve Vision 2020. Although the recent economic crisis has slowed down the growth of ICT industry, growth is still expected albeit at a slower pace since ICT industry revenue are closely linked to Malaysian Gross Domestic Product (GDP) trends. ICT industry revenue growth recorded a compounded annual growth rate of 22 percent from 1993 to 1997 and is projected to grow about 6.9 percent between 1998 and 2000. The ICT industry's importance can be seen by the increase in it's contribution towards the GDP. On average, ICT sector has contributed about 2.8 percent to the GDP between 1994 and 1999. ICT industry's share of GDP has increased from 2 percent to 3.4 percent between 1994 and 1997, and 5 percent in 1999. Recent trend indicates that ICT industry is expected to outpace the GDP growth in the next three years, especially in response to the recovery of the Malaysian economy in 1999. In view of its strategic importance, the overall ICT industry growth is projected to increase rapidly from 10.8 percent 1999 to 13.9 percent 2000 and 2001 (Ministry of Finance, 2000).

In its efforts to build a strong foundation for the ICT industry, the Government of Malaysia launched a mega project known as the "Multimedia Super Corridor" (MSC) in 1995. This project provides impetus to the growth of the ICT industry and the country's economy through a number of benefits, including; development of intelligent cities with ICT and communications infrastructure such as Cyberjaya and Putrajaya areas; tax exemption for MSC status companies for 10 years or a 100 percent investment tax allowance, and; unrestricted employment of knowledge

workers. In addition, the National Information Technology Agenda was prepared as a framework in the development of three strategic elements of human resource, infrastructure and ICT-based application in 1996. Incentives such as removal of sales tax on computer and components as well as granting of accelerated capital allowance for expenses on computers and other ICT equipments were given to encourage the usage of ICT. In order to enhance the nation's move towards ICT strong foundation, some common laws have also been passed, in line with ICT potential that will be explored in order to reach to the fullest possible levels. These acts, among others, include Digital Signature Act 1997; Copyright (Amendment) Act 1997; Computer Crime Act 1997; Telemedicine Act 1997, and; Communications and Multimedia Act 1998 (see Ministry of International Trade and Industry 1996).

Although the ICT industry is growing fast in line with the government efforts, the industry is also hindered by the shortage of professionals and skilled human resource. During a period of 1996 –2000, it was estimated that the country's shortage of ICT staffs reached 7,063, i.e. about 75 percent of the demand were met, as stated in the Seventh Malaysia Plan 1996-2000 (Malaysia 1996). This means that the surge in demand for ICT skilled workers and professionals is exerting on the supply of ICT personnel especially in the area of networking and Internet. Ideally, high demand for ICT skills has prompted many companies to offer increasing pay to attract these personnel. As many other countries worldwide, competition for top ICT talents and entrepreneurs becomes tough. Elsewhere, the United States remains the top destination for her leading edge technology and favorable conditions. Singapore, just across the border, has always been a competitor in attracting Malaysia's talents.

Besides the shortage of human resource, another key challenge faced by the ICT industry is the lack of entrepreneurial talent in ICT. Based on a study recently, lack of entrepreneurial ICT talents impedes the development of innovative world's class technology and products Ministry of Entrepreneurs Development 1999). This is especially so for entrepreneurs in SMEs. To date, numerous efforts have been implemented to promote ICT applications in SMEs. A RM20 million fund for SMEs to participate in electronic commerce known as The Electronic Commerce Grant Scheme was, for instance launched in 1999, other than ICT entrepreneurial development training, infrastructure supports, technical and advisory services etc. The aim is to enable SMEs to integrate themselves into the mainstream of e-commerce, communications, and information technology as well as helping them to find a place to survive in the global marketplace (The Star July 2000). This is other than the Malaysian Government efforts to develop a "mega" project such as Multimedia Super Corridor (MSC), to act a proxy to expand participation of local SMEs into the information technology and advanced techniques in their operation, production, marketing and distribution system. The efforts are also initiated in order to establish wider business networks between government and SMEs, SMEs and MNCs, SMEs and SMEs, locally and globally.

IMPLICATIONS ON ICT USAGE IN MALAYSIA'S SMEs

The study of ICT in Malaysia is still relatively new and does not have a long research tradition. There is unclear status on appropriate research methods that can be used. However, this research study uses two main method i.e. the secondary data and documents, and primary data. The first method i.e. the secondary data and documents is essential especially when its explores literature review in the field and enabling the

research study to illustrate the importance variables that determine the use of ICT in SMEs. It derives from a short review of literature, which indicates that there are a number of variables especially entrepreneurial characteristics, explaining the level of use of IT in SMEs. The second method is primary data based on a survey. This survey study is derived from a case study on the use and adoption of IT in SMEs in the Eastern and Northern regions of Peninsular Malaysia from June 1999 to April 2000. This means that it involves five states of Kelantan, Terengganu, Perlis, Kedah and Penang. The criteria for defining SMEs in this study as an enterprises employing full-time workers of less than 200; and the amount of paid up capital less than RM2.5 million[1]. Procedures used in data collection are divided into a few phases. At the outset, the names and addresses of SMEs were compiled from am number of governmental and non-governmental agencies in Malaysia and from the five states in the two regions. Those include Small and Medium Industrial Development Corporation (SMIDEC), Federal Malaysian Manufactures (FMM), Penang Development Corporation (PDC), State Economic Development Corporation of Kedah, State Economic Development of Perlis, State Economic Development of Kelantan and State Economic Development of Terengganu.

A total of 1,512 SMEs were identified in those five states. Indeed, the experience of compiling the list of SMEs in the study area was not a simple one since there was hardly any comprehensive source where the list of all SMEs could be obtained. From 1,512 SMEs in the compiled list, about 44 percent of them could not be traced when initial visits to their respective addresses were made (867 firms). Two likely reasons for explaining these untraceable firms are; firstly, that they may have gone out of business (bankruptcies); and secondly they may have moved out from the study areas. Moreover, 116 SMEs were well known as large companies and multi-national corporations. In addition, 262 SMEs in the study area refused to cooperate or to give interviews. Therefore, only 665 agreed to be interviewed. The study was conducted in two phases i.e. a pilot study and a questionnaire survey. Eventually, only 414 SMEs were available for a questionnaire survey, while in the pilot phase, 15 SMEs were randomly chosen to do the pre-test the questionnaire. SMEs in the survey produce a wide variety of products. However, the study categorised them into four main products i.e. electrical products, food, drink and medical products, and non-food oriented products (see Moha Asri at el. 2000). The size of SMEs in the samples is relatively small in terms of their number of employees, paid up capital as well as value of output. A total of 42.0 percent of SMEs are sole proprietor, while others are private limited firms and family ownership or/and friend-ventured firms. In terms of ICT usage, out of 414 SMEs, only 7.2 percent have a high level of ICT usage and 34.8 percent have used some ICT as compared to 58.0 percent SMEs that have not used ICT at all (see Table 6). This data reflects that the level of ICT usage among SMEs tend to be higher than entrepreneurs knowledge on ICT. This may reflect that there are SMEs in the survey that use ICT, even though their owner/entrepreneurs do not have ICT knowledge. The research study also carried out a task to determine other factors contributed to ICT usage in SMEs using the Pearson Correlation and multiple regression analysis.

[1] This definition is widely used in Malaysia by several agencies such as World Bank 1986, UNIDO (1982) and ADB (1990), other than individual researchers such as Saleh (1989), Chee (1986), Moha Asri (1997, 1999 etc.)

Table 6: The Overall Knowledge of ICT among SMEs' Entrepreneurs and the Overall Use of ICT among SMEs.

Knowledge Level	Knowledge of IT		Level of IT Usage	
	No.	Percent	No.	Percent
No Knowledge	293	70.8	240	58.0
Some Knowledge	108	26.1	144	34.8
High Knowledge	13	3.1	30	7.2
Total	414	100.0	414	100.0

The correlation matrix is presented in Tables 7 and 8. It is illustrated in two phases. Firstly the correlation between all sub-variables of ICT knowledge of entrepreneurs and the ICT use as in Table 7. Secondly, the correlation between composited score of ICT knowledge together with all other variables and the ICT use as in Table 8. Table 8 shows that ICT adoption is positively correlated with all sub variables in ICT knowledge among entrepreneurs. These include knowledge of ICT on Operating System; Microsoft Office; Lotus Application; Multimedia System; Printing Operation; Computer Hardware; Web-Page Use; Network Configuration; and Group Application Software with all at the significance level of 0.01. The findings suggest that entrepreneurs of SMEs are the key factor in determining the use of ICT. Only entrepreneurs who have more innovative would be realising and willing to improve their business efficiency and effectiveness, confirming earlier suggestion made by Howell and Higgins (1990). Entrepreneurs are the person who have a direct concern over economic feasibility and are more likely to use ICT if there is tangible economic justification in terms of costs and benefits derived.

Table 7: Pearson Correlation Matrix on Sub-Variables of ICT Knowledge of Entrepreneurs in SMEs

Sub-Variable of Knowledge	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Operating System	1.000								
(2) Microsoft Office	.8142**	1.000							
(3) Lotus Application	.6811**	.6140**	1.000						
(4) Multimedia	.6884**	.7485**	.6948**	1.000					
(5) Printing Operation	.6587**	.7129**	.6341**	.8202	1.000				
(6) Computer Hardware	.5868**	.6359**	.6028**	.6290	.6171**	1.000			
(7) Web-page Use	.6574**	.6833**	.6335**	.6946	.6806**	.7528**	1.000		
(8) Network Configuration	.5708**	.5556**	.5999**	.6110	.5831**	.7688**	.7842**	1.000	
(9) Group Application Software	.5454**	.5699**	.6761**	.5733	.5316**	.7439**	.7368**	.8082**	1.000
(10) Group Application Software	.4341**	.4727*	.5098**	.5077	.4555**	.5028**	.5282**	.4989**	.5244**

Note: ***P< 0.001, **P< 0.01, *P< 0.05

Table 8: Pearson Correlation Matrix on all Variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Age of Entrepreneur	1.000										
(2) Entrepreneur's Education	-.5537**	1.000									
(3) Age of SME	-.3770**	.4506**	1.000								
(4) Value of Output	.4782 **	-.3273**	-.2371**	1.000							
(5) Number of Worker	-.2917**	.3865 **	.4165**	-.0952	1.000						
(6) Value of Paid up Capital	-.1735*	.2097 **	.2238 **	-.0323	-.0046	1.000					
(7) Value of Output	-.2447**	.3322**	.3773**	-.0759	.3810**	.1449 **	1.000				
(8) Overall IT Knowledge	-.4562**	.6089 **	.4716 **	-.2822**	.3455 **	.2593 **	.3034 **	1.000			
(9) Number of IT Workers	-.0891	.0490	.1367	-.0485	.1557*	-.0056	.1507*	.1579*	1.000		
(10) Budget Allocated to IT	-.1278	.1534 *	.1056	-.1037	.1950 **	.1045	.1810*	.3172 **	.0639	1.000	
(11) Plan for IT Expansion	-.3312**	.4134**	.4079**	-.2077**	.4574**	.1534*	.1555*	.5045**	.1750*	.2851**	1.000
(12) Overall Use of IT	-.2504**	.4683**	.4471**	-.1943**	.4022**	.1864*	.3234**	.5868**	.2291**	.4200**	.4024**

Note: ***P< 0.001, **P< 0.01, *P< 0.05

All the sub-variables in ICT knowledge of entrepreneurs then composited into one-single score that was tested with the Cronbach alpha of over 0.70 (i.e. 0.945) meaning that the validation is highly accepted. The variable is then analysed with the other independent variables to see their correlation as illustrated in Table 8. It shows that ICT usage is positively correlated with ICT knowledge of entrepreneurs, education level of entrepreneurs, location of SMEs, budget allocated to ICT and plan for ICT expansion, number of ICT workers and total value of output and paid up capital at the significance level of 0.01 except for the total paid up capital which has a significance level of 0.05. As ICT knowledge of entrepreneurs is explained earlier, the level of education among the entrepreneurs which has positive correlation with ICT usage means that the higher the level of education, the higher the level of ICT use among SMEs. Thus, it is plausible to assume that entrepreneurs with the higher educational level tend to realise more on the benefits and economic justification for the ICT use in their firms. The finding shows that knowledge of ICT among entrepreneurs is the most important factor influencing the use of ICT, it is necessary to educate and expose entrepreneurs themselves with ICT knowledge. Location of SMEs is also positively correlated with SMEs. This correlation means that SMEs which situated in the industrial zone tend to use more ICT than the ones which are situated in the illegal and backyard areas. There is a possibility that, SMEs which located their operation in the industrial site and light industrial zone relatively bigger in terms of size and resource of operation. Hence, they are more affordable and economically viable and justifiable to upgrade their business operations through the ICT use as opposed to SMEs located in other sites [2].

The analysis is further carried out using the Multiple Analysis which involves the use of the partial correlation coefficient (Pr^2). This is one of the major methods by which multiple analysis of relationship is calculated[3]. The partial coefficient of correlation (Pr^2) for the eleven independent variables that are use in the multiple regression analysis and their relative important for correlation with the dependent variable are shown in Table 9 which illustrates that ICT knowledge of entrepreneurs, their level of education and skilled professionals contributed much of it[4].

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[2] However, age of entrepreneurs and age of SMEs is negatively correlated with ICT use also at significance level of 0.01. This finding illustrates that SMEs with younger age appear to use ICT more than the older age. This variable may be correlates to innovative entrepreneurs at early year of business involvement, who are more likely to try out new things and take risks (Kirton 1984). In this relation, only entrepreneurs who are much younger and innovative would be willing to improve their business efficiency and effectiveness by doing thins differently. The younger the entrepreneur, the higher realisation towards using ICT and more adoptive on ICT use. More interestingly, ICT use is highly correlated with ICT knowledge of entrepreneurs with the biggest score of 0.587 as compared to other variables.

[3] The test allows the research study to know the strength of the independent variable in relation to dependent variable when the linear effects of other independent variables have been removed or kept constant[3]. All eleven variables is determined by their partial coefficient of correlation (Pr^2). The dependent variable that has the highest absolute Pr^2 is considered to be the most important variable in explaining the ICT use. A positive value for Pr^2 implies that the independent variable is positively related to the dependent variable and vice versa.

[4] The Table raises several issues. First, the average of Pr^2 variable is very convincing with significant level of 99 percent. This means that most of the variables analysed in the research study explain the most substantive part of the dependent variable. Second, from eleven independent variables analysed, average score of ICT knowledge of entrepreneurs is the most highly correlated to the ICT use with the beta score of 0.349, followed by the number of ICT workers (0.235), while level of education comes third (0.226). Other than knowledge of entrepreneurs on ICT, another variable seems to influence ICT use is employees' ICT knowledge. SMEs that have workers who are more knowledgeable on ICT are

Table 9: Multiple Regression Analysis for the ICT Use in SMEs.

Dependent Variable	Independent Variable	Beta	t	Significance Level
The Use of IT	- IT knowledge of Entrepreneur	.349	6.260	.000
	Level of Education	.226	4.042	.000
	Number of IT Workers	.235	4.738	.000
	Ownership Status	-.157	-3.467	.001
	Paid up Capital	.071	1.672	.096
	Age of Entrepreneurs	.102	1.915	.057
	Budget allocated for IT	.078	1.843	.066
	Value of Output	.020	0.450	.653
	Age of SMEs	.047	-1.032	.303
	Development Plan for IT	.062	1.240	.216
	Percent of Variance Explain (R^2) 0.611			

Note: ***P< 0.001, **P< 0.01, *P< 0.05

CONCLUDING REMARKS

ICT is rapidly emerging as a key component of business practice in Asia Pacific countries. While e-commerce is the driving force in restructuring of information-intense and service-oriented industries, the Internet is moving to the forefront of popular culture and seized great public consciousness. Many governments in the regions play a very pro-active role in developing e-commerce and ICT usage. Many of them, if not all are not only moving towards the electronic collection of customs data and duty and taxes, but more importantly ICT is also being used as a source of regulation and facilitation as well as a purchaser and supplier of goods and services. Despite the fact that Malaysia occupies a medium position among the Asia Pacific countries with a greater prospects to achieve advanced Internet connectivity rate in a couple of years, the government laid down a strong foundation for the ICT industry to grow and expand with a launch of the "Multimedia Super Corridor". This project provides great emphasis on the development of ICT and the country's economy through a range of spin off effects. After almost eight years in its implementation, the implications on the development of SMEs and specifically the effect on the usage of ICT among Malaysia's SMEs, is hard to gauge. Through a sample survey in the study, the findings indicate that out of 414 SMEs, only 7.2 percent have a high level of ICT usage and 34.8 percent have used some ICT as compared to 58.0 percent SMEs that

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more likely to use more ICT. The finding further validates the earlier statement by Senn and Gibson (1981) who admitted that lack of knowledge and insufficient awareness of the potential benefits of ICT use among workers may also inhibit businesses from using ICT.

Third, all these three variables have the significance level of P<0.001 or 99 percent. Fourth, there are other variables which show the significance level of P<0.05 include, paid up capital, age of entrepreneurs, budget allocated for ICT and plan for ICT development. Fifth, the total R^2 variance is 0.611 which is extremely high meaning that variables surveyed in the research study explain a significant factor for the ICT use among SMEs in Malaysia. Finally, some limitations of the research study are essential to note. As this research study was conducted in SMEs in the Northern part of Malaysia, the findings may not be appropriately generalizable to large enterprises or even SMEs in other countries with different stages of economic development and environment. The research study acknowledged that there may be other variables which, may be significant determinants of ICT use by SMEs, but were not included in the selected variables. Not withstanding these limitations, this research study has contributed a significant factor in understanding the use of ICT in SMEs.

have not used ICT at all. The findings reflect that the actual level of ICT usage among SMEs tends to be higher than entrepreneurs' knowledge of ICT. This may mean that there are SMEs in the survey that use ICT, even though their owner/entrepreneurs do not have explicit knowledge of ICT.

In addition, SMEs that have entrepreneurs with ICT knowledge, higher level of education, employees with ICT knowledge, higher paid up capital, younger age of entrepreneurs, budget allocated for ICT and plan for ICT expansion are more likely to use ICT. In view of the findings, an effective way to promote ICT use is to cultivate greater ICT knowledge and exposure to entrepreneurs especially concerning its benefits, quality, productivity and efficiency. It could be useful too to enhance ICT knowledge to employees of SMEs to create a greater awareness among SMEs, in order to improve their overall attitude towards ICT use. This indeed could be done in a number of way such as training programmes to entrepreneurs and employees; seminars and workshops; other than providing seek capital for SMEs to enable them to purchase and meet necessary requirement. Moreover, information intensity with respect to various types of ICT and their applications to business purposes are equally essential. Therefore, providing sufficient information on the availability of ICT products, suppliers or customers, match-making procedures between the business need and the softwares and hard wares, as well as operation system are also crucial. A specific agency dealing with these requirements and needs would be highly desirable.

REFERENCES

Beal, Tim (2001), "Patterns of Internet development in the new economy: Implications for Asian SMEs", in Moha Asri Abdullah (ed.) *Small and Medium Enterprises in the Information Age: Asian Perspectives*, Wisdom House Publications Inc.; Leeds, U.K.

Beal, Tim, (2000), "SMEs and E-commerce in China: Foreign Paths, Chinese Steps", *Proceeding of International Conference in the Internet Age*, 21st-24th June 2000, Beijing, China.

Daily Yomiuri, May 3, (2001) (Thursday)

Davis G. and Oslon M. (1985), *Management Information Systems*, Macmillan: New York.

Fraza V. (1998) "Making the Investment", *Industrial Distribution* 87(9 (59-62)

Gregory G. (2000), "Globalisation of mall and medium enterprises (SMEs) in Korea: A response to the Asian financial crisis", *Proceeding of SMEs in a Global Economy Conference*, 16th-17th June 2000, Wollongong, Australia.

Harrison D.D et. al. (1997), "Executive decisions about adoption of information technology in small business: Theory and empirical tests", *Information System Research*, 8 (2) (171-195)

Hassan H. (2000), "Cut-Price IT consultants for SMEs", *Proceedings of the SMEs in a Global Conference*, 16-17 June 2000, Wollongong, Australia

Hlava M.M.K. (1999), "Expanding partnerships for small- and medium-sized enterprises". *Bulletin of the American Society for Information Science*, 25(3) (7-9).

Ho C.F. (1996), "Information technology implementations strategies for manufacturing organisations: A strategic alignment approach", *International Journal of Operations and Production Management*, 16(7) (77-100)

Howard A., Kochhar A. and Diworth J. (1999), "Functional requirement of manufacturing planning and control systems in medium-sized batch manufacturing companies", *Integrated Manufacturing Systems*, 10 (3) (1-13)

Howell J.M. and Higgins C.A. (1990), "Champions of technological innovation", *Administrative Science Quarterly*, 35 (317-341)

Kim B.O. and Lee S.M. (1996), "Logistics information's role within an IT systems architecture in a world-class organization", *Logistic Information Management*, 9 (3) (19-26)

Kirton M.J. (1994), "Adaptors and innovators-why new initiatives get blocked", *Long Range Planning* 17 (2) (137-143)

Malaysia (1996), *Seventh Malaysia Plan 1996-2000*, Government Printer; Kuala Lumpur

Ministry of Economy, Trade and Industry (METI 2001), Small and Medium Enterprise Agency of Japan, *White Paper on Small and Medium Enterprises in Japan 2000*, <http://www.chusho.meti.go.jp/english/wp2000/wp2000.html>

Ministry of Entrepreneurs Development (2000), *Study on Bumiputera's Participation in the Information Technology Industry*, (unpublished and restricted report); Kuala Lumpur

Ministry of Finance (2000), *Annual Economic Report 1999/2000*, Bank Negara; Kuala Lumpur

Ministry of International Trade and Industry (1996), *Second Industrial Master Plan 1996-2005: Executive Summary*, Kuala Lumpur

Modie A.M (1999), "Getting the right advice isn't easy", *Australia Financial Review*, February 23, 1999

Moha Asri Abdullah (1999), *Small and Medium Enterprises in Malaysia*: Ashgate Publishing Ltd: London.

Moha Asri Abdullah (2000(a)), *The use of information technology in Small and Medium Enterprises*, IRPA Short-Term Grant, Universiti Sains Malaysia; Penang.

Moha Asri Abdullah (2000(b)), "Globalised Economy and the Strategic Importance of SMEs in Malaysia's Industrial Structure", *International Conference on SMEs in*

East Asia in Aftermath of the Asian Financial and Economic Crisis, 15th - 17th June 2000, University of Wollongong, Australia

Moha Asri Abdullah (2001), *Asian Small and Medium Enterprises: Challenges in the 21st Century*, Wisdom House Inc; Leeds: United Kingdom.

Myers M. (1998), Quantitative Research in Information System, ISWORLD URL; http://isworld.dis.unimelb.edu.au/isworld.html

Naumes W. (1978), *The Entrepreneurial manager in small business*, Addison-Wesley Publ. Company: Sydney

Newsfactor (2002) "Report: At-Home Web Population Keeps Growing", NewsFactor Network, 9 May 2002, <http://www.newsfactor.com/perl/story/17684.html>

Nua (2002a) "Reuters: China number two in home net usage", Nua, 22 April 2002, <http://www.nua.ie/surveys/index.cgi?f=VS&art_id=905357873&rel=true>

Nua (2002b), "ElectricNews: B2B ecommerce sales set to increase", Nua 9 May 2002, <http://www.nua.com/surveys/index.cgi?f=VS&art_id=905357936&rel=true>

Ohmae K. (1995), *The End of the Nation State: The Rise of Regional Economics*, The Free Press: New York.

Porter M. and Miller V.E (1985), "How information gives you competitive advantage", *Harvard Business Review* 63 (4), 149-160

Robert M. and Wood M. (1997), "The use of computerised information systems to gain strategic competitive advantage: The case of start up manufacturing company", *Logistics Information Management*, 10 (4), (178-183)

Rothwell R (1997), "The characteristics of successful innovators and technically progressive firms", *R&D Management*, 7 (3) (31-42)

Senn J.A. and Gibson V.R. (1981), "Risks of Investment in Microcomputer for Small Business Management", *Journal of Small Business Management*, July (24-32)

The Daily Yomiuri, May 3, (2001)

The Star, July 5, (2000)

Williams, Victoria (1999), E-Commerce: Small Businesses Venture Online, US Small Business Administration, <http://www.sba.gov/advo/stats/e_comm.pdf>

Williams, Victoria (2000), Small Business Expansions in Electronic Commerce, US Small Business Administration, <http://www.sba.gov/advo/stats/e_comm2.pdf>

Yap C.S (1989), "Computerization problems facing small and medium enterprises: The experience of Singapore", *Proceeding of the Twentieth Annual Meeting of the Midwest Decision Sciences Institute*, Ohio; Miami University (128-134)

INDIA: THE ROLE OF SMALL-SCALE INDUSTRIES IN AN EMERGING ECONOMY

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ABSTRACT

The role of small-scale industries in the economic development of India in recent years is critically analysed in this paper. Various factors affecting the growth and development of small-scale industries and the problem faced by this vital sector of Indian economy is examined. The contribution of small-scale industries in employment growth, production, export promotion and other economic indicators are discussed. Conclusions drawn from the analysis of the data suggest that the various policy initiatives taken by the Government of India since independence have helped this sector to grow considerably. Some of the policies of the Government of India may, however, not be very helpful in increasing the efficiency of units in this sector as number of non-viable units is increasing steadily.

INTRODUCTION

India is an emerging economy with a population of more than One Billion. Nearly 40% of the population lives below the poverty line and 70% of the population is dependent on the agriculture for sustenance. The economic reconstruction of India depends on the balanced growth of economy in the fields of agriculture and industry. Because capital and finance have been scarce in India, the Government of India has encouraged alternatives to agriculture and heavy industries like small-scale industries, which can operate on limited resources. A small-scale industry can be operated by an entrepreneur without needing sophisticated machinery and modern technology. These small-scale industrial units can be established in semi-urban and rural areas where the infrastructure is underdeveloped. The objective is to use local raw material for raising production with the help of local skills. Small-scale industries provide employment without affecting the main occupation -agriculture- of illiterate people in rural areas in India. The other advantages of small-scale units are that these units need short gestation period in establishment, are less dependent on imported raw material and machinery and help in meeting a substantial part of demand for consumer goods. These units also help in solving the problem of regional disparities in economic growth (Gyan Prakash, 1991).

In recent years, the small-scale sector in India has emerged as a progressive and decentralised sector on its own. Small-scale Industries have made a significant contribution to employment generation in the non-agricultural sector in India. The

data available from the Ministry of Small-scale Industries, Government of India (Annual Report 1999-2000) indicates that there has been an excellent growth in small-scale industries in India in recent years. The number of SSI units in India has increased from 2.082 million in 1991-92 to 3.121 million in 1998 –99. The value of production in these units has increased from Rs.1786.990 Billion to Rs.5275.150 Billion in 1998-99. The volume of employment in small-scale sector has increased from 12.98 million in 1990-91 to 17.158 million in 1998-99. The growth of employment in small sector is significantly large in small sector than other organised sector in India. Small-scale industrial units have a large potential and an important role to play in India. Sickness or financial distress in small-scale sector is however of great concern to the government of India and the entrepreneurs. The number of sick units has increased from 221,472 in 1991 to 306,221 in 1999 Reserve Bank of India, 1999- 2000). The magnitude of sickness in last 9 years has prompted Reserve bank of India and the Government of India to take certain policy initiatives to eradicate sickness. The problem however still persists.

The small-scale sector in India is one of the largest in the world. A study of the problems and prospects of SSI sector in India can help in understanding the problems and potentials of SMEs in emerging economies. In this paper, the current situation and future prospects of Indian small-scale industries are presented and the effect of various policy measures taken by Government of India in promoting SSI sector are examined with the objective of understanding this vital sector of Indian economy. This paper is divided into seven sections. In section 2 of this paper, the legal framework relating to small-scale industries in India is explored. In section 3, the macroeconomic contribution of small-scale industries to India's economy is evaluated. In section 4, the availability of credit to SSI units from public sector banks are discussed. In section 5, issues relating to sickness of the SSI units are examined. The policy issues and future prospects are analysed in section 6. Finally, an analysis of the performance of SSI sector is undertaken in Section 7 and conclusions are drawn from this analysis.

LEGAL FRAMEWORK

The term small-scale industry used in India is a kind of misnomer. This term is used to indicate small sized industrial units and not small sized industries. The legal framework is provided by Industries Development and Regulation Act, 1951 (IDR ACT) Section 11B of this Act specifies the general requirement that are to be complied by the small-scale industrial units. The sub-section 11B(1) of I.D.R.Act defines small-scale industrial undertaking *"as an industrial undertaking which may be held on ownership terms, lease or hire purchase basis and the original investment in plant and machinery in that undertaking does not exceed the specified limit in force at the time."* Table 1 indicates the historic evolution of this definition of small-scale industry in India. In addition to small-scale industrial undertakings, the IDR Act 1951 also refers another category of small-scale industrial undertaking called Ancillary Industrial Undertakings. This ancillary industrial undertaking is a part of small-scale sector. Over the years, some other sub-sectors have been included within overall small-scale sector.

Tiny Enterprises
Export oriented Units

Small-scale Service and Business Enterprises
Women Enterprises.

The SSI sector in India covers a wide spectrum of industrial units categorised under small, tiny and cottage segments. The term Small-scale Industry evokes different meaning to different agencies of the government in India. For example, the Planning Commission of the Government of India regards the Village and Small Industries (VSI) sector as a part of SSI sector. The Central Excise Department distinguishes SSIs on the basis of the turnover (Up to a maximum of Rs. 30 million). The legal nomenclature developed by the government is very complicated. This is evident from the many classes and sub-classes adopted in defining the small-scale industry. Further the rules relating to eligibility of industrial units as SSIs are also not very easy to interpret. The calculation of the value of plant of machinery depends on a number of things in addition to the price paid to the vendor. For example, cost of installation and inland transport charges paid in India are not included in value of plant and machinery whereas import duty and shipping charges on imported machinery are included. It is therefore very difficult to make a meaningful comparison or statistical analysis of SSI units in India based on the evolution of legal definition adopted by the Government of India and given in table 1. (Ministry of SSI, Govt. of India, Annual Report, pg.5)

From Table 1, it can be seen that the definition of the eligibility for small-scale industry has undergone many changes in India since 1950. Initially the capital assets were included as the basis of categorising a unit as a small scale unit. Since 1966 only the original value of plant and machinery is considered for the purpose of SSI classification. From 1966 to 1997, the limits on the value of plant and machinery, has consistently increased. But in 1998 this limit was considerably lowered to Rs.10 millions from Rs.30 millions. This was a period when the Government of India started a policy of economic rationalisation for small-scale industries, which is still continuing under pressure from World Trade Organisation. (Raju, 2001). Although the limit on the value of plant and machinery was lowered in 1998 the number of SSI units operating in India still increased in 1998-99. The growth rate in the number of SSI units however, declined in 1998-99 to 3.55% as compared to 5.5% in 1997-98 suggesting that the decrease in the growth rate of the number of SSI units could be due to the change in the eligibility criterion.

Table 1: Evolution of the definition of SSI in India

Year	Capital
1950	Capital assets not exceeding Rs 500,000
1958	Capital investment of less than Rs. 500, 000
1959	In capital investment, the value of machinery to be taken at the original price paid irrespective of it being new or old
1960	Gross value of fixed assets up to Rs. 500,000
Original Value of Plant and Machinery Only	
1966	Up to Rs. 750,000
1975	Up to Rs. 1.0 million
1980	Up to Rs. 2.0 million
1985	Up to Rs. 3.5 million
1991	Up to Rs. 6.0 million
1997	Up to Rs. 30.0 million
1998	Uo to Rs. 10.0 million.

Data source. Ministry of Small-scale Industries & Agro and Rural Industries, Government of India, Annual Report 1999 - 2000, Page 4.

CONTRIBUTION OF SSI SECTOR TO INDIA'S ECONOMY

The SSI sector in India plays a vital role in the growth of the country. It contributes

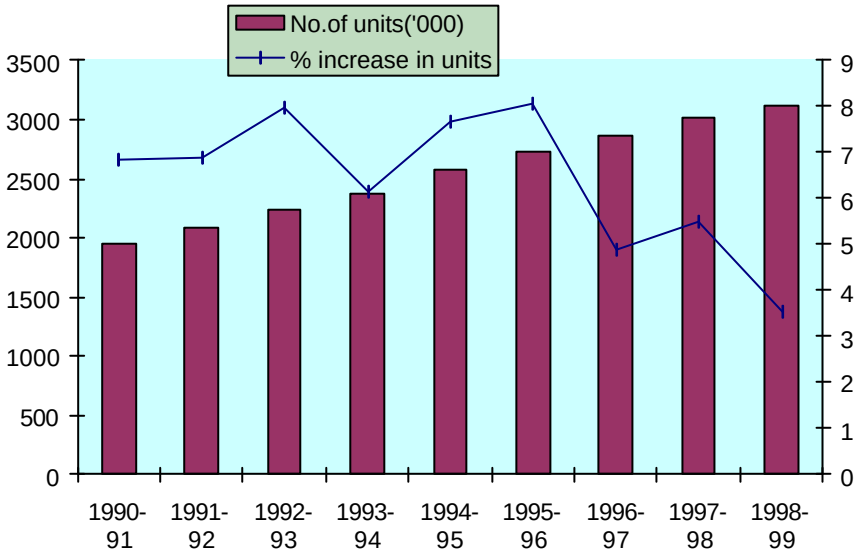

Figure 1. Graph showing the number of SSI units in India and % increase in the number of units from 1990-91 to 1998-99.

Data source: Ministry of Small-scale Industry, Government of India, Annual Report, 1999-2000 .

40% of the gross manufacture to the Indian economy. It has been estimated that 100 thousand rupees of investment in the small-scale sector produces 462 thousands worth of goods and services with an approximate value addition of ten percentage points (SIDO, 2000).

The SSI sector has grown rapidly over the years. The growth rate is very impressive. The number of small-scale units has increased from an estimated 874 thousand units in 1980-81 to 3.121 million units in the year 1998-99. The employment in SSI sector has increased from 12.53 million persons in 1990-91 to 17.16 million persons in 1998-99. The rate of growth in the number of SSI units in India is given in Figure 1.

From the year 1990-91 this sector has exhibited a lower growth trend. This has to be viewed in terms of general recession in the economy. The transition period of the process of economic reforms was also affected for some period by adverse factors such as foreign exchange constraints, credit squeeze, demand recession and high interest rates. During 1994-95 and 1995-96, the trend was reversed. After 1997-98 the growth rate was reduced possibly due to the effect of Asian Financial Crisis and also due to the change in the legal definition of SSI units, which resulted in the decrease in the original cost of plant and machinery, which could be covered in SSI sector.

The rate of employment growth in SSI sector in India between 1990 and 1999 is about 3-5% per year as is evident from Table 2 and Figure. 2. The SSI sector is particularly suited for employment growth in a country like India because SSIs are more labour intensive than larger industries, which are capital intensive. The labour intensity of SSIs enables them to provide employment to millions. Further SSIs also help in solving the problem of regional disparities in employment in India by maximising employment opportunities in rural and semi-urban areas. One of the disadvantages of

Table 2: Growth in number of units and employment in SSI sector in India

Year	Number of Units In thousands	% Growth in no. of units	Employment (No.of persons) in millions	% Growth in employment
1990-91	1948	6.86	12.53	4.77
1991-92	2082	6.88	12.98	3.59
1992-93	2246	7.98	13.406	3.28
1993-94	2381	6.14	13.938	3.97
1994-95	2571	7.66	14.656	5.15
1995-96	2724	8.05	15.261	4.13
1996-97	2857	4.88	16.00	4.84
1997-98	3014	5.5	16.72	4.5
1998-99	3121	3.55	17.158	2.62

Data source. Ministry of Small-scale Industries & Agro and Rural Industries, Government of India, Annual Report 1999 - 2000, Page 4.

using labour intensive technology is that such a technology may render production costly and eventually uneconomical. However if this happens then there should be a decline in the growth rate of new SSI units in India, which has not happened as is evident from Figure 1.

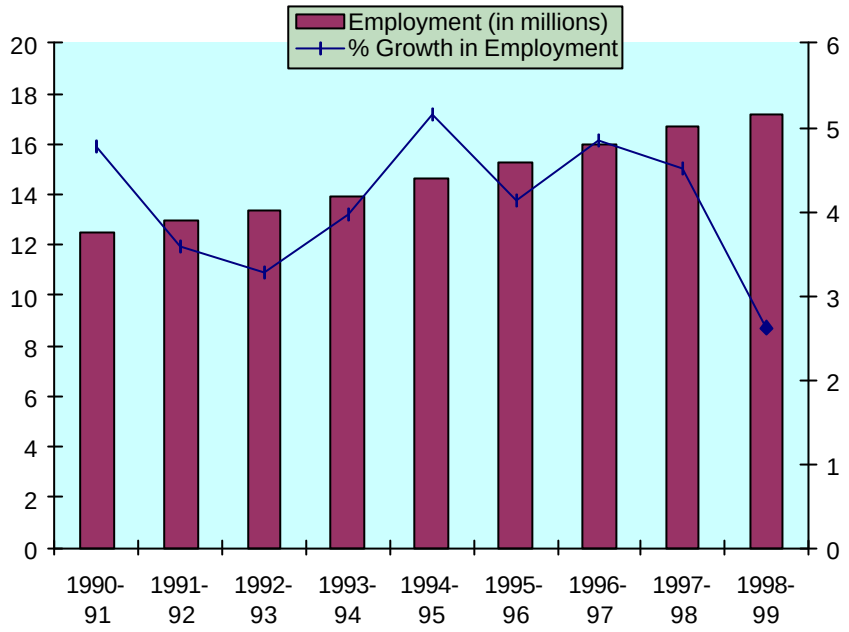

Figure 2. Graph showing the employment in SSI sector in India (in million persons) and % growth in employment from year 1990-91 to 1998-99.

Data source: Ministry of Small-scale Industry, Government of India, Annual Report, 1999-2000 .

The choice still remains between maximising efficiency and increasing employment.

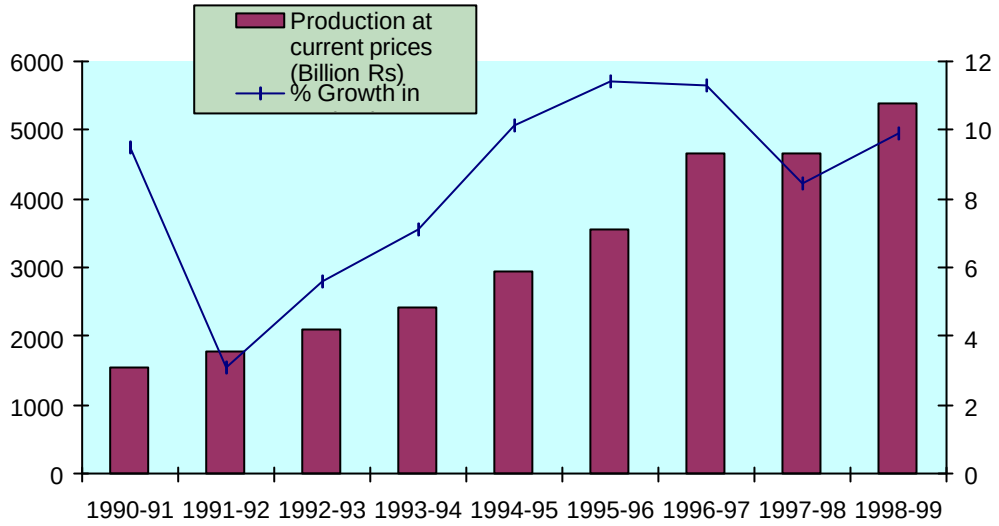

Figure 3. Graph showing the Production by SSI sector in India (at current prices) and % growth in production from 1990-91 to 1998-99.

Data source: Ministry of Small-scale Industry, Government of India, Annual Report, 1999-2000 .

SSIs in India help in solving employment problem to some extent although efficiency may be compromised.

Table 3: Growth in production and exports by SSI sector in India

Year	Production At current prices (Billions of Rs)	%Growth at constant prices 1990-91	Exports at current prices (Billions of Rs)	Growth %
1990-91	1553.40	9.46	96.64	
1991-92	1786.99	3.10	138.83	43.3
1992-93	2093.00	5.60	177.85	28.1
1993-94	2416.48	7.10	253.07	42.3
1994-95	2939.90	10.1	290.68	14.86
1995-96	3562.13	11.40	364.70	25.46
1996-97	4126.36	11.3	392.49	7.62
1997-98	4651.71	8.43	439.40	11.95
1998-99	5383.57	9.91	491.81	11.92

Data source. Ministry of Small-scale Industries & Agro and Rural Industries, Government of India, Annual Report 1999 - 2000, Page 4.

SSI sector plays a very important role in the production in India. The production figures from 1990-91 to 1998-99 are given in Table 3. The production in the SSI

sector has continuously increased in India from 1990-91 to 1998-99. However, the rate of growth in production has declined in 1997-98 but increased again in 1998-99. The decrease in growth rate in production could be attributed to the change in the legal definition of SSI units because a number of SSI units ceased to be small units with the decrease in the original cost of plant and machinery.

In addition to production, the 45%-50% of the Indian exports are contributed by SSI sector. The export performance of SSI sector in India is given in Figure 4.

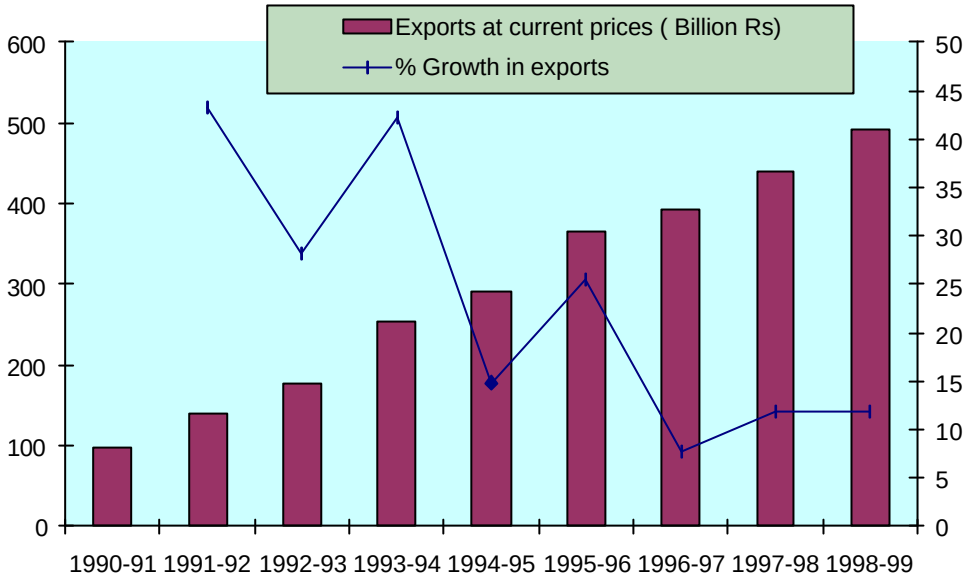

Figure 4. Graph showing the exports by SSI sector in India (at current prices) and percentage growth in exports at constant prices (1990-91).

Data source: Ministry of Small-scale Industry, Government of India, Annual Report, 1999-2000 .

Direct export from SSI sector account for nearly 35% of the total exports. The number of small-scale units that undertake direct exports would be about 5000. Small-scale industrial units also contribute to nearly 15% of exports indirectly. This 15% of indirect export takes place through merchant houses, trading houses and export houses. These may also be in the form of export orders from large units or the production of parts and components for use in finished exportable goods. The product groups where SSI sector dominates in exports are sport goods, readymade garments, woollen garments and knitwear, gems and jewellery, plastic products, processed food and leather products.

The growth in SSI sector can be attributed to a series of industry policy resolutions and statements formulated by the Union Government in India, which aimed to promote the industrial growth and encouraged state intervention and assistance. The 1956 Industrial Policy Resolution recognised the role that SSI sector could play in providing employment opportunities, mobilising local skills and resources and integrating SSI sector with larger units. The Industrial Policy Statement of 1977, stressed on the dispersal of cottage and small industries into rural areas and small towns. The concept of District Industries Centre was also for the purpose of providing services to SSI under one roof. In 1980 emphasis was put on the ancillarisation and

creation of nucleus plants whereas Industrial policy in 1990 focussed on enhancing the contribution of SSI sector in exports, employment generation and dispersal of industries into rural areas. The Industrial Policy in 1991 provided a basis for Integrated Infrastructure Development for SSIs with the participation of State Government, Financial Institutions Non-Government Organisations and Industry/Trade Associations. The measures taken by the government include reservation of products for exclusive manufacture by SSIs. 812 items are currently reserved in this category. (SIDO, 2000)

CREDIT AVAILABILITY

Table 4 shows the position of credit flow to SSI sector in India. Most of the credit to SSI sector in India is provided by public sector banks, which are expected to follow the government policy in the flow of credit. The SSI sector is covered as a priority sector for lending purpose by the public sector banks according to the policy laid down by the Reserve bank of India. However this policy does not apply to private sector and foreign banks in India.

Table 4

Credit to SSI sector from Public Sector Banks in India

(Amount in Rs. Billions)

Net Bank Credit	At the end of March				
	1995	1996	1997	1998	1999
Net Bank Credit	1690.38	1843.81	1896.84	2182.19	2462.03
Credit to SSI	258.43	294.85	315.42	381.09	426.74
No. of SSI accounts (in thousands)	3225	3377	N.A.	2964	N.A.
SSI credit as % of Net Bank Credit	15.29	15.99	16.6	17.5	17.33

Data source: Small Industries Development Organisation: Small-scale Industries in India, http://www.laghu-udyog.com/sssindia/spfpr01x.htm.

The percentage of net bank credit to SSI units from public sector banks has increased from 15.29% in 1995 to 17.33% in 1999 against a target of 16% set by Reserve Bank of India for public sector banks. Although the private sector banks and foreign banks are exempt from these regulations, the outstanding credit deployment to the SSI sector from private sector banks was at Rs.64.51 Billion at the end of March 1999 forming a share of 18.9% of their net credit. Outstanding advances to SSI sector from foreign banks aggregated Rs.24.50 Billion at the end of March 1999, accounting for 11% of their net bank credit.

According to Raju (2001), the lack of access of timely and adequate credit is a big hurdle for the development of SSI sector in India. The Adid Hussain Committee constituted by the Reserve bank of India in 1997 examined the problem of credit to SSI sector and recommended the restructuring of financial support to SSI sector because the overall credit availability to SSI sector during 1991-96 was only 13% of the value of production. It is very clear that legislative measures and government policies in regard to financing of SSI units have not been able to address the issue of credit availability to this vital sector of India economy adequately. The involvement of private sector and foreign banks in India in this regard has been very limited. The private sector banks do not have a vast network of branches in India as do the public sector banks. Foreign banks are mostly confined to big cities of India reducing their availability as a creditor to vast number of SSI units, which are located in small towns.

Table 5 gives the status of credit flow to tiny sector, within SSI sector since 1995. As per RBI guidelines, 40% of priority sector lending to SSI has to go to tiny units with investment in plant and machinery below Rs. 500,000 and another 20% to tiny units with investment in plant and machinery between Rs. 500,000 and Rs 2.0 million.

Table 5 Credit to Tiny Sector as a part of SSI sector in India

Net Bank Credit (Amount in Rs. Billions)	At the end of March 1995	1996	1997	1998
Net Credit	77.34	81.83	95.15	102.73
Tiny Credit as a Percentage of credit to SSI	29.93	27.76	30.2	27.0

Data source: Small Industries Development Organisation: Small-scale Industries in India, http://www.laghu-udyog.com/sssindia/spfpr01x.htm.

Thus against a target of 60% of SSI credit to tiny units, actual flow is at 27%. RBI has taken a number of steps in recent years to improve the credit delivery mechanism to SSI units such as encouraging public sector banks to open more specialised SSI branches at centres where there is a potential for financing SSI borrowers.

As on March 1998, 370 specialised branches were already working in the country. Other measures include extending single window scheme to meet all financial requirements of term loan and working capital, delegation of enhanced power to branch managers of SSI branches and according the benefit of less spread over prime lending rates to SSI units with a good track record. In spite of all these measures the problems remains.

The directed credit policy of the Government of India has helped in raising the investment in the small-scale industries in India considerably as evidenced by the work of Eastwood et. al (1999; p.58), who are of the opinion that "the view that the efforts minimising official of public sector banks are unlikely to lend to small firms unless forced to do so should not be discounted, making the directed credit somewhat stronger in the case of such banks." Eastwood et. al (1999; p.57) conclude that "directed credit policy in India was well conceived and successful in the case of small

modern sector firms; the financial constraints that the policy was designed to relax does appear to have existed and the extra bank credit channelled to small firms does seem to have raised their investment appreciably".

SICKNESS IN THE SMALL-SCALE SECTOR

Sickness in the small-scale sector is a matter of great concern in India. Sickness or financial distress results in locking of resources, wastage of capital assets and loss of production in addition to affecting the circulation of bank credit. A number of causes have been attributed to sickness in SSI units in India. Some of these are: faulty planning, management inefficiencies, inefficient financial control, obsolete technology and machinery, diversion of resources, shortage of raw material and other input, power cuts, inadequacy of working capital, delay in the availability of credit.

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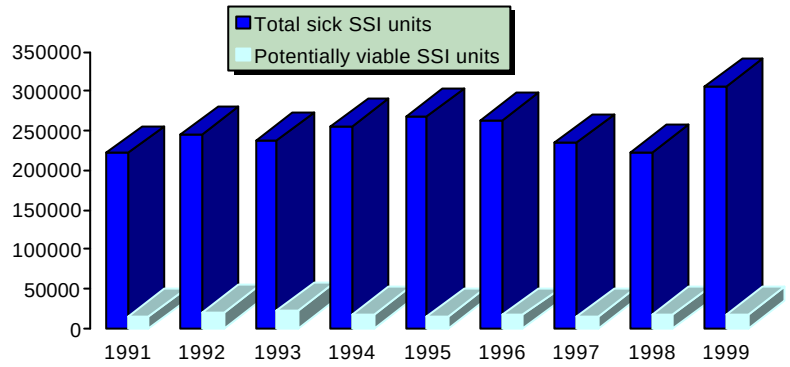

Figure 6. Graph showing the total number of sick SSI units and number of potentially viable SSI units in India.

(*Data source: Reserve Bank of India, Annual Report, 1999-2000 .www.rbi.gov.in)*

The magnitude of sickness can be estimated from the RBI data from 1991 to 1999. given in Figure 6 and Table 6. On the average 10% of SSI units in India face financial distress and only about 67% of distressed units ultimately come out of financial distress and become viable again.

The Reserve Bank of India has issued a number of guidelines to public sector banks for rehabilitation of sick SSI units. The measures suggested by Reserve Bank include detection of sickness at an early stage and grant of relief and concessions such as:

- Interest on working capital at 1.5% below the prevailing fixed/PLR,
- Interest free Funded Interest Term Loan
- Working Capital Term Loan at 1.5% below the prevailing fixed/PLR
- Concession up to 2% below the document rate for Term Loan
- Contingency Loan Assistance at concessional rate for working capital

The Kapur Committee set up by RBI (RBI Annual report 1999-2000) to review the working of the delivery system of credit to SSI units recommended the following measures to deal with sickness

- Changing the definition of classifying the SSI unit as sick unit by reducing the non-performing period of the SSI unit from 21/2 years to one year.

- Converting State Level Inter Institutional Committees into Statutory bodies to enable them to play an effective role in the rehabilitation of sick SSI units.
- Setting up branches of SLIICs in districts having large concentration of SSI units
- Providing relaxation in income recognition and asset classification amounts to encourage banks to take up rehabilitation of potentially viable sick units.

It is too early to estimate the impact of these measures on the sickness in SSI units.

Table 6: Sickness in SSI sector in India

As at the end of	Total Sick units		Potentially Viable	
	No.	Amount Outstanding (Rs. Millions)	No.	Amount Outstanding (Rs. Millions)
1991	221,472	27290	16,140	6931.20
1992	245,575	31006.7	19,210	7289.0
1993	238,176	34429.7	21,649	7987.90
1994	256,452	36803.7	16,580	6859.30
1995	268,815	36471.60	15,539	5979.30
1996	262,376	37219.40	16,424	6358.20
1997	235,032	36092.0	16,220	4793.10
1998	221,536	38566.40	18,686	4559.60
1999	306,221	43134.80	18,692	3768.60

Data source: Reserve Bank of India, Annual Report, 1999-2000 .www.rbi.gov.in

POLICY INITIATIVES

The importance that the government attaches to SSI sector is reflected in the fact that a new ministry to deal exclusively with small and tiny industries was constituted in 1999. The policy initiatives taken by the Government in India and given in the annual report of Ministry of Small Scale Industries, 1999-2000 in regard to SSI sector can be divided into the following categories.

Financial Concessions

Reservations

Infrastructure Support

Training

Technological Support

Marketing and Export Promotion

Each of these policy initiatives is discussed in detail below.

a. Financial Concessions.

From time to time the SSI units have been given a number of financial concessions. Some of the concessions currently available are:
Excise exemptions for branded goods to units located in rural areas. General Excise exemption to industries such as those engaged in cotton yarn and glazed tiles, packaged tea.
Increase in MODVAT Credits to manufacturing units
The other fiscal incentives are by way of concession in credit to SSI units from banks. Important changes in recent budget include:
Enhancement in the limit of composite loan from Rs. 200,000 to Rs. 500,000.
Delegation of more powers to branch managers to grant ad-hoc facilities to the extent of 20% of limit sanctioned.
Special training programs for branch managers.
Opening of more SSI branches.
Credit insurance scheme.

b. Reservation

The reservation of items of exclusive manufacture in SSI sector is statutorily provided for in Industries (Regulation and Development) Act. The reservation policy aims to ensure that the bulk of increased production of consumer goods is in the small-scale sector. The reservation policy also helps in expanding employment opportunities through setting up of more SSI units. 812 items are currently reserved for exclusive manufacture in SSI sector. Non-SSI units can undertake manufacture of reserved items only if they undertake 50% export obligations. There is no regulation or restrictions on marketing of reserved items by large units.

c. Infrastructure Support

The government has launched a program of infrastructure development in regional and rural areas. Infrastructure facilities like power, water, communications are funded by the government and SIDBI with the government providing equity and SIDBI providing the loans.

d. Training

The Small Industries Development Organisation, through its network of Small Industries Service Institutes is conducting training programs such as Entrepreneurship Development Programs for various target groups for generating employment and upgrading skills in industries such as hosiery, food products, leather products, herbal cosmetics etc. These trainees are given equity assistance and loans for setting SSI units.

e. Technology Support

SIDBI had set up a Technology Development and Modernisation Fund for direct assistance of Small-scale Industries to encourage existing industrial units in the sector, to modernise their production facilities and adopt improved and updated technology to strengthen their export capabilities. Assistance is available for meeting capital expenditures, acquisition of technical know how, upgrading of process technology

and total quality management in SSI units. The other forms of technology support include:
Setting up tool rooms and Product cum Process Development Centres
Providing assistance to industry associations/voluntary agencies to set up testing centres.
Industry Specific Institutes for training such as Central Leather Institute.

f. Export promotion

Export promotion from the small-scale sector has been accorded a high priority in the India's export promotion strategy because export from this sector accounts for about 40% of total exports. Export strategy for SSI sector includes simplification of export procedures, providing export incentives, trainings and awards etc.

g. Credit Guarantee Scheme

The objective of the Credit Guarantee Scheme is to help the SSI units to access credit without the need for a collateral security from eligible financial institutions. The loan limit under the scheme is Rs.2.5 million. The Government of India and SIDBI, the apex development bank have set up a corpus fund of Rs.25 Billion. The fund, which is known as Credit Guarantee Fund Trust for Small Industries (CGTSI) helps in the availability of collateral free credit to the SSI sector. The Member Lending Institutions sanction credit to the eligible borrowers based on the viability of the projects and seek guarantee cover from CGTSI against the payment of one time guarantee fee 2.5% of the sanctioned credit facility and thereafter, annual service fee of 1% on the outstanding credit. CGTSI guarantees up to 75% of the credit subject to loan cap of Rs.2.5 million and guarantee cap of Rs.1.875 million per borrower. The current trend in percentage of default is around 20% (Venkatsubramanyam, 2001). The success of the guarantee scheme will get reflected only when Member Lending Institutions treat the guarantee scheme as an incentive to support the SSI units.

ANALYSIS OF POLICIES AND PERFORMANCE

The performance of SSI sector in India can be analysed based on the economic rationale for intervention by the governments in support of small and medium scale enterprises developed by The World Bank and discussed in the paper by Hallberg (2000). According to Hallberg (2000), the economic importance of SMEs can be investigated based on a number of factors such as share of firms and employment, labour intensity of SMEs, efficiency and social, political and equity justifications.

The first criterion discussed by Hallberg(2000) is the share of firms and employment. From the data given in Tables 1,2,3 it is observed that the SSI sector in India has shown considerable growth from 1990-91 in terms of number of units, employment numbers, production and exports. Nearly 40% of India's G.D.P. is contributed by SSI sector. Although the employment numbers in this sector of economy could be high compared to production levels this could be explained as being due to the nature of product composition in India, as suggested by Hallberg (2000). The reservation policy of the Government of India in regard to production of consumer good items in small-scale sector could possibly contribute to large labour force working in SSI sector in

India. Nearly 812 items of consumer goods are reserved for exclusive manufacturing by SSI sector and large labour force could be working in these sectors.

Hallberg (2000) further suggests that "small firms have higher job creation and destruction rates than large enterprises and may offer lesser job security than large firms." In India the destruction rate of SSI firms is close to 9-10% and revival rate of SSI units is very small (only 6-7% of the sick units are revived). This data supports the contention of Hallberg(2000) in regard to destruction of small firms.

Another important issue in regard to SSI units is the efficiency of these units. According to Hallberg (2000), "smallest firms are least efficient". This view of Hallberg (2000), is supported by Goldar (1988) in regard to SSI sector in India. According to Goldar (1988),"while small Indian modern sector firms are more labour intensive than larger firms they are less efficient". Given the suggestions of Hallberg (2000) and Goldar (1988), it may therefore be more appropriate to compare the relative efficiency of SSI units in India over a period of time instead of comparing their efficiency with larger firms in India. Figure 7 shows the employment per unit in SSI sector in India from 1990-91 to 1998-99.

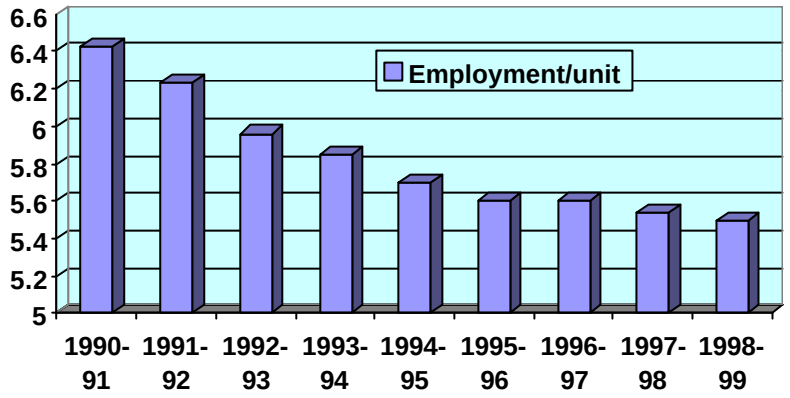

Figure 7. Graph showing the employment per unit in SSI sector in India from 1990 -91 to 1998-99.

Figure 8 shows the production per unit and production per person employed in SSI sector in India from 1990-91 to 1998-99. From Figure 7 and Figure 8, it is observed that the employment per unit in India has declined progressively from 1990-91 to 1998-99 whereas the production per unit and production per person employed has increased during the same period (see also Table 7). This suggests that the SSI sector in India is progressively increasing their efficiency in regard to production and employment.

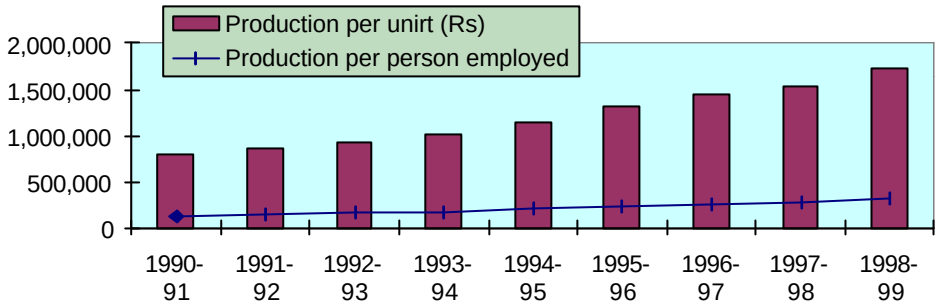

Figure 8. Graph showing the production per unit and production per person employed in SSI sector from 1990-91 to 1998-99.

This increase in relative efficiency has resulted from a very low fixed investment per unit of Rs208056 and fixed investment per person of Rs.37,844 (smeindia.com, 2001) These ratios are important for SSI sector in a country like India because India has an intense capital shortage and SSI units in India face a credit shortage as discussed in Section 4.

Table7: Efficiency parameters of SSI sector in India

Year	No. of persons employed per unit	Production (in Rs.) per unit	per person employed
1990-91	6.43	797,433	123,974
1991-92	6.23	858,305	137,672
1992-93	5.96	931,878	156,124
1993-94	5.85	1014,901	173,373
1994-95	5.70	1143,485	200,593
1995-96	5.60	1307,683	233,413
1996-97	5.60	1444,298	257,897
1997-98	5.54	1543,367	278,212
1998-99	5.50	1724,950	313,764

Another important issue in regard to SSI sector is the issue of social, political and equity justification for the promotion this sector in India. According to Hallberg (2000), "the desire of the governments in promoting SMEs is often based on social and political considerations rather than on economic grounds." In the case of India, the support given to the SSI sector by the government does not seem to be entirely on the social and political considerations because the SSI sector serves a very useful economic purpose in terms of employment, production and exports as is evident from the data given above although the SSI sector also helps in the regional development. The social, political and equity justification of SSI sector in India should also be taken into consideration. The political justification of support to SSI sector is evident from the fact that the legal definition of eligibility of SSI units, have changed off and on, which is based on political considerations (Raju, 1991). The various policy initiatives in regard to financial concessions and lending, reservations of items exclusively for

manufacture in SSI sector, infrastructure and technological support given by the Government of India points to an equity and social justification. However, it should be understood that India is a very diverse country with a huge population and many social, cultural and political problems, which can have a considerable impact on the economy as well. The consequences of not providing support to SSI sector can be disastrous for India. Therefore, Hallberg's (2000) argument that the government support to SMEs is because "they are there" could have some validity for SSI sector in India.

References

Agarwal, A.K., "Trends and structure of small scale sector in India. Some issues." in R.S.Jalal, "Industrial entrepreneurship in Small Scale Industries". Anmol Publications, New Delhi, 1991, p.129-143.

Bansal, S.K., "Financial problems of small scale industries." Anmol Publications, New Delhi, 1992.

Dana, L.P., "Creating Entrepreneurs in India". The Journal of Small Business Management, January 2000, p.86-91.

Eastwood, R., and R.Kohli, "Direct credit and investment in small scale industry in India: Evidence from firm level data 1965-78." The Journal of Development Studies, Vol. 35, 1999, p.42-63.

Gupta, N.K., "Small scale industries: Challenges and perspectives." Anmol Publications, New Delhi, 1992.

Hallberg,K., "A market-oriented strategy for small and medium enterprises." International Finance Corporation Discussion paper No.44. the World bank, Washington D.C., U.S.A., p.1-25.

Industrial Development and Regulation Act, Government of India.

Ministry of Small-scale Industries & Agro and Rural Industries, Government of India, Annual Report, 1999 - 2000.

Padoshi, A.R.,"The role of small scale sector in employment generation in India - A note," in R.S.Jalal, "Industrial entrepreneurship in Small Scale Industries". Anmol Publications, New Delhi, 1991, p.53-59.

Prakash, G., "Problems and prospects of Small-scale Industries in India" in Industrial Entrepreneurship in Small-scale Industries, ed. R.S.Jalal, Anmol publications, 1991, p. 165 - 182.

Raju, B.Y., "Small and medium enterprises: Issues in changing global economic environment (part I & II). http://www.smeindia.com/article2.htm. 2001.

Reddy, R. J. P., "Problems and development of small scale industries in India," Ashish Publishing House, New Delhi, 1991.

Sharma, M.N., "Problems and prospects of small scale industries in Haryana.". Kurukshetra University, Kurukshetra, India, 1988.

Small Industries Development Organisation, "Small Scale Industries in India", *http://www.laghu-udyog.com/ssindia/spfpr01.htm*.

SME India, "Indian small scale industry on cross roads." http://www.smeindia.com/article5.htm., 2001.

SME India, "SSI sector in various states in India" http://www.smeindia.com/ssi.variousstates.asp., 2001.

Tewari, V.K., J.Phillip, A.N.Pandey, "Small scale industries. Success and failures." Concept Publishing Company, New Delhi, 1990.

Venkata Subramanayam, N., "Credit guarantee fund for small industries - A boon for SSI to access collateral free credit." http://www.smeindia.com/article4.htm. 2001.

Vepa, R.K., "Small industries in the seventies." Vikas Publications, London, 1971.

ANALYSIS OF INFORMATION COST INCURRED IN FOREIGN EXCHANGE RISK MANAGEMENT BY SMEs

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ABSTRACT

In this study, the theory of Information Cost developed by Casson (1995) is used to explain the various information cost associated with foreign exchange risk management by SMEs. From the application of Casson's theory, it is concluded that the SMEs incur maximum cost in collecting, communicating and synthesising information while managing foreign exchange risk. Also, the SMEs do not seem to have the potential to reduce these information costs because of their limited bargaining capacity in relation to service providers. As such, SMEs would fit the description of "optimal" organisation as defined by Casson (1995) due to the trade-off made by them in their information costs and decision-making in regard to foreign exchange risk management.

INTRODUCTION

The issue of foreign exchange risk management by SMEs engaged in international business is an important issue. Because of the limited bargaining power of the SMEs in relation to their suppliers, customers and other dealing parties, SMEs face a number of difficulties in managing their foreign exchange risk. This inability of SMEs to optimally manage their foreign exchange risk can reduce their profitability, cause financial distress and may also result in business failure.

One of the critical issues involved in the foreign exchange risk management by SMEs is the issue of collecting information, communicating the information collected for the purpose of analysis, synthesizing the information and taking a decision based on the analysis and synthesis of the information collected. Information is therefore required at every step in foreign exchange risk management by SMEs. For example, one of the steps in managing foreign exchange risk is to use the various hedging mechanisms and techniques available. The use of internal and external techniques of hedging, are discussed in detail in the literature on foreign exchange risk management (Davis and Militello, 1995; Collier et. al, 1990; Holland, 1984; Bhati, 2000). However, the decision about the comparative advantage and suitability of a particular technique will be based on the information about the relevance and benefits of the particular technique from the perspective of the firm using the technique. The actual execution of decision about hedging contracts will require the information about various products available with the service providers, costs associated with each of them etc. the final decision about the use of a particular hedging product may ultimately depend on the synthesis and analysis of costs and benefits of various products. Thus the ability to collect, disseminate and synthesise

the information goes a long way in the proper management of foreign exchange risk by SMEs. Although SMEs are known to have lesser access to information in comparison to large firms, the collection, communication and synthesis of information is important because scarce resources available to SMEs need to be put to proper use.

A number of authors have studied the issues related to information in managing foreign exchange risk in large firms such as Davis et. al (1991), Davis and Militello (1995), Batten et. al (1993). In regard to SMEs, the issues of information relating foreign exchange risk management was studied by Bhati (2000) as a part of study on foreign exchange risk management by SMEs. In this paper, the issues related to collection, dissemination and synthesis of information in foreign exchange risk management by SMEs are critically analysed. The analysis is based on the Theory of Information Cost developed by Casson (1995) for firms engaged in international business. In Section 2 of this paper, the general principles underlying the Theory of Information Cost (Casson, 1995) are discussed. In section 3, the nature of information collected, disseminated, analysed and synthesised in managing foreign exchange risk by SMEs is discussed. In Section 4, this information is critically analysed using the Cassen's theory. Finally the conclusions are arrived in Section 5.

CASSEN'S THEORY OF INFORMATION COST

Casson's theory of Information describes the way in which information might be used by firms engaged in international business. This theory is developed for any firm engaged in international business. The general principles underlying this theory are set as follows.

1. Organisations use information to coordinate activities.
2. Information is logically constructed by partitioning the set of all possible states of environment into subsets and then asserting that the reality belongs to one of these subsets.
3. Decisions are constructed by partitioning the set of all possible states of all possible strategies. A decision asserts that the strategy belong to one of the subsets and not the others.
4. An organisation has stakeholders who determine its objective. If stakeholders (usually equity holders) are risk neutral then their objective is the maximisation of the expected profit. The managerial employees collect information, communicate it to one another and take decisions on behalf of stakeholders.
5. Information is costly to collect, to communicate and to use in decisions. Profit is maximised net of information cost. An efficient organisation minimises the information cost of achieving a given degree of coordination. An optimal organisation trades off information cost against the degree of coordination to maximise the degree of net profit.
6. The organisation consists of a rule for gathering the information as well as a rule for acting on it. It is the use of sequential information gathering rules that gives the organisation their distinctive procedural quality.
7. Sources of information in an organisation tend to be dispersed. This dispersion reflects the division of labour in other activities.
8. Information from different sources may have to be synthesised before a decision can be made. This incurs cost of inter-personal communication. The greater the interpersonal cost of communication, the higher the communication cost becomes.

9. An individual collector may lack the skill to understand what other people are telling him, whereas the specialist synthesizer can be chosen for his ability to choose different types of information from different sources. The sue of specialist increases the amount of information that has to be communicated but it may still reduce the overall cost because the information that is communicated is more readily understood.
10. The reason why certain types of information are difficult to understand lies in their tacit nature. The more tacit the information the higher the cost of interpersonal communication. For this reason it is often useful to allocate the synthesis of information to the person who collect the information of the most tacit nature.
11. Decisions tend to be easier to communicate than information because their explicit communication costs are normally minimised by giving the synthesiser the authority to make the decisions.
12. To each possible set of rules prescribed above there correspond an optimal division of labour in implementation, which minimises the overall information cost. The optimal organisation trades off the degree of coordination and the information cost in the appropriate way.

Casson (1995, p.73-75)

THE NATURE OF INFORMATION COLLECTED, DISSEMINATED AND SYNTHESISED

In this section the Theory of Information Cost developed by Cassen is used to explain the data collected in regard to foreign exchange risk management by SMEs. According to Cassen (1995, p.73), "organisations use information to coordinate activities. Information is logically constructed by partitioning the set of all possible environment into subsets and then asserting that the reality belong to one of these subsets." In regard foreign exchange risk management by SMEs the observed data (Bhati, 2000) given in Table.1 indicates that SMEs require a host of information to manage foreign exchange risk. From Table 1, the following information can be inferred to be of use in exchange risk management. Table 1 also gives the subsets of exchange risk environment, such as

- Export Sales and Import Purchases as part of the total business
- Average periods of realisation creating foreign exchange exposure
- Number and denomination of currencies other than home currency in which the companies deal
- Preferred mode of realisation of export sales/ payment of import purchases
- Various methods used in the forecast of currency positions and the suitability of each of the methods to a particular company.
- Various methods used in the forecasts of currency movements and the suitability of each of the methods to a particular company
- Use of internal techniques in the management of foreign exchange risk ans selection of proper technique for managing the risk
- Use of financial instruments in the management of foreign exchange risk and selection of proper instruments for managing the risk
- Use of information technology tools such as computers and suitability of each of the tools
- Various performance evaluation methods used in the evaluation of foreign exchange risk management and suitability of each of the methods for a particular company.

- Services provided by banks in foreign exchange risk management
- Quality of service provided by a particular bank for foreign exchange risk management.

The nature of information used in foreign exchange risk management and given above is not easy to understand. The information given above can be understood and used by a person who would be exposed to international business and has an understanding of risk management principles and practice in addition to the knowledge and exposure to foreign exchange markets. The information used by SMes in foreign exchange risk management and given in Table 1 can be termed "tacit". Because of the "tacit" nature of information, the cost of obtaining, communicating and using the information could increase for SMEs.

ANALYSIS OF INFORMATION COLLECTED IN FOREIGN EXCHANGE RISK MANAGEMENT BY SMEs BASED ON CASSEN'S THEORY

In this section, various issues in regard to the information collected, disseminated and synthesised by SMEs in relation to their foreign exchange risk management is critically examined and analysed. According to Cassen (1995, p.73), "Decisions are constructed by partitioning the set of all possible states of all possible strategies. A decision asserts that the strategy belong to one of the subsets and not the others." The companies involved in the exchange risk management can construct many strategies from the various subsets given in each of the sets in Table 1. For example, in deciding about using a method to forecast currency position, a company may construct four different methods such as

- Forecast using the contracts
- Forecast using orders
- Cash forecast by currency
- Balance Sheet/Income forecast.

These four methods available in the literature could constitute the set of all possible states of all possible strategies in forecasting currency positions. The decision to forecast the currency position may not belong to one of the subsets (forecasting method in this case) but may belong to more than one possible states of subset (more than one forecasting method). The observed data (Bhati, 2000) indicate that companies have used more than one method in forecasting currency position, in conflict with the theory of Cassen according to which "a decision asserts that the strategy belong to one of the subsets and not the others." This is the first observed difference between the theory and the empirical observation.

The next issue relates to the collection and, communication of information in managing foreign exchange risk management. According to Cassen(1995, p.74), "The managerial employees collect information, communicate it to one and take decisions on behalf of stakeholders." Available evidence supports the Cassen's theory about collection and communication of information and decision-making, in regard to foreign exchange risk management for large firms. The observations of Davis and Militello (1995) and Collier et. al (1991) suggest that the foreign exchange risk management of the large multinationals is controlled by a system of line management and treasury. The Chief Executive Officers of large multinationals are not directly involved in the management of foreign exchange risk management although the objectives of the exchange risk management may be set by the board or the chief executive officers in case of large multinationals. In the case of small firms the situation is however different from that of the large firms. From the data collected by Bhati(2000), it was observed that the Chief

Executive Officers of SMEs could be directly involved in the day to day operations of foreign currency dealings. The CEOs of SMEs could also be assisted in managing exchange risk by external consultants, general managers and company accountants. Even where CEOs of SMEs were assisted by company accountants, general managers and external consultants in managing exchange risk, the ultimate control of exchange risk management rested with CEOs who would take final decision in regard to foreign exchange dealings. Bhati(2000) has explained the reason for the difference in the approach of large multinationals and SMEs in managing foreign exchange risk management as follows. In the case of small companies the export or import business of SME constitutes a large proportion of their total business. Small foreign currency movements could affect the profitability and firm value of SME in a large way. The CEOs of SMEs are, therefore more concerned about the currency movements than the CEOs of large companies. This difference in the approach to managing foreign exchange risk management between large firms and SMEs can be illustrated by the chart given in Figure 1.

The issue of information cost is another important issue in foreign exchange risk management. According to Cassen(1995, p.74) "Information is costly to collect, to communicate and to use in decisions. Profit is maximised net of information cost. An efficient organisation minimises the information cost of achieving a given degree of coordination. An optimal organisation trades off information cost against the degree of coordination to maximise the degree of net profit." The costs incurred in managing the foreign exchange risk by SMEs were observed by Bhati(2000) and are given in Table 2. The available evidence supports the theory about the cost of information collection in regard to exchange risk management. The costs given in Table 2 can be divided into two groups. Bank charges, exchange margin, cost of writing contract and cost of deposits required in managing exchange risk are transaction costs. The cost of obtaining information is explicitly an information cost. Cost of staff and management time would include both transaction cost and information cost. If TC_n is the transaction cost incurred for a particular transaction undertaken to manage exchange rate risk in say currency n and IC_n is the information cost incurred for the same transaction by a SME, then the total cost of the transaction C_n is given by

$$C_n = TC_n + IC_n$$

If A_n is the value of Assets denominated in the same currency n and L_n is the value of liabilities in currency n for the same SME, then the net assets NA_n in currency n which needs to be managed through the transaction is

$$NA_n = A_n - L_n$$

If ΔEX_n is change in the value of currency n from the time of entering into contracts for the currency to the time of realisation of assets/liabilities then

$$\Delta EX_n \ (A_n - L_n)$$

represent the gain on the home currency value of net assets due to change in the exchange rate. The profits can be maximised only if the gain on home currency value of net assets due to change in the exchange rate is greater than the total cost C_n incurred for the particular transaction or

$$\Sigma EX_n (A_n - L_n) > C_n > (TC_n + IC_n)$$

In the case of SMEs the transaction cost is an externality for SMEs because the SMEs do not have any bargaining power towards the transaction service providers (such as banks) and as such are not able to negotiate any reduction in transaction cost. SMEs may also not be able to reduce the information cost as the SMEs may not have the bargaining power towards the information providers as well. The issue of "profit maximisation net of information cost" for SMEs may not have the same implication as for large firms. A large organisation may employ different people for collecting information, communicating the information and synthesise the information and thereby reduce its information cost. Large organisation can also combine the decision making process with the synthesis of information and reduce the combined cost of synthesis and decision making. In the case of SMEs, collecting, communicating and synthesising the information is undertaken by the same person, according to the observations of Bhati (2000). The opportunity for reduction in information cost is minimum for SMEs because the synthesiser would be a trained person who could be a company accountant or general manager. This person would also collect and communicate information in case of SMEs whereas in case of large firms the collection and communication of information could be done by a person with less training. Large firms would therefore pay less for collection and communication of information as compared to SMEs as synthesiser would be paid more than a lesser trained person whose only job would be to collect and communicate information. The SMEs would therefore incur the maximum information cost, which would be paid to a synthesiser. SMEs would therefore loose on two counts in collection, communication and synthesis of information. One, SMEs would pay higher charges to service provider for collection of information and also for transaction costs in managing foreign exchange risk. Second, by employing a synthesiser who would also collect and communicate information, SMEs would pay high wages to synthesiser. Large firms are efficient because they can minimise their information costs whereas SMEs are "optimal" in managing the information costs relating to exchange risk management because they cannot reduce their information cost. SMEs however have one advantage in relation to information cost of exchange risk management as compared to large firms. SMEs can reduce the cost of inter-personal communication as compared to large firms because the number of persons involved in collecting and communicating the information in SMEs would be very small as compared to large firms. According to Cassen, "Information from different sources may have to be synthesised before a decision can be made. This incurs cost of inter-personal communication. The greater the interpersonal cost of communication, the higher the communication cost becomes." Because the SMEs are in a position to reduce the cost of interpersonal communication, they can also reduce the total communication and total information costs.

According to the observation of Bhati (2000) the Company Accountants and General Managers may act as synthesiser of information in case of SMEs and the CEOs act as the decision maker, when it comes to managing the foreign exchange risk. The available evidence from Bhati (2000) suggests that the CEOs of SMEs do not appear to vesting their authority of decision making to Company Accountants or General Managers, which could increase the cost of decision making. Casson's theory suggest that it is economical and efficient to vest the decision making authority to specialist synthesiser. The available evidence from Bhati (2000) suggests that the CEOs of SMEs are willing to trade off the cost of decision-making against maintaining their control and power on the organisation. This attitude of the CEOs of SMEs

also contribute to the increase in the information costs of SMEs in managing their foreign exchange risk management.

It can be concluded that the SMEs have to make the following tradeoffs while managing exchange rate risk as compared to large organisations

- Tradeoffs in transaction cost and cost of collecting the information due to their poor negotiating capacity vis-a-vis the service providers.
- Tradeoffs in the cost of collection and dissemination of information due to the use of specialist synthesisers in collecting and disseminating information in addition to synthesis of information.
- Tradeoffs in decision making cost because CEOs do not wish to vest their decision-making authority in specialist synthesisers.

These three factors mentioned above tend to increase the cost of collection, dissemination and synthesis of information by SMEs while managing their foreign exchange. Because SMEs are either unable to reduce these costs or consciously take decisions which would increase the information costs, SMEs in managing their foreign exchange risk do not act efficiently. The action of SMEs would fit them into the description of an “optimal” organisation as defined by Casson (1995) due to the choices made by the CEOs and their inability to negotiate with service providers. According to Casson, “the optimal organisation trades off the degree of coordination and the information cost in the appropriate way” and does not operate in the “efficient” way. The discussion given above suggests that SMEs are "optimal organisations when it comes to managing foreign exchange risks because the CEOs of SMEs tradeoff tradeoff the information cost for maintaining their control on the organisation.

CONCLUSIONS

Based on the theory of Cassen (1995) and the empirical evidence provided primarily by Davis and Militello (1995) and Bhati (2000), the following conclusions are drawn about the information costs in foreign exchange risk management by SMEs.

1. Cassen's theory can be used to explain a number of empirical observations in regard to the information cost incurred by SMEs in foreign exchange risk management although some differences exist between the theory and the empirical evidence.

2. SMEs have to "optimise" their costs of collection, disseminating and synthesising information in managing the foreign exchange risk instead of minimising the cost in efficient way either due to their limited bargaining power with respect to service providers or because of conscious decisions made by stakeholders, in particulars "CEOs".

These differences in information costs tend to differentiate the management of SMEs from those of large companies.

TABLES

Table 1: The information which may be used by SMEs in managing foreign exchange risk.

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1. Export Sales and Import Purchases as part of the total business
Export sales and percentage of export sales to total sales
Import purchases and percentage of import purchases to total purchases
Export denomination in currencies other than Australian dollar (%)
Average amount of each export transaction ($)
% of average export transaction amount/export sales
% of average export transaction amount/total sales
Import denomination in currency other than Australian dollar (%)
Average amount of each import transaction ($)
% of average import transaction amount/import sales
% of average import transaction amount/ total sales

2.Average periods of realisation creating foreign exchange risk
Average time from the receipt of the export order to the dispatch of export order by the company
Transit time from the dispatch of shipment by the company to the receipt of goods by the buyer
Average time from the receipt of the goods by the buyer to the payment in the company's account (in case of credit sales)
Average time from the day of ordering the goods to the dispatch of goods by the supplier
Transit time from the day of shipment of goods by the supplier to the receipt of the goods by the company
Average time from the day of receipt of the goods by the company to the day of payment to the supplier (in case of credit purchases)

3. Number and denomination of currencies other than Australian dollar the companies deal in

*4. Preferred mode of realisation of export sales/ payment of import purchases**
a. Mode of Realisation of exports
Letter of credit opened by the buyer
Payment of export bills by the buyer
Direct remittance by cheque/DD

b. Mode of Payment of imports
Letter of credit opened favouring supplier
Payment of import bills to supplier
Direct remittance to supplier

5. Methods used in the forecast of currency positions by the companies
Forecasting Methods
Forecast using the contracts
Forecasts using orders

Cash forecast by currency
Balance sheet/Income forecast

6. Methods used in the forecasts of currency movements by the companies

Methods of forecasts
Forecast by consultant/expert
Forecasts by banks/RBA
Forecast by own employees
Forecasts using sophisticated models/computers

7. Use of internal techniques in the management of foreign exchange risk
Invoicing in Australian dollars
Matching
Portfolio approach

8. Use of financial instruments in the management of foreign exchange risk by the companies
Forward exchange contracts
Foreign currency accounts
Currency options

9. Use of technology by the companies in the foreign exchange risk management

Time sharing from banks
PCs/ Microcomputers
Commercial information services like Reuter
Manual

10. Rating of performance evaluation methods used by the companies in the evaluation of foreign exchange risk management

*Performance evaluation method**
Fully hedged position
Spot rate of settlement
Best rate during the period
Opportunity loss/gain

11. Considerations in choosing the banks for foreign exchange risk management
Conditions set by banks
Exchange rate
Credit availability
Service quality
Value dating terms
Security requirements

12. Companies' perception of quality of service provided by their banks in relation to foreign exchange risk management

Nature of service provided by respective banks
Opening hours
Speed of transaction
Technical knowledge
Advice on various issues
Location advantage
International network
Contacts with correspondent bank

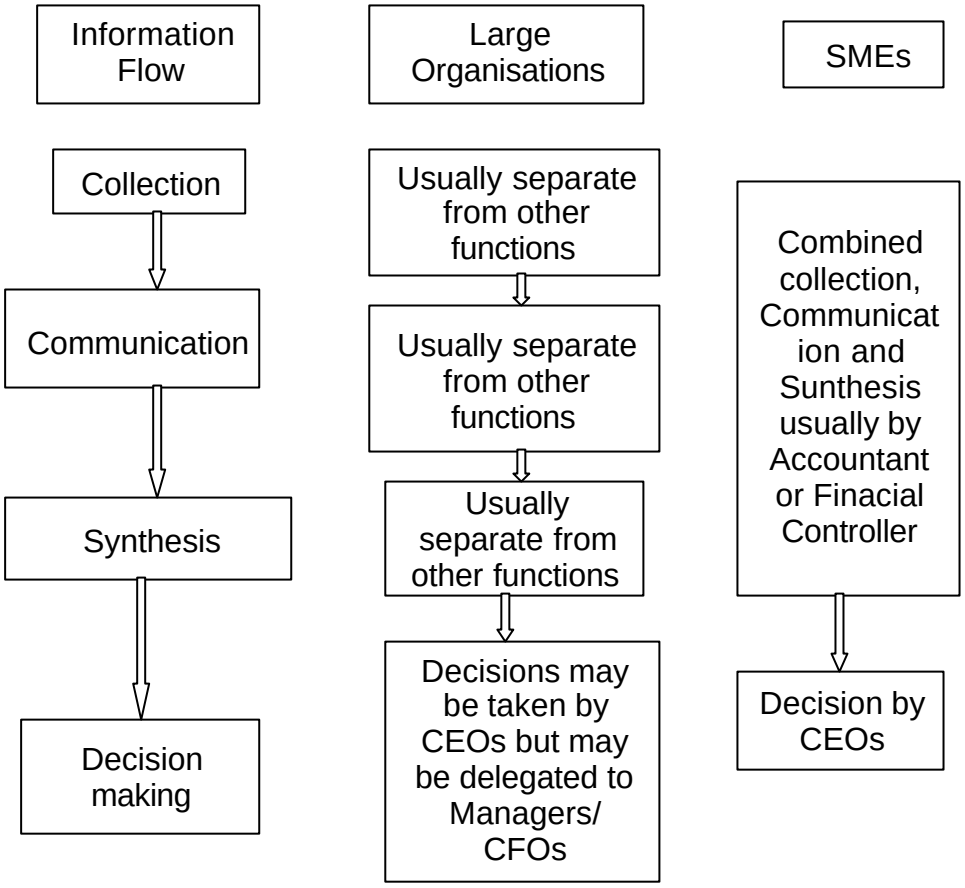
Data source: Bhati (2000)

Table 2: Costs associated with foreign exchange risk management by SMEs

Nature of the cost
Bank charges
Exchange margin
Cost of writing contracts
Staff and management time
Cost of funds for deposits
Cost of obtaining information

Datasource: Bhati(2000)

Figure 1. Model of information flow in foreign exchange risk management by SMEs



REFERENCES

Batten, J. and Mellor, R., [1993], "Foreign exchange risk management practices and products used by Australian firms", *Journal of International Business Studies*, pp. 557 - 573.

Belk, P. A. and Glaum, M., [1990], "The management of foreign exchange risk in UK multinationals: An empirical investigation", *Accounting and Business Research*, Vol. 21, pp. 3 - 13.

Bhati, S.," Foreign exchange risk management in Australian SMEs". *SMEs in a global economy conference*, ed., C. Harvie and B. Lee, Wollongong, June 2000, p. 58-73.

Boothe, R. and Madura, J., [1985], "Reducing exposure to exchange rate risk: A case study", *Long Range Planning*, Vol. 18, No.3, pp. 98 - 101.

Bureau of Industry Economics, Australia, [1991], *Response of small manufacturers to exchange rate variability*.

Cassen, M. "Information costs and the organisation of the multinational enterprises" in *The organisation of International Busines*, Edward Elgar, Aldershot, UK, 1995, Chapter 4, pp. 71-88.

Collier, P. and Davis, E.W., [1985], "The management of currency transaction risk by UK multinational companies", *Accounting and Business Research*, Vol.15, Autumn, pp. 327-334.

Collier, P., Davis, E.W., Coates, J.B. and Longden, S.G., [1990], "The management of currency risk: case studies of US and UK multinationals", *Accounting and Business Research*, Vol. 20, No.79, pp. 206-210.

Davis, Henry A. and Militello Jr., Frederick C., [1995], *Foreign exchange risk management: A survey of corporate practices*, Financial Executive Research Foundation.

Davis, E., Coates, J., Collier, P. and Longden, S., [1991], *Currency risk management in multinational companies*, Prentice Hall, London.

Dufey, Gunter and Srinivasulu, S.L., [1983], "The case for corporate management of foreign exchange risk", *Financial Management*, Vol. 12, pp. 54 - 62.

Glass, Milton L., [1989], "The structure of foreign exchange exposure management" in Antl, Boris (ed.), *Management of Currency Risk*, Euromoney Publications, pp. 3 - 7.

Hagemann, Helmut, [1989], "Strategic exposure", in Antl, Boris (ed.), *Management of Currency Risk*, Euromoney Publications, pp. 41 - 46.

Holland, J.B., [1992], "Foreign exchange risk management - A balanced portfolio", *Managerial Finance*, Vol. 18, pp. 2 - 20.

Holland, J.B., [1984], "Foreign exchange risks and exposure management", *Management Forum*, Vol. 10, June, pp. 60 - 67.

Jorion, Philippe, [1994], "Mean/Variance analysis of Currency overlays", *Financial Analysts Journal*, May-June, pp. 48 - 56.

Mathur, Ike, [1982], "Managing foreign exchange risk profitability", *Columbia Journal of World Business*, Winter, pp. 23 - 30.

Mohr, L.C., [1985], "The reliability of the case study as a source of information" in Coulam, R., and Smith, R., (ed.), *Advances in Information Processing in Organisations*, Vol.2, JAI Press.

Moriarty, R.J., Kimball, R.L. and Fay, J.M., [1983], "The management of corporate banking relationship", *Sloan Management Review*, Spring, pp.3-15.

Potts, John, [1989], "Cable and Wireless" in Antl, Boris, (ed.), *Management of Currency Risk*, Euromoney Publications.

Ryan R., Scapegs, R., and Theobald, M., [1990], *Research Methods and Methodology in Finance and Accounting*, McMillan, London.

Schweser, Carl and Peterson, Tom, [1980], "Risk management for the small importer - exporter", *American Journal of Small Business*, Vol. V, p 13 - 21.

Sercu, Piet and Vanhulle, Cynthia, [1992] "Exchange rate volatility, international trade and the value of exporting firms", *Journal of Banking and Finance*, Vol. 16, pp. 155 -162.

Soenen, L.A., [1983], "Foreign exchange management for the small firm", *American Journal of Small Business*, Vol.VII, pp. 13 - 23.

Soenen, L.A., [1989], "Practice of treasury management in a small open trading economy: The Belgian case", *Journal of Management Studies*, Vol.26, pp. 59 - 74.

Teoh, H.Y. and Er, M., [1986]. "Foreign exchange risk management: The Australian experience", *The Chartered Accountant in Australia*, Dec., pp. 38 - 43.

Yin, R.K., [1981], "The case study crisis: Some answers", *Administrative Scientific Querterly*, Vol. 26, March.

Weston, C.R., [1981]. *The foreign exchange risk experience of smaller Australian companies*, Economic discussion paper no. 6/81, Melbourne.

WHAT MIGHT AN INTERNATIONAL BUSINESS MANAGEMENT CONDUCT STANDARD MEAN FOR SMALL AND MEDIUM SIZED BUSINESS IN AUSTRALIA?

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ABSTRACT

International management standards are not a new idea. Indeed, with the advent of generic quality management and environmental management system standards the foundation has already been laid for development of other such standards. In this paper a new proposal prepared for presentation to the International Organization for Standardization (ISO) for the development of a business conduct management system standard is examined. First, background to the proposal is presented, along with a brief history of its development to date. Second, the notion of what is envisioned by business conduct is examined. Two generic models that have guided the proponents are examined next – the US Sentencing Guidelines and ISO management system standards. Examination of and comment upon the application of the ISO model to the proposal leads to consideration of the potential advantages and disadvantages associated with the standard setting process from an SME perspective. Potential net benefits of such a standard to SMEs in Australia are considered before concluding observations are made.

1. BACKGROUND TO THE PROPOSAL AND BRIEF HISTROY OF ITS DEVELOPMENT

1.1 EOA/ANSI proposal

Over the past five years, the Ethics Officers Association (EOA) has been exploring the idea of and then developing a proposal for a Business Conduct Management Systems Standard (BCMSS). The proposed standard has been put to the American National Standards Institute (ANSI)[1] for endorsement. ANSI has agreed to carry the project to the International Organisation for Standardisation (ISO) and advocate its inclusion in the armoury of ISO standards.[2] To this end the EOA proposal was developed in accordance with the specifications of ISO Guide 72 that deals with the purpose, scope and justification for new standards or other products emanating from the ISO. The proliferation of new standards is carefully controlled through Guide 72.[3]

[1] The equivalent group in Australia is Standards Australia International Limited
[2] http://www.eoa.org/BCMS/bcms_ accessed on 17 June 2002
[3] http://www.iso.ch/iso/en/ISOOnline.openerpage accessed on 17 June 2002

The ISO is a network of national standards institutes from 140 countries working in partnership with international organizations, governments, industry, business, and consumer representatives to develop standards. It is a source of over 13,000 standards for business, government and society. ISO's management system standards – the ISO 9000 and 14000 series – are implemented by a large number of organizations in 158 countries. ISO standards are not mandatory; if an organization complies then it is by choice. Our understanding of the choices is that an organization can implement the ISO 9004 or 14004 standard for internal management purposes only, or if an organization implements ISO 9001 or 14001 and wants to receive recognition for their EMS, it can seek registration, or it can receive certification from a third party that it is in conformance with the standard. However, those that do adopt the standards voluntarily must demonstrate both the capacity to comply and actual compliance by an external and/or internal verification process. ISO provides for self-declaration or independent certification by a third party. The EOA proposal is advocating self-declaration with monitoring through regulatory mechanisms that are already in place and by the market place.[4] Of course 3rd party certification would remain an option for those complying organizations that prefer it.

It is by no means certain that the EOA/ANSI proposal will lead to a new ISO standard. The EOA had planned to present their proposal to the International Committee of ANSI in January this year, however the diversity of views coming from its membership and the conflicts between these views, led to that step being deferred.[5] BATE (February 2002 pp. 1-2) gives a brief report on the divergent reactions to EOA submitting a proposal. However, on 22 May the International Committee of ANSI agreed to propose to ISO the formation of a new technical activity to develop a BCMSS, one that is not intended for mandatory third-party certification. The International Committee also formed an ad hoc group to review the draft ISO proposal form and accompanying draft ISO Guide 72 Justification Study, revise them (if necessary) to make them suitable for submittal, and carry out any further steps required prior to the submittal of these two documents to ISO.[6]

The EOA/ANSI proposal is not yet in the public domain and we have not seen it or earlier drafts.

1.2 SMEs, structure and interrelationships

The EOA/ANSI proposal is for a MCMSS that has global reach and that is generic, namely applicable to entities of any size, operating in a range of industries and in different economic sectors. While the emphasis is on conduct in business, the standard could be used also by not for profit organizations, NGOs and government enterprises and instrumentalities. In this paper we focus on the impact or relevance of the BCMSS for small and medium size enterprises (SMEs) from an Australian perspective and setting. There are approximately 1 million SMEs in Australia employing some 5 million persons.[7] SMEs are typically identified

[4] http://www.eoa.org/BCMS/faqs_links.html accessed on 17 June 2002
[5] http://www.eoa.org/BCMS/bcms.html accessed on 17 June 2002
[6] http://www.eoa.org accessed on 6.June 2002
[7] http://www.onlineaustralia.net.au/Projects/ecommerce/SME/index.htm accessed on 17 June 2002

as such by the number of persons employed[8]. In those we have noted, the number used to identify SMEs range from less than 50 to less than 250 employees. This is no surprise since the bodies providing the classification have differing reasons for doing so. In our discussion we rely on the Australian Bureau of Statistics which provides three categories

* Micro less than 5 employees;
* Small 5 to 19 employees; and
* Medium 20 to 199 employees.

This has the advantage of being a measure relevant to the Australian context and also because it provides some discrimination within the SME sector. We are conscious, however, that in the global setting of ISO standards there may be substantially different conceptions of small and medium size business. In that wider setting all or nearly all Australian enterprise might be considered medium or small in scale. If that proves to be so, the impact of a BCMSS, in the form of costs or advantages, could be more far reaching in Australia (and other small nation players in the global market) than a discussion focused on SMEs would suggest.

In structural terms, then, it is accepted that there are small and large ends of a spectrum of businesses operating in the marketplace. Hence, for our purposes the impact of a business conduct standard is important in the context of SME to SME, business to business relationships and SME to larger business interrelationships (eg SME and MNC interactions), as well as the relationships between SMEs and other stakeholders, such as regulators and financiers.

This paper presents some speculation on what may be proposed to ISO by EOA/ANSI and to shaping of the BCMSS. However, because the end goal is an ISO standard, there are some *indications* and *certainties* that can be identified for consideration by SMEs. The *indications* are to be found in the (draft) ISO Guide 72 in which the proponents set out their justification for the BCMSS (the justification study). The *certainties* flow from three principles followed by the ISO.[9] The first is approval of standards by consensus. Much of the development process is about building consensus from the diverse views of affected constituents, from national interests, and within ISO's own membership. The second principle is that an ISO standard is designed for worldwide application and to provide relevant, global solutions. Finally, compliance is voluntary. The assumption behind all ISO products is that their use and usefulness will come about through market forces. Firms will apply them if doing so offers a perceived competitive or other advantage and if the benefits outweigh the costs. Costs are incurred, both to demonstrate that the business has established controls and protocols that ensure an ISO standard has been achieved, and to introduce monitoring/audit to verify continuing compliance. These financial costs are greater for 3rd party verification and certification but will be significant even when businesses choose to self-declare their compliance with the standard.

[8] We have noted one instance only of SMEs being categorised by other means – namely annual sales turnover.
[9] http://www.iso.ch/iso/en/stdsdevelopment/whowhenhow/how.html accessed 9 May 2002

2 WHAT IS ENVISAGED BY BUSINESS CONDUCT?

2.1 Good business conduct

The setting of standards for business conduct will be aimed at fostering good business conduct, however that concept is open to many interpretations. The BCMSS proposal does not define business conduct. Indeed this is one of the issues to be determined by consensus arrived at through the process of developing the ISO standard.[10] The concrete signals of a person's conduct are decisions, actions, and statements of intention and of process. We anticipate all of these to feature in a BCMSS. We feel less sure about the inclusion of beliefs, knowledge, attitude, and other behavioural factors that nevertheless contribute to and shape conduct.

With regard to the attribute 'good' it seems reasonable to expect that it will subsume efficiency and feasibility. To be useful, standards specified should be able to deliver or support good conduct without imposing avoidable or excessive costs; and will need to be within reach of the many. On the latter point the US Council for International Business opposed the EOA proposal going to ISO, being concerned that it could represent a burdensome, unrealistic benchmark of best practice (BATE 2000, p. 2). There are many other conceivable dimensions of good business that could be considered. This paper examines ethical conduct only, first because moral issues are at the core of judgements about goodness in human affairs, and second because the provenance and description of the BCMS project provide strong indications that the proposal will place the same primary stress on business ethicality. So we find in EOA's documentation expressions, such as 'management of organizational ethics, compliance and business conduct programs', 'practical way for organizations … to integrate business ethics into their operations', 'demonstrate a commitment to ethical business practice', and 'harmonization of national and cultural business ethics standards within an international framework'. This emphasis may also be inferred from the choice of links to other standard or guidance setting organizations that EOA has placed on its website.[11]

There are many models that could be selected, or perhaps combined, to form the framework for good conduct in the BCMSS[12]. We provide a very brief description followed by some speculation on the model that will be underpinning the EOA/ANSI proposal. Simplistically put, the competing systems can be grouped as Eastern models, many springing from or being imbued with religious or mystical teaching and scripts; or Western models based on the judeo/christian heritage, the greco/roman tradition or other more recently evolving secular philosophies. A very recent development in response to the march of globalism is a search

[10] http://www.eoa.org/BCMS/bcms_cont.html accessed on 17 June 2002
[11] http://www.eoa.org/BCMS/faqs_links.html accessed on 17 June 2002
[12] See list of other standards and guidelines at http://www.eoa.org/ which include reference to: Caux Round Table; European Business Ethics Network, Deutschland, EV; Global Reporting Initiative (GRI) Sustainability Reporting Guidelines on Economic, Environmental, and Social Performance; Global Sullivan Principles; International Chamber of Commerce Business Charter for Sustainable Development; Organization for Economic Cooperation and Development (OECD) Guidelines on Multinational Enterprises; Social Accountability 8000; and the United Nations Global Compact.

for synthesis of all major ethical systems. The basis for this is the argument that a global ethic is essential to control, restrain and inform global interaction, particularly in commerce but also in political and other spheres because national and denominational checks and balances are not effective on the global stage. According to Küng (1998) we cannot achieve a world order without a global ethic, to which adherents to all major religious and non-religious belief systems can respond with conviction. Early attempts to specify a global ethical system are An Interfaith Declaration (1993) and the Principles for Business (Caux Round Table, 1994) that purport to distil the common values from the world's major belief systems. For example, the Caux principles are based on ethical ideals of human dignity and 'kyosei', a Japanese concept of mutual good achieved through living and working together.

2.2 Teleological model of conduct

These formulations of global business ethics are too recent to have major impact as yet on business practice (Hartman, 2002). We think they will have little or no impact on the EOA/ANSI proposal and that, instead, the proposal will reflect and endorse a Western model; and, in particular a secular, teleological version of ethics that originated with the English utilitarian movement and laid down its fundamentals in the late 18th to mid-19th centuries in parallel, and to some extent symbiotically, with classical economics. Its fundamentals are that the merit of an action is decided by its consequences. A good action is one that produces net benefits; as between competing good actions, that one is best which gives the greatest benefits. Different versions of utilitarian ethics are advocated. In many of its forms the distribution of the benefits matters – the greatest good for the greatest number.[13]

This teleological model of ethics, as applied to business, treats continuing wealth generation as socially desirable so that actions that increase wealth are good. Wealth creation can be understood in many ways but business has consistently conceived of it as profit, something that is relatively simple to understand and to measure monetarily. Only recently have triple bottom line (social, environmental *in addition to* economic) considerations started to impinge on the dominating or unitary focus on profit. Also wealth distribution has largely been ignored in the business application of this ethical model, being something that will be catered for by a mixture of market disciplines, entrepreneurial generosity, or government interventions. Further, there is no concept of enough profit, only of more.

We expect this ethical model to provide the foundations of the EOA proposal for various reasons. First it is an Anglo-Saxon product that has been greatly influential in the English speaking world. Second, it fits well with a Protestant ethic of coupling the use of God's gifts with industriousness, virtues that Americans have embraced and extolled with enthusiasm. Thirdly, as mentioned already, the utilitarian ethical model developed hand in hand with capitalist economics and endorsed some of the latter's key ideas. For instance, maximization

[13] Teleological ethics encompasses all schools of ethical thought, including hedonism and egoism, that judge goodness in terms of consequences. The utilitarian school builds on foundations laid down in earlier, even ancient, times. It was instrumental in giving ethical respectability to the pursuit of pleasure by equating pleasure (or absence of pain) with happiness. The basis of the moral respectability lies in arguments that no person's pleasure is more important than another's, that good consequences are those which maximize collective happiness (the utility, or greatest happiness principle) and, according to some exponents, that enhancing the happiness of others is the pathway to personal pleasure and fulfillment (Plamenatz, 1949).

is legitimated, as is resource exploitation so long as net good outcomes follow; quantification is essential to determine the outcomes; competition is prized as the system cleanser, and people must be free to choose between competing offerings. Capitalism has proved so far to be the most resilient and successful economic system of the modern era and this fact cannot be ignored in any proposal concerning business conduct in a global setting. The US is the most forceful exponent and practitioner nation of this system. Moreover, the ideology and mechanisms of capitalism have spread rapidly throughout Eastern Europe and large parts of Asia, and are being urged on countries elsewhere that seek assistance with reconstruction.

Alternative secular models within the Western tradition are ethical systems in which good conduct is its own reward, or in which duty is the driving force. Such systems are more receptive to a business social responsibility broader than just wealth generation. They can and do embrace, as primary business goals rather than as means to wealth maximization, the satisfying of other social necessities, for instance, the provision of fulfilling employment and goods and services, all at fair prices. It is our impression that these contrasting perspectives have greater influence in the non-Anglo-Saxon Western world; particularly those European countries that have chosen to blend capitalism and socialism to a substantial degree in their political and economic systems. Consequently they are unlikely to have had major impact on the EOA/ANSI proposal but they could become influential once the proposal passes to ISO for consideration.

2.3 Ethical position in the BCMSS

In addressing business conduct the BCMSS could concern itself with any or all of business goals, management process for goal achievement, and outcomes such as specific procedures, practices, targets, evaluations and monitoring. EOA states that it intends a process standard, not an outcomes standard. It also claims that the ISO's record on separating the two is excellent.[14] There is no question in ISO Guide 72 that directly addresses the issue of process or outcome standard so the point is not raised in the justification study. However, its scope section starts: 'This MSS will require specific management processes and elements'.

Neither the justification study nor other documents issued by EOA indicate that its proposal will address business goals. One web page suggests that enterprise social responsibility is raised and addressed by many other existing standards or guidelines and is in any case an issue distinct from business ethics and the ethical management concerns of EOA members; but it follows with a statement that guidelines on corporate social responsibility can be helpful in developing business conduct policy and that an ISO formulated BCMSS might indeed include aspects of corporate social responsibility or allow for their inclusion.[15] Whilst there may not be explicit consideration of business goals and responsibilities, the previous section is arguing that broad goals and interpretation of corporate social responsibility are already implicit in the economic and ethical systems that provided the assumed framework and context of the proposed BCMSS. Indeed it is difficult to see how effective management processes can be established without some knowledge and specification of the purposes that the processes are to serve.

[14] http://www.eoa.org/BCMS/faqs_links.html accessed on 17 June 2002
[15] http://www.eoa.org/BCMS/history.html accessed on 9 May 2002

To illustrate, the teleological model, that we believe will infuse the EOA proposal, can give respectability and moral purpose to a range of seemingly contradictory business aims so long as they all produce net good outcomes, howsoever these may be defined. Thus it supports the Friedman (1970) thesis that the dedicated pursuit of profit for enterprise owners, by any means that are lawful or in accord with accepted commercial custom, is the one and only social responsibility of business. It can legitimise the 'greed is good' and 'more is good' mentality and the power of lobbying. It lends support to those who equate ethical business with profitable business, or who recite the 'ethics pays' mantra, which can become an encouragement to drop the ethics if the pay off is not adequate. It also endorses subsidisation, tariff barriers and other government action, like the practice of protectionism while preaching unrestricted trade, to create artificial advantage for business. But the teleological model can also justify stakeholder orientated goals like provision of generous employee welfare schemes, sponsorship of the arts or expenditure on community programs, or using offsets to compensate for damage done in the normal course of business (Burritt and Lehman, 1995), either by the argument that the business managers assess these to be suitable means to achieve long-run profit maximisation or by prizing these as good outcomes in their own right. The teleological ethical system can do all this because it, and the constraints specified, do not deal with distribution issues, or do so only minimally, and because national or narrower views of the greater good have prevailed so far. There are thinkers in the teleological paradigm who are broaching its implications in a global society (for instance Singer, 2000; and Pogge, 1989) or who have explored the problem of fairer distribution (notably Rawls, 1971) but little of this has trickled into the business application of teleological ethics.

We suspect that certain ethical positions will be taken in EOA's BCMSS proposal and that these positions may be taken for granted unless they are challenged from outside and subjected to vigorous debate. On the evidence available we doubt such debate is occurring now but are hopeful of it emerging when the proposal enters the ISO mechanisms for consensus building.

2.4 Importance of trust

We conclude this section on business conduct with a brief discussion on building trust, which we think is a fundamental purpose for entities that would consider adoption of a management conduct standard and something that the standard would be expected to deliver. A closer examination of benefits and costs of a BCMSS comes later. The EOA justification study has little to say directly on trust; it does include protection and enhancement of reputation, and long-term survival as benefits to adopting organizations. Benefits of this kind are closely linked to and dependent on the organization being trusted by those who deal with it. Also there is a motherhood proposition that the BCMSS will improve trust in the system of commerce and improve global trade.

A general trust in human nature is an essential requirement for much of our social activities (Pellegrino 1991 p. 69). To live without trust is akin to living without hope. Whatever specific experiences may tell us we do trust others, usually and for example, to be honest, to

have regard for our safety, to observe the rules, to be not bent on our destruction. This is so even in a world full of the rhetoric of war on terror, unless perhaps we live in a zone of terror in which case we may observe severe restriction on normal social interaction or a breakdown of the social fabric with the failure of a general trust in others. In business interactions there is also a general trust in the people and institutions of commerce. This may be an emotional expectation but it is also rational because to assume otherwise is to also assume that commerce is near impossible or imposes horrendously expensive contracting costs. A BCMSS is unlikely to have other than marginal impact on general trust since that trust is a pervasive and indispensable requirement for a civilised existence. However, we can see a significant role for it in respect of the special relationships that arise in the conduct of business.

These special business relationships are those that develop between an organisation and: its end users (typically customers); its suppliers of goods, services, advice and labour; governments and regulators; partners or allies; and intermediaries in all of these relationships. What one looks for in such relationships are qualities such as honesty, competency, reliability, commitment and absence of deceit, and when trust is established there is good prospect that these qualities are present. The nature of trust is different in these relationships. First, because these relationships are with individuals rather than with humanity the parties have some control over the relationship that permits of scepticism and caution in the giving of trust. Second, entering into these relationships exposes participants to some degree of vulnerability; there is ample scope for them to exploit each other. This may arise from information asymmetry, unequal power, dependence on the other party to deliver according to requirements on product, competency, reliability, quality, and so forth. The vulnerabilities are unlikely to be equally balanced in most business relationships, nevertheless it is important that all parties to the relationship will generally have some risk exposure that can be ameliorated through justified trust. Consequently establishing trust is not a one-sided affair but a mutual responsibility. An employer who seeks loyalty from employees should reciprocate that loyalty; a business seeking assurance on reliable quality and delivery of supplies should provide assurance on reliability of payment.

These circumstances identify obstacles that need to be overcome if trust is to be established. Traditionally they have been overcome by the consistency of experience and example displayed in repeated and often personal interactions over extended time. But as business relationships are increasingly forged with participants in distant places communicating by impersonal technologies alternative mechanisms for building and maintaining trust can prove very valuable and is essential as regards non-repeat business. A BCMSS would be such a mechanism, allowing an enterprise to demonstrate its commitment to and practice of ethical conduct by conforming its management structures to the recognised standard and agreeing to a verification process. The true worth of the BCMSS would depend on the credibility of the standards set and their acceptability to the range of potential adopters.

3 POSSIBLE GENERIC MODELS

One model as a possible foundation alluded to by the EOA for the development of a BCMSS is the US Sentencing Commission's Federal Organisational Sentencing Guidelines. Indeed,

the EOA and the US Sentencing Commission have an established alliance. For example, an ad hoc advisory group of the Commission has a member representative from the EOA, and both bodies are organizing a regional forum on the guidelines, compliance and ethics.

The Commission's organizational sentencing guidelines first became effective on 1 November, 1991[16]. The guidelines provide incentives for organizations to report violations, cooperate in criminal investigations, discipline responsible employees, and take the steps needed to prevent and detect criminal conduct by their agents. The guidelines mandate high fines for organizations that have no meaningful programs to prevent and detect criminal violations or in which management was involved in the crime. The guidelines take into account the potential range of organizational criminal culpability, from an inadvertent record keeping violation to an organization created solely for criminal purposes. The main elements of the Sentencing Commission's business conduct program are:

- Compliance standards and procedures;
- Oversight by high-level personnel;
- Due care in delegating substantial discretionary authority;
- Effective communication of standards and procedures to all levels of employees and other agents, *e.g.*, through required training or clear and practical publications;
- Reasonable steps to achieve compliance with standards, including systems for monitoring, auditing, and reporting suspected wrongdoing without fear of retribution;
- Consistent enforcement of compliance standards including disciplinary mechanisms; and
- Reasonable steps to respond to and prevent further similar offenses upon detection of a violation.

However, because the proposal is being submitted to ISO, two existing ISO series of standards provide the most likely potential *generic* models for the way that a business conduct *management system standard* might develop - quality assurance and environmental management - especially once wider interests are brought into the process.[17] *Generic* means that the same standards can be applied to any organization, large or small, whatever the product, service or sector. *Management system* refers to what the organization does to manage its processes, or activities. In a micro or small organization, there is probably no "system", as such, just "our way of doing things", and "our way" is probably not written down, but all in the manager's or owner's head. The larger the organization, and the more people involved, the more the likelihood that there are some written procedures, instructions, forms or records.[18] *Management system standards* provide the organization with a model to follow in setting up and operating the management system based on state-of-the-art practices as agreed by ISO's members. The quality and environmental systems model is examined briefly below before some of the benefits and concerns for SMEs related to these process based standards are addressed.

[16] http://www.ussc.gov/PRESS/rel0202.htm accessed on 16 June 2002
[17] Some exposure of the EOA ideas has been presented to the European Committee on Standardization (CEN) in Brussels (Nov 14-16, 2001) http://www.eoa.org/ accessed 17 June 2002
[18] http://www.iso.ch/iso/en/iso9000-14000/tour/generic.html accessed 17 June 2002

3.1 ISO 9 000 and ISO 14000 series of standards

ISO 9000 refers to a family of standards on quality assurance management systems and ISO 14000 refers to a group of ISO standards on environmental management, the latter group being based substantially on the former. Quality assurance provides an example of international standards, propounded by ISO, that are widely used throughout the world. The figure stood at 408,631 registrations on 31.12.00.[19] Initially, 20 member countries of ISO decided to become active participants (P-members) in the development of the quality management standards and another 14 countries opted to follow the work as observers (O-members). Today, the number of countries actually participating in ISO/TC (Technical Committee) 176 is more than 50, with around another 20 as observers. The ISO 9000 standards were predominantly based on national experience, with the UK, Canada and Japan taking the lead. It is the business sectors in those countries that are most interested in implementing the eventual standards that provide experts to develop the standards. Although there is no ISO 9000 standard aimed specifically at SMEs, a book has been produced entitled *ISO 9000 for Small Businesses*, written by experts from the Small Business Task Group of ISO/TC 176 to assist with understanding and implementation. ISO 9004:2000 has recently been introduced as a guidance document not intended to be used for third party certification purposes. A key element in the new ISO 9004 is the ability to perform self -evaluation, but third party quality management systems certifications/registrations are part of ISO 9001:2000, which consolidates the old ISO 9001, 9002, and 9003 standards.

Environmental Management Systems (EMS) are increasin gly being adopted by organizations as a means of ensuring that their operations take account of environmental considerations (Olsson and Thomas 1998, p.234). The model provided by ISO for its quality assurance standards is very similar to that used for its environmental management standards, especially since changes were introduced to the quality assurance standards in 2000 designed to make their requirements more compatible. Although fewer organizations are registered under ISO 14000 - 22,897 as at 31.12.00[20] - than under the ISO quality standards, the rate of increase in ISO 14000 registrations (79% as compared with 26% pa) is consistently higher.[21] The ISO 14000 series of standards relates to environmental management system standards that can be implemented in any type of organization in either public or private sector (companies, administrations, public utilities). ISO 14000 grew out of ISO's commitment to support the objective of "sustainable development" discussed at the United Nations Conference on Environment and Development, in Rio de Janeiro, in 1992.[22] ISO launched the new technical committee, ISO/TC 207, *Environmental management*, in 1993. However, this was preceded by an intensive consultation process, carried out within the framework of the ISO/IEC Strategic Advisory Group on Environment (SAGE), set up in 1991, in which 20 countries, 11 international organizations and more than 100 environmental experts participated in defining the basic requirements of a new approach to environment-related standards. Today, delegations of business and government experts from 55 countries participate actively within TC 207, and another 16 countries have observer status. The typical process for ISO 14001

[19] http://isotc176sc2.elysium-ltd.net/survey10thcycle.pdf accessed 17 June 2002
[20] http://isotc176sc2.elysium-ltd.net/survey10thcycle.pdf accessed 17 June 2002
[21] http://www.scc.ca/news/articles/iso_survey_results_e.html accessed 17 June 2002
[22] http://www.iso.ch/iso/en/iso9000-14000/tour/14kfrom.html accessed 17 June 2002

involves: an application, EMS documentation review (desk audit), on-site EMS readiness review, third party independent registration audit and determination, and surveillance. For ISO 14004 no external audit is required and this appeals to many SMEs. One key objection to ISO 14001 from SMEs was the relatively high fixed costs of establishing the system for certification. ISO 14004 provided an alternative. While ISO 14004 provides guidance for the implementation of environmental management systems to all types and sizes of organization, the standard is at present being revised in order to make it more attractive to small and medium-sized enterprises to understand, set up and benefit from.[23] The inference is that the views of SMEs were not as persuasive as they could have been when the original standards were promulgated.

Quality management and environmental management systems are being developed into a 'consistent pair' model with similar elements. The representative main elements of ISO generic management systems are: policy; planning; implementation and operation; checking and corrective action; and management review. The next section shows how these elements are employed in the EOA/ANSI proposal.

3.2 Application of the ISO model to the EOA/ANSI proposal

EOA/ANSI propose 'management processes and elements' covering policies, planning, implementation and operation, performance, and improvement. Modification of this list is anticipated. Elaboration of these terms from the justification study and our comment on the items follow.

3.2.1 ***Policies.*** Policies are said to include 'compliance standards and procedures to be followed by employees and other agents that are reasonably capable of reducing the prospect of misconduct and demonstrate commitment and principles for action'. Our main comment is that there is nothing here (or elsewhere) to suggest that the proposal considers strategic management issues. The fostering of ethical business conduct would surely involve establishing and maintaining an organisational climate or culture that supports such conduct. This proposal says nothing of the role of leadership in defining and expressing organisational values, in driving the ethical conduct by its direction, example and observance. A second issue is whether management itself is to comply with the BCMSS. The expression 'employees and other agents' is ambiguous, it could include or exclude some levels of management. The ambiguity is unnecessary and could be easily avoided. If exclusion is the intention it is a major deficiency for many reasons not least being that managers are often the perpetrators of unethical business practices, particularly those practices that do the most damage. To exclude or exempt management from compliance is to deny any ownership of the BCMSS to those governed by it, and promotes resistance to it as yet another controlling mechanism imposed by management. It creates the appearance of a dual culture in the organization and indeed encourages that to take place. Another ambiguity concerns misconduct (and the term 'wrongdoing' used in discussing performance). Misconduct may mean illegal conduct only (illegality is the term EOA employs in regard to planning) or include conduct that is morally wanting, anti-social, or a violation of orders or rules. Concerning the last item, misconduct could be construed as non-compliance with trivial rules

[23] http://www.iso.ch/iso/en/iso9000-14000/pdf/IMS0201-nextissue.pdf accessed 17 June 2002

and orders, or with ones that are unjust or harmful and thus present an obstacle to legitimate disobedience. Our suggestions here are that:

- policies should be extended to include issues of leadership, or that this be included as a separate matter;
- compliance requirements should be required of management and those in governance;
- other agents subject to compliance should include those such as consultants, outsource providers and business partners who can, by their actions, significantly affect the organization's business conduct reputation; and
- misconduct should encompass the illegal and unethical but not justifiable contravention of organisational rules or orders.

3.2.2 ***Planning.*** Planning is the identification of needs, resources, organisational structures, responsibilities, and so forth. It includes oversight at a high level and due care in the assigning of discretionary authority to avoid granting it to those disposed to act illegally. As suggested above, we believe disposition to some other forms of misconduct besides illegality should disqualify a person from holding discretionary powers.

3.2.3 ***Implementation and operations.*** Implementation and operations deal with effective communication of standards and procedures to all levels of employees and other agents through, for example, training, and clearly presented, practical publications. We observe that documentation is needed for other purposes than properly informing employees and agents, notably for management supervision and for any form of certification. It is possible, though not apparent, that communications intended here include external and public reporting, which would be an important visible result of the BCMSS. Openness to scrutiny through public reporting is one way for adopters to demonstrate commitment to transparency and it may provide incentives to develop and formalise measurements of compliance and improvement. As with the policies section, the scope of 'employees and other agents' needs clarification

3.2.4 ***Performance.*** Performance is performance assessment and management review. It includes 'reasonable steps to achieve compliance with standards, including systems for monitoring and measuring, auditing, reporting suspected wrongdoing without fear of retribution, handling non-conformities, and consistent enforcement including disciplinary mechanisms and discipline of individuals responsible for the failure to detect misconduct'. Regarding this item our comments are:

- EOA/ANSI should clarify whether wrongdoing and misconduct are synonyms or have different meanings;
- Individuals are encouraged to voice concerns and there should be protective mechanisms to shield those who do from victimisation. However, there is a potential conflict with this aspect of performance and with the policies section. It arises if misconduct is to include all forms disobedience;
- While internal voicing is supported, it seems that whistleblowing, the reporting of wrongdoing to external parties (Jubb, 1999), is not. A well designed and well functioning BCMS would typically avoid the necessity to consider whistleblowing, but these conditions are not guaranteed. We consider that a BCMSS should sanction

whistleblowing in defined circumstances and maybe this is, in part, what is intended by 'handling non-conformities'; and

- As presented by EOA a BCMSS is a stick by which to enforce discipline and penalties on employees and only this. It is a negative view of ethical conduct and we think a reactive one that will not nurture the current fragile business morality. We consider a better vision is one that includes expressions of encouragement and guidance, one that is concerned also with aspirations and rewards.

3.2.5 ***Continuous improvement.*** Improvement concerns corrective and preventative action, and, when a violation occurs, taking reasonable steps to deal with it appropriately and to prevent similar occurrences. This scope section responds to ISO's continuous improvement criterion for maintaining the certification.

3.3 Potential advantages for SMEs associated with the BCMSS process

3.3.1 General advantages. According to the EOA proposal, voluntary adoption of an ISO business conduct management system standard would result in a number of possible advantages. As these are not sector or size specific they should apply to SMEs. The advantages listed are:

- It will create a set of practical and usable guidelines to help SMEs assimilate ethics into their business operations and achieve continual improvement in their business conduct management systems;
- It will provide a cost effective manner, under the control of the business, for SMEs to demonstrate their commitment to ethical business practices;
- It will enable SMEs to defend their reputation in dealings with various stakeholders (eg banks, suppliers);
- It will be a tool for the consistent measurement of the effectiveness of SME activities;
- The model adopted for this proposal is likely to be closely related to the model adopted for other international standards issued by the ISO, especially quality assurance and environmental management, and this will limit duplication of some of the cost of training and learning associated with introduction of the new standard;
- Voluntary adoption of a new standard can be used to *persuade* various stakeholders that the SME has credible business conduct, or that it seeks credible business conduct in the practices of external and internal stakeholders with which it is involved (Schaltegger and Burritt 2000, 317); and
- The voluntary standard could provide the basis for harmonisation between national and international standards for business conduct, as well as the basis for understanding cultural differences.

In spite of these general advantages it is clear that verification by a third party will be required by some of the stakeholders looking for confirmation of credible business conduct and the basis for a trustworthy relationship.

3.3.2 Relationships with external stakeholders. The potential importance of a business conduct management system standard increases as the relationships between parties move away from legally binding contracts and fiduciary duties towards, relationships built entirely on trust and commitment. In addition, SMEs have less control over external influences over

their business conduct management systems relative to larger businesses. For example, a large business may insist that, once introduced, a BCMSS must be adhered to by a SME as a basis for all relationships between them.

3.3.2.1 Partnerships

Partnerships come into being because of the development of social relationships through mutual trust and commitment (Schaltegger et al., 2003), although in business there is usually a legal contract providing the foundation for a partnership. Commitment means that partners are motivated to act in accordance with their common intentions. A committed partner agrees to do something and then does it. Some SMEs have a reputation for breaking contracts and moving on and, given a higher failure rate for SMEs, this mean that it can be harder for trust and commitment to be demonstrated when they try to establish partnerships. A partnership means that a fiduciary relationship exists between the partners – one that leads to penalties in the event of a breach of fiduciary duties. Voluntary compliance with a business conduct management system standard will signal that partners are serious about accepting what they are committed to, but in the event of failed relationships the penalties will be clear and legally enforceable.

High trust relationships are required in partnerships, if they are to succeed. A business conduct management system can form a foundation for development of trust that sustains and goes beyond the legal fiduciary expectations. It provides a visible sign of commitment to promote trust and credibility such that potential partners will accept mutual support of each other, even in adverse times. In short, commitment to a voluntary business conduct management system standard signals intentions and expectations of partners and potential partners, confirms expectations and justifies the trust in each other. Provision of information about the implementation of and compliance with the standard over time could become an essential component of the development and maintenance of trust and commitment between partners.

Partnerships most often assume the following: equal power to commit the resources of the partnership; open exchange of information; participatory decision making; mutual help; maintenance of promises and engagements and lack of suspicion in response to unexpected actions. Implementation of a business conduct management system would signal the commitment and trustworthiness of the business, thereby supporting the legal duties and rules established in advance for handling potential conflicts and failures. The BCMSS could be seen as an assurance of good character. SME to SME business, where power is balanced, would be encouraged in the presence of adherence to a BCMSS by both parties because it provides a ready basis for trust. With an unequal power base between partners, as say between a multinational and its local SME supplier, trust would be harder to establish. SMEs seek to gain a competitive advantage by providing assurance of their trustworthiness. This they can promote by implementing a BCMSS, indeed, MNC's that have themselves adopted the standard may insist on the SME doing likewise. Third party certification of the standard could further enhance the competitive advantage.

3.3.2.2 Cooperation and networks

Looser groupings of businesses do not have such clear legal duties and penalties as partnerships. For these structures business conduct and reputation are of critical importance as no fiduciary relationship exists. Cooperation is a practical way of instituting bilateral or trilateral relationships between businesses, where the venturers meet the costs of a project and share any of the resulting benefit. Cooperation does not require a separate business structure, as is the case with a legal partnership. Instead, parties cooperating may simply agree to share an asset, such as information, for the purpose of the cooperative venture, with the legal autonomy of the participating organizations being maintained. Cooperation is created through long-term team based activities, especially during project work (Schaltegger et al., 2003). In contrast, networks, arise when there are multiple parties involved in cooperation. Networks are unbounded structures that cannot be precisely defined at any given time. Not everybody is constantly engaged in a network.

For business management the success of cooperation and networks depends on whether interaction is based on common interests and on the parties remaining unconstrained in following their own interests – something that is encouraged when a minimum standard of business conduct is evident.

Strategic alliances among competitors, as well as with suppliers and customers, are key forms of cooperation and networking. A strategic alliance is a formal and mutually agreed arrangement that links specific facets of two or more enterprises or organizations. The allies pool, exchange and/or integrate selected resources for mutual benefit while remaining separate and entirely independent. It is a cooperative arrangement that enables the allies to achieve goals together that they could not achieve alone. Although strategic alliances are said to be relatively enduring (Parkhe, 1993 p. 795), where alliances are between SMEs or SMEs and larger businesses there is evidence to suggest that they are likely to be short lived (Young and Pelton 1995). For example alliances between two small businesses may fail because of insufficient trust between the parties. Alliances between a small and a large business may fail because the latter sees an opportunity to take over the former by using knowledge gained through the alliance. This could be regarded as the process of competition in action, but it could also arise because trust evaporates and the possibility of financial gain dominates. The presence of a business conduct management system standard acting as a benchmark could promote trust over individual financial gain thereby leading to enduring cooperations and alliances when SMEs are involved.

3.3.2.3 Evaluation by fund managers and financiers

Fund managers are wary of situations where unacceptable business conduct leads business into difficulties, dilemmas or disasters. Commitment to a standard that signals best business conduct practices exist, will encourage fund managers to recommend the inclusion of listed and unlisted (SME) business activities in socially responsible investment (SRI) portfolios. Likewise, compliance with the standard would provide banks with additional evidence that management of good business conduct is seen as a priority by their actual or prospective SME client (or independent evidence where third

party certification is adopted) and would encourage the provision of funding. Also, regulators will be provided with the opportunity to be less draconian with SMEs that can demonstrate they comply with sound business conduct management procedures.

3.3.3 Relationships with internal parties. Good business conduct is also critical to the way that benefits from internal interrelationships are derived and converted into increased productivity in SMEs. A growing number of businesses have developed business codes of conduct and made them available on the intranet to signal expectations for all employees, or have built them into workplace agreements. A case in point relates to the unfair dismissal of employees in SMEs. Unfair dismissal laws have been set up to protect employees. Two views are aired about unfair dismissal and SMEs. One view is that SMEs need to be exempt from laws that relate to unfair dismissal as they impose onerous restrictions on the business to dispose of employees and this stops the creation of new jobs and leads to increased casualization of the SME workforce[24]. However, calling for exemptions does not promote the ethos of an employer that is keen to demonstrate concern for employees, their conditions and just work. The second view is that the best way to protect small business from unfair dismissal claims is for the small business itself to dismiss fairly. Where an SME wishes to develop a reputation for fair dismissal implementation of a BCMSS would provide a useful foundation, especially if the courts become involved.

3.4 Potential disadvantages for SMEs associated with the BCMSS process

A range of potential disadvantages are faced by SMEs when considering whether to adopt ISO standards. These can be divided into external and internal considerations and each can have a bearing on the success or otherwise of adoption.

3.4.1 External considerations. External considerations largely stem from the inability of SMEs to control processes which affect their performance.

Domination by large US business. As the driving force for the BCMSS comes from the EOA, with expected support from and carriage by ANSI, one might suspect bias towards large US business in the EOA proposal. EOA is an association of some 800 members restricted to managers (and the employing organisation) of ethics, compliance and business conduct programs. It claims to be international but its membership list (at November 2001) represents predominantly US enterprises and organisations, and appears to be dominated by US based multinational corporations.[25] Apart from one conference, and a briefing in November 2001 to the European Committee for Standardization, all pre-proposal exposure in conferences, workshops and other meetings since the inception of the project in 1997 has occurred within the USA.[26] In its justification study, EOA responds to questions about availability of

[24] For example, see http://www.cpaonline.com.au/01_information_centre/16_media_releases/2002/1_16_0_20020313b_mr.asp (accessed 16 June 2002) where 30% of SMEs state that they employ casuals because of the unfair dismissal laws (CPA Australia report on interviews with 600 small businesses (independent and employing fewer than 20 staff) and 105 CPA (CPAs) accountants across Australia in February 2002.)

[25] http://www.eoa.org/ accessed at 17 June 2002

[26] The justification study (section C4) asserts a wider exposure at conferences outside USA but without providing details. http://www.eoa.org/BCMS/history.html accessed at 17 June 2002

technical reference material and expertise by citing its member organisations and individuals. Those specifically named are all US organizations. Consequently there is a distinct possibility that the proposal will reflect US perceptions of good practice, solutions to problems that trouble US multinationals, and interpretations supportive of US interests, values and institutions. For instance the EOA strongly supports self-declaration and appears concerned to pre-empt possible rival proposals that might seek to impose third-party certification. ANSI has confirmed its support for this view. Yet, other ISO's do provide for both options. This is described as the "consistent pair" approach where structure and terminology are similar, regardless of the way in which the standard is adopted. EOA does recognise US dominance of the process at this stage and suggests that it is committed to the development of the proposed standard as being a global process. They ask their members and others who are not based in the U.S. to contact them to discuss similar global initiatives that are underway in the hope of better coordinating these efforts.

Under representation. As previously considered, US based multinational interests may dominate the proposal to ISO. For example, the EOA has representative members - Motorola and United Parcel Services - on the ad hoc committee and an EOA representative. EOA is establishing a committee of its own to provide input during the development of a preliminary draft of a working document for the standard and related issues. The lobbying process is well in place. Also, four other US based standards bodies are being approached for their support, although their names are not yet public. ISO has 140 country members out of 190 in the world and this may counter the dominance of the 'conduct' of US multinationals. However, a further concern is that although ISO does have a broader membership upon which to draw for the further development of the generic standard, there remain small developing countries and economies in transition that are not members of the group and whose SME interests will not be taken into account in the development of the generic standard (eg. Afganistan, Angola, Belize, Georgia, Haiti, Kosova, Laos, Libya, Macedonia, Malawi, Myanma, Puerto Rico, Senegal, Serbia, Somalia, Taiwan, Tadjikistan, Tibet and Zambia).

Competition. SMEs, because they can only mobilize a limited amount of resources, have less market power than their larger bretheren. SMEs are unable to access rents from monopolistic or oligopolistic market practices or cross-subsidize unprofitable activities. Instead, unprofitable business fast drives SMEs to failure, or tempts them to adopt unethical practices that reduce costs and promote survival (eg dumping waste rather than paying for it to be disposed of through legitimate channels, selling poor quality products and using lower quality inputs). In circumstances of intense competition, voluntary commitment to international standards leaves SMEs bearing the cost of voluntary compliance but unable to reap the reputational or financial benefits.

Government regulation. Political power is another area in which SMEs demonstrate relative weakness. Lobbying abilities are curtailed by the lack of time available to SMEs to engage government and regulators. Larger business has the specialized expertise and resources to be heavily involved in the processes of creating and administering standards and regulations. This lack of involvement in the political process acts as an informational barrier to SMEs, constrains access to benefit from the lower levels of the regulatory enforcement pyramid (Ayres and Brathwaite, 1992) where regulators use voluntary instead of compulsory means

of securing compliance and, hence, leads to increased costs of regulation. These institutional barriers place SMEs at a disadvantage as uneven enforcement gives rise to inequitable treatment of businesses that have the same environmental impacts, the same quality products and processes, and the same business conduct practices. Any new ISO standard offers the chance for business to address compliance with government regulation through voluntary means.

Higher costs of financing investment. The cost of financing the implementation of systems for compliance with international standards acts against SMEs. Although costs of information gathering and recording have declined with advances in information systems, SMEs still face higher costs of capital to finance their investments and have a relative cost disadvantage. There is no difference in principle between the difficulties SMEs face in obtaining funding to finance environmentally friendly production processes, and the difficulties they will face in funding the installation of business conduct management systems. An EMS requires an organization to manage a great deal of information from various sources, such as legal requirements, training records, operational procedures, and performance data. The cost of packages for managing this information is relatively high for SMEs, even though electronic tools are available at a price.[27]

External accounting and reporting for business conduct costs. Introduction of a BCMSS adds to the pressure to measure, account for and report on the associated costs and benefits. While benefits are hard to measure (see below), there will be concern that external disclosure of negative information will reduce the credibility or reputation of the organisation.

3.4.2 Internal considerations. SMEs tend to be able to exert control over the following considerations.

Lack of knowledge. Terminology associated with a new standard may be unfamiliar to SMEs and costs of education and training in relation to business conduct issues prohibitive. SMEs may not have sufficient in-house knowledge to implement the standard and monitor progress. Implementation of a business conduct management standard will be hampered by this lack of knowledge and expertise. The learning curve puts SMEs at a disadvantage.

Lack of resources. SMEs tend not to have resources for full time dedicated management specialists.[28] Development and implementation of comprehensive training programs for staff responsible for specialized management can be a daunting task for SMEs, for example, because of the large number of laws to be complied with.

Short termism. For SMEs making money in the short term is a key driver of their actions and activities. Indeed, considerable comment is made that this is the overly dominant concern of business – environmental issues and quality can only be means to that end, from this perspective. In these circumstances, business conduct is only likely to be seen as an issue where short term profitability is threatened. Investing money in the process of developing

[27] http://www.ec.gc.ca/emsinfo/home_e.htm accessed 17 June 2002
[28] see, for example, the comment in the US EPA's document on EMS for small laboratories at http://www.epa.gov/sbo/smalllabguide_500.pdf

and adopting a business conduct management system would be a low priority where the benefits are seen as accruing in the long term. Limited resources, expertise and training and higher costs of capital all bring additional pressure to SME organisations to focus on profitability rather than issues associated with improving long term business conduct.

Lack of consciousness. Environmental management, quality assurance or business conduct are not necessarily something that SMEs are aware of as being important issues. For example, when ethical issues, such as whistleblowing, become an issue then negative connotations arise and SMEs may look for the protection that compliance with an international standard can provide, but in other circumstances the benefits seem less clear and are usually not to the fore.

Inadequate accounting and internal reporting systems. In parallel with generic ISO management system developments much effort has been devoted towards demystifying the accounting for and reporting on costs of quality and environmental costs, and classifying and recording such information. As management accounting systems are a critical information source that affect business decisions and accountability relationships with internal stakeholders, one aspect of a business conduct management standard may be the need to consider the cost of recording and the internal reporting of information.

Sequential decision making. Managers of SMEs do not have unbounded cognitive abilities to address each and every issue that may have a bearing on decisions that they make. The Carnegie school of thought talks about 'bounded rationality' as being the practical context for decision making. Only a limited amount of information can be appraised at any one time and problems are tackled in sequence – to keep various stakeholders satisfied – a process called 'satisficing'. From this perspective, if greater time is to be spent on formal business conduct management systems less time is available for other strategic issues at any one time.

Use of information as a power base The tendency for individuals to cover up mistakes and not reveal when poor conduct occurs can dampen the effect of any standard that is designed to encourage better business conduct management. Information can be seen as a powerful resource by individuals in SMEs, particularly in family businesses, where business conduct may be regarded as of secondary importance to interpersonal relationships. The style used to manage the business will influence the importance of this issue. If a team based approach, two way communications and setting the tone from the top are to the fore, then acceptance by others of the need for good business conduct management has a higher chance of succeeding.

Resistance to change Introduction of changes to businesses can be resisted where employees and managers perceive these as a threat to the way they conventionally conduct their jobs. Change is resisted and objections are likely to be raised where existing procedures are challenged by new systems for conducting business. Resistance can be present by default where:

- there are no personnel directly responsible for the management of business conduct;
- the systematic introduction of concern over business conduct is seen as time consuming and without direct benefit to the business;

- the need to consider whether some employees should be 'allowed to leave' because of their conduct; and
- integration of this additional set of procedures is seen as a burden because of lack of available time in the short run.

4 POTENTIAL NET BENEFITS OF ADOPTING THE PROPOSED VOLUNTARY STANDARD

4.1 Impacts on adopters

In sections 3.3.2, 3.3.3 and 3.4 we outlined a number of external and internal factors through which international management standards could either benefit, or impose disproportionate cost and disadvantage on, SMEs that conform with the standards. We see no reason to suppose that a BCMSS would have a lesser net impact. Rather the opposite in fact, since the benefits of the BCMSS appear to be more emotional and impressionistic in character as compared to those deliverable by adoption of the ISO 9000 or 14000 series Moreover, these same factors are likely to impact on SMEs in Australia though perhaps in different degree. For instance domination and under representation are potentially more severe problems for SMEs in the non-dominant or under represented societies.

Section 3.3.1 lists seven general advantages that the EOA/ANSI proposal asserts will benefit any adopter but which seem improbable from an SME perspective, in any country. Particularly dubious are the two claims that a BCMSS offers SMEs a cost efficient, controllable means of demonstrating commitment to ethical business conduct; and defence of their reputation (this is doubtful for the expected majority of adopting SMEs that decline 3rd party certification).

Some other benefits to adopters, claimed in the EOA/ANSI proposal to arise specifically from a BSMSS, are that the standard will:

- provide assurance to others of commitment to professed policies, objectives, targets;
- demonstrate an emphasis on preventative (proactive) rather than corrective action;
- provide evidence of reasonable care and regulatory compliance;
- incorporate continual evaluation and improvement; and
- minimize costs because the proposed BCMSS is consistent with existing programs based on US Sentencing Guidelines and ISO 9000 and 14000.

Most of these are fleshing out the nature of reputational benefits and would seem to have relevance to Australian SMEs. The last item would have relevance only to Australian SMEs that are adopters of either or both ISO standards. Also while costs might be minimized they are likely to remain large as there will be significant additional costs to gear up to another standard and, if needed, to demonstrate capacity to comply and actual compliance.

For those advantages seen as applicable, its questionable whether signing on to a BCMSS is the efficient way for an SME to go about getting the above benefits. Large organisations do need to rely heavily on process to establish conformity with desired benchmarks due to the variety of relationships which they enter into, the large number of persons in each stakeholder category and distance of policy makers from those supervised or from those

requiring assurance. This is not a problem, or is far less so, for SMEs. Personal contact seems a more likely and a more effective mechanism of building and holding trust and reputation, at least in dealings with other similar sized organizations.

4.2 Are there net benefits to Australian SMEs from adoption?

The EOA/ANSI proposal also lists benefits to parties other than adopters that would flow from a BCMSS. They are:

1. a single set of international business standards will contribute to better business conduct by employees and companies, and thus greater business success and a more competitive marketplace. Unifying the efforts of multinational businesses will reduce the need for government mandated ethical standards and enable companies voluntarily to adopt a set of business conduct standards;
2. ethically concerned customers can assess an entity's ethical/ legal compliance;
3. compliance with the BCMSS throughout the supply chain can (a) bring convergence to one set of standards and replace multiple standards that parties might otherwise impose on each other and (b) be assessed and demonstrated by any party in the chain;
4. business opportunities are available to management system standards service providers (advisors and registrars) by innovative review or certification processes that are envisaged for the BCMSS;
5. credibility in contracting with US government (Defence contracts) or federal court sentencing via voluntary adoption of audit and public reporting of business conduct programs; and
6. managers of socially responsible investment funds can assess an entity – for example, by using adoption as a criterion of acceptability. There is no reason to limit this to fund managers. Ethically concerned investors could use business conduct standards as a criterion in building their own portfolios.

Item 5 will have no or minimal relevance to the Australian SME sector; while other advantages in items 1, 4, 5 and 6 have no or little relevance to unlisted SMEs. Moreover item 1 might may signal a disadvantage since reduced regulatory control is something that larger enterprises are better equipped to negotiate and exploit. Even so, this category of benefits may be very significant to consumer or supplier SMEs that are in search of assurances in transacting with peers or the large enterprise sector.

The advantages of a BCMSS to the SMEs are oversold perhaps in the EOA/ANSI proposal. We see virtually no scope for it to offer benefits to either the micro or small business divisions of the Australian SME sector and only minimal opportunity for any but the largest in the medium size division. The implications for management specialization requirements in a BCMSS appear likely to preclude most enterprises employing less than 200 persons. Perhaps the real benefits to SMEs arise only for those firms seeking, from large or multinational companies, niche service or supply business opportunities or partner/venture arrangements for the development of new technology or ideas. The large enterprise may refuse to consider such arrangements with SMEs that do not present good and credible business credentials or may demand this before committing to an arrangement. While this may seem merely to add to the SMEs' costs, arguably the relationship with an MNC is a

game lifting experience from which the SME gains skills, advice and help in implementing improvements that do enhance its business conduct in appearance and in reality. The other side of that picture is infiltration of the SME by MNC officers or other aspects of lost independence.

4.4 On measurement of costs and benefits

Measurement of costs and benefits is something to be addressed by ISO in the consensus based course of developing the BCMSS. Determining the direct costs of signing on to a standard should be relatively simple. Indeed the cost considerations that have already influenced the EOA/ANSI proposal indicate that organizations have already estimated them. Mostly, they would be the consulting and human resource costs required to institute the management processes identified in section 3.2 of this paper, have them implemented, have them authenticated, and sustain and improve them over time. Identifying these costs and quantifying them in financial or other measures is a further cost. Hidden costs might include the creation of unwieldy management structures in order to achieve compliance, diversion of managerial effort from the 'main game' (a potential problem for enterprises that adopt for cosmetic reasons without real commitment to ethical conduct), and the risk that the BCMSS fails to deliver the benefits anticipated.

Measurement of benefits is another matter. The benefits are enhancements achieved or costs avoided as a consequence of adopting the standard. They represent advantages arising simply from adoption of the standard, that is efficiencies obtained by improvements to the management systems and responses to those improvements within the organization. Or, and perhaps more significantly, the benefits derive from the enhanced reputation that comes with public recognition of that adoption. They can include new business opportunities, less interference by or friction with regulators or the law, greater industrial harmony, and goodwill generating synergies. Some of these are quite nebulous benefits that do not easily submit to measurement; and none of them is readily attributed, causally, to adoption of the standard. We suspect that direct measurement of most benefits is unlikely in the short term. Meanwhile, indirect measures or indicators may serve some purpose. We suggest some indicators that can be relevant to SMEs and that that might prove helpful for assessing business conduct performance. They are change in the incidence / frequency of, and related expenditures / revenues from:

- civil litigation with customers, employees supplier, partners / associates, regulators;
- prosecutions for violations of legislation on: environment; workplace safety, discrimination, harassment; product performance and safety; corporations law;
- consultations with lawyers;
- industrial disputes;
- new customers /contracts;
- new business partnerships or alliances created;
- renegotiation in established relationships especially with regulators; and
- tax audits.

If public reporting about the adoption and compliance with a BCMSS is volunteered or required, we anticipate that businesses would seek ways to demonstrate the benefits over the costs, an incentive that could also contribute in time to the development of museful measures.

5. Concluding observations

These closing remarks, draw together some of the issues raised in the paper and provide pointers to opportunities for research in the standardisation of business conduct.

The general process by which ISO standards have been developed in the past (development by a core group of ISO members with some peripheral involvement by observer members and substantial majorities voting to endorse the draft standard) may not be appropriate for a BCMSS standard because its subject matters is so pervasive. It has important implications for communities, at national and global levels, as well as for the targeted business conduct, for instance whether the same or similar standards of conduct are to apply in the general society. Accordingly it may be essential that the development be undertaken by a broader or more representative collection of ISO members, or indeed that the development should not be limited to ISO but be done by a coalition that is more attuned to the interests and concerns of stakeholders outside the business community. Related to this is how, if at all, SME representation in the development phase might be better achieved and made feasible for members of this sector (eg through their industry associations).

The scope of the proposal for a standard is management systems for business conduct. We have assumed that the intention underlying this proposal is more importantly to achieve good /better business conduct than to achieve good/better management systems. The two do not necessarily go together since we could propose that the intention includes how to manage ethically corrupt business practices. This is not a facetious scenario for without doubt corruption does exist in business and in some societies it is thought to be the norm not the exception. If a BCMSS is to be truly global it seems it must somehow embrace, though not endorse, that corruption. Research to test the assumption that there is a correlation between the management system and actual ethical conduct and performance is warranted.

The EOA/ANSI proposal may present a particular outlook or interpretation of business conduct or the function of systems to manage business conduct. The canvassing of other views and interpretations is a potentially fruitful field for research and for influencing the policy outcomes. In particular the criteria for a concept of good business conduct and the essential common values that must be incorporated in and applied by a business conduct that is globally acceptable are major research questions.

We have emphasised the role of trust in business relations and the opportunity for a BCMSS to facilitate the building of justified trust. Whether this is achievable must depend in large part on the quality of the standard itself and the impact it has on business practice, but another factor is the suitability of an ISO standard to achieve that goal across all sectors and sizes of organistions. Consequently research opportunities exist to test the ‘one size fits all’ approach of the EOA/ANSI proposal by investigating how trust between business participants is best established and maintained in different relationships, in different sectors, in different industries and in enterprises of differing size. Another angle on the same theme is what relationships exist between the structure of an organisation and the business conduct

within an organisation. Internal organisational structures and choices of various forms of corporate and non-corporate organisation of the business activity could be examined.

For SMEs the relevance of a BCMSS appears to depend, above all else, on cost /benefit considerations. This is perhaps the area of greatest interest as it lends itself to the kinds of analysis especially familiar to economists. Some specific issues that we think deserve attention are:

- How are the costs and benefit to be identified, with special emphasis on benefits and on hidden costs and benefits?
- How are small business enterprises to achieve awareness and understanding of these costs and benefits?
- How are identified costs and benefits to be usefully measured; and by what criteria may some measures be deemed better than others?
- Is cost/benefit analysis sufficient? What other forms of analysis might usefully be applied to assess the value for SMEs of adhering to a BCMSS?
- Is cost benefit analysis appropriate to the question of determining the benefits of good business? Does it shut out of consideration perceptions, other than the teleological, of what ethical business conduct is?

Bibliography

An Interfaith Declaration (1993) *'A Code of Ethics on International Business for Christians, Muslims and Jews'*, Amman, Jordan.

Ayres, I. and J. Braithwaite (1992) *Responsive Regulation: Transcending the Deregulation Debate*, Oxford University Press, New York.

BATE (2002) 'Ethics Group Tries to Justify Work on a New Management Standard', *Business and the Environment* 8(2), February.

Burritt, R.L. and G. Lehman (1995) 'The Body Shop Wind Farm - an Analysis of Accountability and Ethics', *British Accounting Review*, September, 1995, Volume 27: 167-186.

Caux Round Table (1994) *Principles for Business* accessed at http://www.cauxroundtable.org/PRIN4.HTM on 18 June 2002.

Grace, D, and S. Cohen (20??) *Business Ethics*, 2nd ed., OUP, Sydney.

Friedman, M. (1970) 'The Social Responsibility of Business is to Increase its Profits', *New York Times Magazine*, 13 September.

Hartman, L. Pincus (2002) *Perspectives in Business Ethics*, 2nd ed., McGraw Hill New York, pp. 741-6. Reproducing Carlson, P. and M. Blodgett 'International Ethics Standards for Business'

Küng, H. (1998) *A Global Ethic for Global Politics and Economics*, Oxford University Press, New York.

Jubb, P. (1999) ' Whistleblowing: A Restrictive Definition and Interpretation', *Journal of Business Ethics*, vol 21, pp. 77-94.

Parkhe, A. (1993) Strategic Alliance Structuring: A Game Theoretic and Transaction Cost Examination of Interfirm Cooperation. *Academy of Management Journal* 36: 794- 829.

Pogge, T. W. (1989) *Realizing Rawls*, Cornell University Press, Ithaca , NY.

Rawls, J. (1973) *A Theory of Justice*, Belknap Press, Cambridge, MA.

Schaltegger, S. and R. L. Burritt (2000) *Contemporary Environmental Accounting – Issues, Concepts and Practice*, Greenleaf Publishers, Sheffield, UK.

Schaltegger, S., Pedersen, H. and R.L. Burritt (2003 forthcoming) *Environmental Management: An Introduction*, Greenleaf Publishers, Sheffield, UK.

Singer, P. (2000) *Writings on an Ethical Life*, Ecco Press, New York, pp.105-124.

Young, J.A. and L.U. Pelton (1995) *Strategic Alliances: are they relational by definition?* at http://www.sbaer.uca.edu/Research/1995/SMA/95swa336.htm accessed on 13 June 2002.

SMALL IS BEAUTIFUL IN A SUSTAINABLE PRODUCTION SYSTEM

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ABSTRACT

This paper examines the relationship between small enterprises and a sustainable production system. While some groups and countries have made significant progress in raising their living standards in the 20th century, the development model that has been adopted so far is one in which excessive emphasis has been placed on the economic aspects of development, a model that has generated significant inequities, a model that is not meaningful for the large majority of the world's population, and a model that may not be sustainable in the longer-term. These concerns have provoked a critical questioning of present forms and processes of development, and have led to a search for better and more viable alternatives; for instance, alternatives flowing from the concepts of sustainable development and sustainable management.

At the same time, significant changes are underfoot that are transforming the mass production system that has dominated many economies for most of the 20th century. These changes lead beyond the 'lean production system' and in the direction of what may be called a 'sustainable production system'. Some of the principal outcomes of the new production system lead to outputs of goods and services that are potentially available at 'anytime', 'anywhere', 'any kind', with 'no matter' and at 'no charge'. Furthermore, for many activities it would be feasible to 'do it yourself', guided by the imperatives of sustainability.

In that context, there are enhanced possibilities for small enterprises to play a more important role in a sustainable development process. Evidence of their potential contribution may be found among the small farms that practise sustainable agriculture, and in the emergence of dynamic local clusters connected to distributed production and service networks. From this perspective, progress in the future may be spearheaded not by the large mega-corporation but by the diversified and sustainable small enterprise.

INTRODUCTION

The recent economic crisis has demonstrated clearly that, for several Asian countries, the path towards higher levels of development is not a smooth one, and that success in the past does not assure future success in the development process. However, the difficulties lie not just in the relatively slow pace and the fluctuations of the development process but, more significantly, in the very nature of the development model that has been adopted so far. It is a model in which excessive emphasis has been placed on the economic aspects, a model that has generated significant inequities, a model that is not meaningful for a large proportion of the world's population, a model that is crisis-prone, and a model that may not be sustainable in the longer-term. These concerns have provoked questioning of present forms and processes of development, and led to a search for better and more viable alternatives; for instance, alternatives flowing from the concept of 'sustainable development'.

Increasingly, business organisations too must incorporate sustainability concerns into their activities. This also has to be related to the significant changes that are presently transforming the mass production system (MPS) that has dominated many economies for most of the 20th century. These changes lead in the direction of what may be called a 'sustainable production system' (SPS). Some of the principal outcomes of the new production system lead to outputs of goods and services that are potentially available at 'anytime', 'anywhere', 'any kind', with 'no matter', at 'no charge', and you can 'do-it-yourself'.

These developments have major ramifications for SMEs, as they play a significant role in most countries.[1] SMEs are particularly important in developing countries, because of the large aggregate number of people that they employ. In many developing countries, SMEs represent almost the only employment opportunity available to a large proportion of the population. In addition to creating jobs, they play a major role in the evolution of a dynamic private sector and serve as a significant force for economic growth. Their small size, flexibility, and proximity to local markets enable them to be responsive to changing market conditions. In addition, they provide possibilities for promoting empowerment, security and opportunity. Where economic growth occurs, and the number of small and medium-scale enterprises increases, they serve as a major force promoting upward social mobility, by increasing employment and drawing in people from lower-productivity occupations (IFC, 2000, p.15).

On the other hand, however, SMEs face significant constraints. Owing to their smaller scale, they tend to have more limited resources (including knowledge, skills, technology, finance and influence) and, consequently, to be more marginal and more unstable. Furthermore, they are more vulnerable to market and institutional failures, and they also confront more problems with corruption and crime (Hallberg, 2000; Schiffer and Weder, 2001). Consequently, any development that helps to reduce their difficulties and vulnerabilities, and to enhance the positive contributions that SMEs can offer, has the potential to lead to very significant improvements.

[1] There are various definitions for SMEs (see Kayanula and Quartey, 2000, pp.6-10). For our purposes it may be useful to adopt UNIDO's definition for developing countries, in which large enterprises have 100 or more employees, medium enterprises have 20 to 99 employees, small enterprises have 5 to 19 employees, and micro enterprises have less than 5 employees (Elaian, 1996).

In this respect, it is arguable that a SPS offers several possibilities for the capabilities of SMEs to be enhanced significantly. This is due to the other characteristics of SMEs, including their spontaneity (ease of materialising into existence), flexibility (adaptability), diversity (variety), and multiplicity (ubiquity). These characteristics may enable SMEs to capitalise significantly on the tendencies emanating from the SPS. In particular, the deflationary tendency ('no charge') will assist to lower financial barriers to entry, reduce operating costs, and increase access to resources. These are complemented by the other SPS tendencies ('anywhere', 'anytime', 'any kind', 'no matter' and 'do-it-yourself'), which would further enhance SME capacity for spontaneity, flexibility, and diversity. If these enhanced capabilities are directed effectively towards the promotion of sustainable development, in time, this contribution could counteract very substantially the effects of the various difficulties that are currently afflicting several Asian countries.

This paper proceeds as follows: Section 2 examines the crisis of development in Asia. The analytical framework is presented in the next two sections, where Section 3 identifies four principal dimensions and associated imperatives of sustainable development; while Section 4 examines the evolution of production systems, with a particular focus on the transition from the mass production system to a sustainable production system. To support the analytical framework, Section 5 provides empirical evidence that small farms can play a significant role in promoting sustainable agriculture, and Section 6 provides evidence of the dynamism of small firms in industrial clusters and global production networks. Finally, Section 7 provides the major conclusions about the possibilities for sustainable production.

The crisis of development in Asia

Development in Asia was focused largely on the economic realm, with 'trickle down' benefits to the poor. When growth rates were relatively high for two or more decades, this strategy appeared to succeed. However, there were two important shortcomings. First, while many people escaped from poverty through this process, disparities were widening. Secondly, when the economies were buffeted by the crisis, the social safety nets were absent or grossly deficient to cope with the resulting demands. Consequently, while poverty had been reduced significantly during preceding decades, the economic crisis in Asia resulted in many people sinking back into poverty.

While much blame for the economic crisis has been placed on domestic factors within the affected Asian countries, broader external factors were also involved. Dieter (1998, p.24) argued that while mistakes were made in the affected countries, "The more important causes of the crisis were the flow of 'hot money' into Southeast Asia, the sudden withdrawal of capital and the speculation against the currencies … The world financial system … failed to provide both adequate warning signals as well as solutions once the Asian crisis developed." Cheah (2000a, pp.102-108) also suggested that, from a global evolutionary perspective, the so-called Asian crisis is part of a larger systemic process of relative convergence and divergence, of 'catching-up' and 'slowing-down', in the development process. In this process, development does not occur in the form of continuously harmonious evolutionary change. Indeed, crises are an inherent feature of this process (see Stiglitz, 1998). They contribute to periodic major discontinuities in the development process, and lead to radical shifts towards new forms and directions.

Furthermore, efforts to promote economic development in Asia incurred significant environmental and social costs (Kurien, 1991; Brookfield and Byron, 1993; Howard, 1993; Barraclough and Finger-Stich, 1996; and Glover and Jessup, 1999).[2] Even in countries that have been successful in the pursuit of economic development, attention to environmental concerns has been limited and constrained (Perry and Teng, 1999). In Asia, many enterprises continue to engage in practices that are grossly detrimental to the local and wider environment. Recent occurrences that came to public notice include the events that contributed to the explosion at the nuclear materials processing plant at Tokaimura in Japan on 30 September 1999; the extensive smog over Indonesia, Singapore and Malaysia resulting from the repeated practice of land clearance by the use of fire over several years; and the problems resulting from the OK Tedi mine in Papua New Guinea (Harper and Israel, 1999) and elsewhere. The enterprises and other actors involved in the situation may also not willingly change or improve their practices (Dasgupta, Wang and Wheeler, 1997b; Banks, 1999).

While business enterprises are keenly aware of the need for economic sustainability, and the more enlightened ones are increasingly conscious of the need for ecological sustainability, very few are attuned to the importance of social sustainability in their operations. For some, corporate philanthropy serves to enhance corporate image and public goodwill towards the enterprise, but the organisations' operations are not directly concerned with, and consciously geared towards, poverty alleviation, reduction of social inequity, tensions and conflict, or the direct enhancement of the community's social well-being. These enterprises knowingly, or unknowingly, adopt the philosophy that "the business of business is business," and that social and other needs in the community and society are the concerns of 'others', such as the government or charitable and non-profit organisations.

However, in the aftermath of the crisis, popular concern has increased over the rise in poverty, widening social disparities, corruption, foreign domination, and exploitative employment and trade practices. Firms that have been subjected to criticism include McDonald's (Wong, 2000; Vidal, 1998) and Nike (UNITE, 2000). Criticisms have also been directed against the World Bank and, in particular, the IMF (Oxfam International, 2000).[3] During the crisis, Oxfam International (1998, p.8) highlighted the "discrepancy between the macroeconomic framework of the IMF, and the social policy framework of the World Bank. In effect, these are pulling in different directions. The World Bank is in the hapless position of erecting social safety nets which are collapsing under the weight of rising poverty and the mass unemployment resulting from IMF programs." This discord compounded both the economic difficulties and the social strains.

Furthermore, the times immediately ahead are likely to be more difficult. In the near future, we are likely to see, in a more forceful fashion, the collapse of other established companies, and the (further) disintegration of some previously viable economies. In

[2] One study of the consequences of economic development in China reported, "Unfortunately, serious environmental damage has accompanied . . . rapid growth. Many of China's waterways are close to biological death from excessive discharge of organic pollutants. In many urban areas, atmospheric concentrations of pollutants such as suspended particulates and sulphur dioxide routinely exceed World Health Organisation safety standards by very large margins. As a result, hundreds of thousands of people are dying or becoming seriously ill from pollution-related respiratory disease each year" (Dasgupta, Wang and Wheeler, 1997a, p.1). See also: http://www.worldbank.org/nipr/china/video/index.htm

[3] See also Bello, et al., 1982; Danaher, 1994; Chossudovsky, 1997; Boafo-Arthur, 1999.

these circumstances, it would be necessary to look ahead at least a decade or more, after the combined crises have demolished the present tottering financial and industrial structures. Then it would be necessary to rebuild from the debris of the collapse new industries, institutions and production systems that are more sustainable and more appropriate for the twenty-first century. It is principally in relation to that future context, not just the present one, that attention must be focused. In that respect, the problems that have emerged demonstrate the need for new thinking and new development strategies.[4]

Towards sustainability: from ecology to the quadruple bottom line

The rising interest in issues relating to sustainable development,[5] corresponded with growing concerns that the previous dominant focus on economic growth, in general, and the gross national product, in particular, have been severely inadequate, unbalanced and even deceptive (Cobb et al., 1995; Cobb et al., 1999). Initial concerns over sustainability centred around the issues relating to environmental and ecological sustainability, resulting from concerns raised, among others, by Carson (1962), Meadows, et al. (1972 and 1992), and Lovelock (1979).[6]

Subsequently, the World Commission on Environment and Development helped to expand sustainability concerns to include economic and social aspects. This led to the concept of the 'triple bottom line', a significant extension beyond the traditional concerns solely with commercial profitability (the conventional 'bottom line') of business enterprise. In this regard, Robinson and Tinker (1998, pp. 14, 22) identified the economy, the ecological system, and human society as three interconnected, overlapping and coequal 'prime systems', with corresponding imperatives, namely: *the economic imperative* is to ensure and maintain adequate material standards of living for all people; *the ecological imperative* is to remain within planetary biophysical carrying capacity; and *the social imperative* is to provide social structures, including systems of governance, that effectively propagate and sustain the values that people wish to live by.[7]

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[4] In this regard, the experiences of Indonesia, Argentina, Russia and other countries seeking to recover from crisis suggest that the economic liberalisation, privatisation and associated free market 'solutions' offered by the IMF, and other orthodox policy advisors, should be treated with caution. As Wedel (1998) reported, "After seven years of economic 'reform' financed by billions of dollars in U.S. and other Western aid, subsidised loans and rescheduled debt, the majority of Russian people find themselves worse off economically. The privatisation drive that was supposed to reap the fruits of the free market instead helped to create a system of tycoon capitalism run for the benefit of a corrupt political oligarchy that has appropriated hundreds of millions of dollars of Western aid and plundered Russia's wealth."

[5] The concept of sustainable development has been broadly defined as development that "meets the needs of the present without compromising the ability of future generations to meet their own need . . . Sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with the future as well as present needs" (World Commission on Environment and Development, 1987).

[6] These concerns have continued with more recent work by Leakey and Lewin (1995), Colborn, et al., (1996), and others.

[7] It may be suggested that specific concerns for morality and the ethical imperative could receive appropriate attention in this sphere. However, in practice they have not, and other social concerns relating to poverty, inequality, and other matters have dominated this space, to the exclusion of specific attention to values and ethics.

Robinson and Tinker (1998) pointed out that these three imperatives are interconnected and mutually reinforcing, with direct and indirect effects on each other, such that "any attempt to address one system in isolation not only runs the risk of intensifying problems in the other systems, but also may give rise to feedback effects from the other systems which overwhelm the effects of the first intervention" (p.24), and "addressing any of these issues in isolation, without considering their interacting effects, can give rise to unanticipated higher order consequences in other realms, which cause problems of their own or undercut the initial policies" (p.12).[8] Furthermore, they claim that "anthropogenic stress generated on a global scale is increasing in all three prime systems" (p.17), and that "accurately predicting system change in response to stress . . . requires greater knowledge than we have at present. Such change often goes in counter-intuitive directions" (p.18).

From this perspective the crux of sustainable development lies in the fact that satisfying any one imperative without also satisfying the other two is unsustainable; because each is independently crucial to societal functioning, each is urgent in light of the scope and scale of problems currently being faced in the world, and each of the three imperatives are interconnected. Consequently, "addressing any one of the three imperatives in isolation virtually guarantees failure. Nevertheless, this is what current policy-making commonly does" (Robinson and Tinker 1998, p.24).[9] Specifically, "the current tendency is to concentrate on the economic imperative combined with a *post hoc* attempt to reconcile this with the ecological imperative, while ignoring the social imperative and its questions of North-South and intra-country equity" (p.35). In contrast, Robinson and Tinker see the necessity for an integrated approach that explicitly and jointly addresses all three prime systems in a complementary manner that can generate positive synergies.[10]

Whilst Robinson and Tinker have significantly enhanced the analytical foundations of the sustainable development framework, an explicit recognition and incorporation of an ethical imperative could further strengthen that analytical framework and the sustainable development process. Indeed, the evidence demonstrates that unethical practices undermine significantly the efficacy and viability of the overall development process (Gill, 1998; Haq, 1999, pp.95-110; Mirsky, 1999; Hawley, 2000; UNDP, 2000). Such considerations highlight the need to extend the original three-dimensional sustainable development analytical framework to include explicitly an ethical dimension focusing on the 'value system' (Anderson, 1997). Furthermore, the quest for

[8] They provide the example that "raising energy prices significantly to reduce energy emissions will disproportionately affect poorer citizens, thus increasing income disparities and contributing to social unsustainability" (Robinson and Tinker, 1998, p.12).

[9] In this regard, Oxfam International (1998, p.8) emphasised that "it is crucial that the artificial separation of social and economic policy be ended. Human development and poverty considerations should be integral parts of the macro-economic policy framework, which is currently dominated by narrow – and deeply flawed – financial targets. Second, an institutional framework must be created within which the IMF and the World Bank can provide a more integrated response to financial crisis. The alternative is for the World Bank to continue its present policy of arriving after the event in a largely futile effort to counteract the negative consequences of IMF prescriptions."

[10] They suggest that this integrated approach should incorporate two sets of policy measures that aim to promote 'dematerialisation' of the economy and 'resocialisation' of the society. The former involves the uncoupling of (a) economic growth and improvements in living standards (consumption of goods and services) from (b) increased consumption of energy and materials (for instance, by further development and greater utilisation of more environmentally benign technologies). The latter involves the uncoupling of (c) human well being from (a), for instance, by greater participation in the informal economy.

sustainable development at the national and international (macro) levels requires a corresponding concept, 'sustainable management', at the organisational and enterprise (micro) level (Cheah and Cheah, 2002); that is, management directly focused on the creation and effective management of economically, ecologically, socially and ethically sustainable enterprises. Where business enterprises had previously focused their concerns and activities largely, or completely, on competitiveness and the creation of material wealth (measured by various indicators of profitability),[11] in the future enterprises will need to adopt broader and more balanced foci to include concerns for habitability (measured by various indicators of eco-efficiency), community (measured by various indicators of quality of life), and legitimacy (measured by indicators of corporate reputation, corporate social responsibility, and ethical investment).[12] The specific foci and criteria for these four dimensions are identified in Table 1.

Thus, an extended sustainable development framework would incorporate four principal dimensions and associated imperatives: (a) the *economic imperative*, that is, business activities must be economically profitable, (b) the *ecological imperative*, that is, the activities must also be ecologically friendly and not damaging to the environment, (c) the *social imperative*, that is, in addition to individual or private gain, the activities must also promote community and societal well-being, for instance by reducing social divisions, inequity and conflict, and (d) the *ethical imperative*. The ethical imperative may be defined simply and positively as a moral responsibility to 'do the right thing', or alternatively as the admonition to 'do no harm'.[13]

[11] In this regard the maxim that 'greed is good', pronounced by the fictional Wall Street financier, Gordon Gecko, is matched by China's former Premier Deng Xiao Ping's exhortation "to get rich is glorious."

[12] From this perspective there has been an excessive dominance of economics and the profession of economists in the public policy arena, as well as an excessive emphasis on competitiveness by Business Schools and the management profession in the corporate arena.

[13] Confucius expressed it as follows: "Do not unto others what you would not have them do unto you" (Analects 15:23); while the Judeo-Christian tradition advised followers to "Do unto others as you would have them do unto you." More recently, Immanual Kant's Categorical Imperative advised that "we should act in such a way that we could wish the maxim of our action to become a universal law."

Table 1. The Quadruple Bottom line
Dimensions, foci and performance criteria for sustainable management and sustainable development

Dimension	Focus	Corporate performance criterion	Societal performance criterion	Global Performance criterion
Economic imperative	Competitiveness	Corporate profitability	Societal wealth[14]	Global wealth
Ecological imperative	Habitability	Corporate eco-efficiency[15]	Societal eco-efficiency	Global eco-efficiency
Social imperative	Community	Corporate reputation[16]	Societal quality of life[17]	Global quality of life
Ethical imperative	Legitimacy	Corporate Values	Societal values	Human values
All Dimensions	Combined foci	Sustainable management index[18]	Sustainable development index[19]	Sustainable development index

Based on these guiding principles, further progress can be made to promote sustainable management and sustainable development, which have become increasingly important concerns among researchers, governments, NGOs and development organisations (see Douthwaite, 1999; GRI, 2000; UNRISD 2000; Wheeler, et al., 2000). Increasingly business organisations too, including SMEs, must incorporate sustainability issues into their planning and operational activities. For business enterprises, sustainability, or the

[14] An improved version of, or an alternative to, the orthodox gross national product (GNP) should be formulated for the societal (and the global) wealth indicator (SWI). At the very least the *gross* national product should be converted to a *net* national product, after appropriate offsets of the associated costs and disbenefits imposed on people and society by certain aspects of wealth creation and related activities.
[15] See WBCSD (1999).
[16] See Fombrun (1986); Kahn, et al. (1999).
[17] This should take into account the 'human poverty index' (UNDP, 2000). Another relevant concept is the 'index of social progress' (Estes, 1992). See also Hirschhorn (2000).
[18] See the sustainability reporting guidelines presented by GRI (2000). For the rising trend in socially responsible investment or ethical investment, see Social investment Forum (2001).
[19] Existing relevant concepts include the 'human development index' (UNDP, 2000) and the 'genuine progress indicator' (Cobb, et al., 1999). Another intriguing concept, adopted in Bhutan, is that of 'gross national happiness'. See: http://www.unicef.org/bhutan/kingdom.htm

concern for long-term viability, also includes four main dimensions: (a) economic sustainability, that is, business activities must be economically profitable, (b) ecological sustainability, that is, the activities must also be ecologically friendly and not damaging to the environment, (c) social sustainability, that is, in addition to individual or private gain, the activities must also promote community and societal well-being, for instance by reducing social divisions, inequity and conflict, and (d) ethical responsibility, that is, provide adequate regard to moral responsibility, and corporate reputation. In this respect the quest for sustainable development at the national and international (macro) level must complement 'sustainable management', at the organisational and enterprise (micro) level; that is, management directly focused on the creation and effective management of economically, ecologically, socially sustainable and ethical enterprises.

Thus, while economic viability has been a traditional concern of private enterprises, at present and in the future this concern can no longer be pursued with a narrow focus (see de Bono, 1992, Prahalad, 1997; Harman and Porter, 1997). Private enterprises need to be more concerned about both the immediate environmental effects and long-term ecological impact of their activities (WBCSD, 1996 and 1999), and the social impact on the present well-being and future viability of communities (see Yunus, 1999). These concerns also need to be linked to a humane value system that upholds the sanctity of diverse life forms and the need for their protection and nurturing to promote local and global sustainability. Furthermore, the continuing evolution of the existing production system will need to incorporate these concerns in the process of its metamorphosis into a sustainable production system.

THE EVOLUTION OF PRODUCTION SYSTEMS

In the past, the production system had evolved from the craft production system (CPS) dominant in pre-industrial economies, to the mass production system (MPS) that has dominated the industrial economies. In recent decades, various developments have led to significant changes in the mass production system that dominated the major economies in the 20th century. These changes have been described as 'flexible specialisation' (Piore and Sabel, 1984), 'diversified quality production' (Streeck, 1991), 'productive diversity' (Cope and Kalantzis 1997), and 'mass customisation' (Pine 1999). These developments have been characterised by Womack et al., (1990) as constituents of a lean production system (LPS). In the 21st century, the imperatives of sustainability will contribute to further substantial changes in the lean production system, which will evolve eventually into what may be termed as a sustainable production system (SPS).

The SPS refers to the emergence of a relatively new technological and organisational configuration, significantly different from the technological and organisational features of the MPS. Firstly, the SPS benefits from the use of the new information and communication technology. This changes the dynamics of the production and communication process radically. According to Jain (1992, p.245), it provides the capacity for decentralised production, de-scaling, better use of local resources and skills, reduced effluent discharges, improved energy efficiencies, and lower capital/labour ratios. Each of these benefits would be significant; in combination they have the capability to be revolutionary. The outcomes for product or service delivery in this shift from MPS to SPS are manifested in at least eight distinct dimensions: (a)

location (b) time, (c) variety (d) material, (e) price, (f) provider, (g) scale, and (h) focus (see Table 2).

Table 2
Tendencies of the Old and New Systems of Production

Dimension	Old tendencies of the Mass Production System	New tendencies of the Sustainable Production System
Location	The product or service is available only at specific or limited locations.	The product or service is available every where (anywhere).
Time	The product or service is available only at specific or limited times.	The product or service is always available (anytime).
Variety	The product or service is available only in specific or limited forms.	The product or service is available in multiple or customised forms (any kind).
Material	The product is tangible and bulky.	The product is miniaturised, or intangible, or available as a service (no matter).
Price	The product or service is available at a price.	The product or service is available for free (no charge).
Provider	The product or service is provided by others.	The product or service can be self-catered (do-it-yourself).
Scale	Production or service provision is dominated by large mega-corporations.	Products or services are offered by a wide range of providers of varying scale (scalability).
Focus	Production or service provision is focused on short-term market performance.	Production or service provision is focused on long-term viability (sustainability).

Location: The emergence of global production and marketing networks is leading to a tendency where various forms of production and marketing can potentially be undertaken anywhere. The possibility for large and relatively rapid capital, technology and other resource flows to various locations in the world mean that the Ricardian concept of 'comparative advantage' based on natural resource endowments is increasingly invalid. Instead, 'competitive advantage can be directly and institutionally created and enhanced (see Porter, 1990 and 1997; North, 1990). At the same time, in the shift away from mass production and mass marketing, niche production and niche marketing assumes increasing importance. The growing importance of production and

marketing niches raises the significance of the capacity to identify and capitalise on niche locations. In this regard, some small enterprises may have greater advantages over large enterprises in identifying, responding to and reaching niche locations more effectively.

Time: The new dynamics of production are leading to outcomes where there is a tendency that customers are served the product or service that they desire in the shortest possible time. Improvements in this capability lead to a tendency where the desired product or service becomes available at any time. This can be seen in the examples of home delivery of pizza in the case of products, and home banking in the case of services. In the ultimate, it generates a tendency towards immediate gratification of consumer wants the moment they are conceived. To facilitate this possibility, organisations will need to endeavour to create "real-time structures; structures that change continually in tiny increments, not in large static quantum jumps. Each change is so minute that the overall effect is one of a structure in constant, seamless motion" (Davis, 1987, p.41). Concomitantly, the notion of 'niche timing' becomes important in this regard, as windows of opportunity appear and disappear more fleetingly. In this regard, certain small enterprises may have greater advantages over large enterprises in identifying and responding more quickly to these fleeting windows of opportunity.

Variety: Another significant change resulting from the new dynamics of production is the increasing range and diversity of products and services. This can be observed in the evolution from the corner grocery store to supermarkets, to shopping emporiums and shopping malls. Indeed, customers are now capable of being offered not just a range of goods and services produced in one location, but from throughout the globe.[20] This is complemented by the shift from mass production towards mass customisation (see Davis, 1987, pp.140-190; Pine; 1999). In the ultimate, the tendency is that customers will be able to have any kind of good or service tailored to their specific desires or specifications, at any time and anywhere. In this regard, the ability of a growing multiplicity of small and diversified enterprises to produce and market a large range of niche goods and services will also help to fulfill the requirements of mass customisation.

Material: Another significant outcome is the development of products that use less or no materials, for instance new (digital) cameras that do not require film.[21] The miniaturisation of products has led to a dramatic shrinking of the space that they previously occupied. This is illustrated most vividly by the evolution of main frame computers to palm-held portable computers, but the process is also observable in many other products; for instance, the encapsulation of the 32-volume contents of Encyclopaedia Britannica (plus dictionary and world atlas) within one DVD-ROM.[22] This spatial contraction has generally been accompanied by increased product capability, functionality, sophistication and, consequently, value. Miniaturisation and increased portability means that transportation constraints are reduced tremendously,

[20] For an account of how water, bottled in Fiji, is exported to the USA to compete against 600 versions of this product, see Cossar (2000, pp.20, 22).

[21] Ayres (1996), and Robinson and Tinker (1998) suggest that 'dematerialisation' is a positive development that promotes sustainability. See also Larson, Ross and Williams (1986), and Gershuny (1978).

[22] There is also an online subscription option for those who do not wish to be encumbered by the physical constraints of a DVD-ROM.

such that products and services can be more easily delivered any time and anywhere. The growth of the Internet is only one means through which this process is being spread and intensified. Consequently, "The meaning of market 'place' is being fundamentally transformed for both the seller and the buyer" (Davis, 1987, p.56). These developments also make it more feasible for small producers and traders to enter the market.

An even more significant development in the shift away from materials is related to the rapid expansion of services in the economy. This has accelerated the shift away from tangibles such as physical resources towards intangibles (no matter) such as information. This has the important consequence that economic activity is shifting away from resources that are potentially and/or actually finite, to resources (for example information) that are potentially or actually infinite. Indeed, the increasing importance (value added) of intangibles attaches both to goods as well as services. According to Davis (1987, p.99), "in the new economy, both inputs (resources) and outputs (goods and services) are increasingly intangible, and value will increasingly be attached to intangibles."[23]

Price: There has been a deflationary tendency leading towards a general fall in prices (see Davidse, 1983, pp.127-128, Makridakis, 1989; Shilling, 1998); and secondly, to a growing number of products and services becoming available at no charge. Software that is freely and legally available to be downloaded from the Internet provides examples of the latter. Free access to the online contents of a host of online libraries, as well as many other resources on the World Wide Web, provide other examples. This does not mean that no revenues will be available to private producers of such goods and services; only that not all elements of the products and services that are provided, even in the private sector, will be transacted at a price. Nevertheless, it is intriguing that it may be postulated as a general tendency that goods and services will become progressively cheaper, and that many privately produced goods and services will assume the characteristics of public ('free') goods (see Gross, Coy and Port, 1995).

The deflationary tendency in relation to raw materials, equipment and machinery, finance and other inputs will contribute to the lowering of barriers to entry for more small enterprises. These also enhance the ability of small enterprises to reduce their production costs and to lower prices of their outputs, or to upgrade their operations and products. This process will encourage more competition, and also broaden and intensify the deflationary tendency even further. At the same time falling price levels will encourage a rise in demand, with the possibility that profits may rise despite a decline in unit price. By such means small enterprises, with their lower overhead costs, may thrive where larger enterprises cannot survive.

Provider: An increasing range of goods and services are self-made or self-serviced. That is, there is a growing capacity to shift from 'do (make) it for me' to 'do (make) it yourself'. Indeed, according to Kelly (1997, p.188), "The Network Economy rewards schemes that allow decentralized creation . . . . An automobile maker in the Network Economy will establish a web of standards and outsourced suppliers, encouraging the web itself to invent the car, seeding the system with knowledge it gives away, engaging as many participants as broadly as possible, in order to create a virtuous loop where

[23] See also Itami (1987).

every member's success is shared and leveraged by all." In this regard, it is noteworthy that, more than two decades ago, Gershuny (1978, pp.145-151), had perceptively predicted that in post-industrial society the household would become more important in production as well as in consumption. This tendency would lower significantly the minimum scale for an enterprise as well as other entry barriers, increase collective flexibility and responsiveness, and increase competition and innovation.

Scale: Systems will become radically more 'scalable'. Decreasing economies of scale, increasing economies of scope and other processes, described above, lead away from the tendency for production to be dominated by large, unsustainable mega-corporations based on monopolistic competition under the regime of the MPS (see Ginzberg and Vojta, 1985; Estes, 1996; Lawler, 1997; Korten, 2001), and towards a tendency for production to be organised and managed by a wide range of small and diversified enterprises based on organic, self-organising principles (see Miles, et al., 1997; Townsend, et al., 1998; Korten, 1999; Weinberger, 2002) The deflationary tendency in relation to raw materials, equipment, machinery and other inputs, contributes to the lowering of barriers to entry for small enterprises. It also enhances the ability of smaller enterprises to reduce their production costs, lower prices of their outputs, and to upgrade their activities and, thus, to become more competitive.

These improvements, in combination with the option to do-it-yourself (internalise activities) if necessary or desired, and the external economies from the division of labour in the cluster or network, will help to enhance the flexibility of small enterprises, expand opportunities for creativity and adaptivity, and strengthen their capabilities to produce 'anywhere', 'anytime', 'any kind' (see Sturgeon, 1997). These tendencies are complemented by the growing reliance on intangible inputs such as information and knowledge, and the relative diminution in the contribution of tangible inputs. When information, knowledge and production capabilities become more widely diffused, it will become much more feasible to 'do-it-yourself' and to focus on 'sustainable abundance'. Then, small may indeed be beautiful (see Schumacher, 1974).

Focus: In the MPS, the focus on cost minimisation generated a tendency towards 'zero cost'. Subsequently, the Toyota production system added emphases on 'zero defects' and 'zero inventory' (Womack et al., 1990; Monden, 1993). In the SPS, management focus will shift from short-term market performance to longer-term multi-dimensional sustainability, pursued in a parallel and integrated fashion. In this regard, Pauli (1995) noted that, after the quest for 'zero defects' and 'zero inventory', the new industry clusters of the twenty-first century will be focused on the search for 'zero emissions'. This would "give rise to an industrial integration quite distinct from the vertical integration traditionally sought after by industrial groupings. Sectors which seem to have little in common will become closely linked" (Pauli, 1995, p.147). Furthermore, he noted, "If manufacturing is based on a decentralised concept with lower levels of economies of scale, then it will be better equipped for global competition. It represents lower levels of capital investment, easier adaptation to changes in demand, and greater involvement of local capital. The lower level of economies of scale will facilitate environmental stewardship. After all, it is easier to take care of waste in a small operation than in a 10,000 employees, billion dollar turnover type of operation" (Pauli, 1995, pp.149-150. See also Pauli, et al., 2000). Beyond the environmental concerns driving the quest for 'zero emissions', growing social and ethical concerns will spur the quests for 'zero inequity' and 'zero harm'. Concerns over standard of living will be

supplanted by concerns over the quality of life, and the search for 'sustainable abundance'.[24]

These characteristics of the old versus the new dynamics of production are summarised in Table 2, which identifies the eight *general tendencies* that lead ultimately to the provision of goods and services 'anywhere', 'anytime', of 'any kind', with 'no matter', and at 'no charge'. Furthermore, you may 'do it yourself', guided by the imperatives of sustainability and the enhanced possibilities for small enterprises. The process of dynamic interactions between these tendencies has the capacity to produce increasing returns based on enhanced system efficiency.[25] This refers not just to improvements within individual enterprises but, more importantly, to a metamorphosis into a global distributed production or service network with significantly enhanced overall outcomes. At present, the possibilities for a SPS still exist only in an early or embryonic form. In this situation, the challenges require an ability to visualise the possibilities ex ante, and the capacity to effectively transform possibilities into reality globally. For this purpose we may draw support from a closer examination of the embryonic forms of a SPS that may be observed in small farms and among industrial clusters and networks.

The sustainability of small farms

Possibilities for sustainable enterprises may be illustrated by various developments that have been observed in agriculture, in particular the sustainability of small farms. Contrary to the common perception of the superiority of large farms and extensive agriculture, focused on monocultures that need large tracts of land to be cleared of their original vegetative cover, and that are heavily reliant on capital intensive mechanisation, chemical fertilisers and pesticides and, increasingly, on genetically modified plant varieties, there is growing evidence that small farms using low-input, natural farming methods are more sustainable (D'Souza and Ikerd, 1996; van Zyl and Miller, 1996; Rosset, 1999; Kwa 2001; Pretty and Hine, 2001; von der Weid and Tardin, 2001; Stabinsky and Sarno, 2001).

In terms of economic performance, significant evidence indicates that small farms have higher overall output and total factor productivity per unit of land cultivated than large farms. In ecological terms, widespread land clearance, deforestation and the strong reliance on chemical fertilisers and pesticides on large farms is more damaging to the long-term fertility of the soil, to the environment, and to human health (Ikerd, 1995; Pretty, 2000a and 2001). In its social impact there are serious adverse consequences for the well being of the people who previously farmed in those areas with very different methods (Shiva, 2000; Posner, 2001; Rosset, 2001). Among other effects, capital-intensive mechanised agriculture leads to employment losses, impoverishment and undermining of rural communities, and displacement of population from rural to urban locations. These may compound the problems of unemployment, poverty,

[24] Examples of companies that have sought to integrate such sustainability concerns into their operations include the Body Shop, Interface Inc., and the New Belgium Brewing Company. See: Roddick (2001), Anderson (1999) and http://www.terrain.org/articles/wann.htm

[25] See Young (1928), Arthur (1990 and 1996), and Schmitz (1997). Other related concepts referring to multiple-orders-of-magnitude improvements are 'factor four' (von Weizsacker, et al., 1997) and 'factor ten' (see: http://www.factor10-institute.org/Factor10.htm and http://www.factor10-institute.org/F10Manif.pdf).

overcrowding, pollution, corruption, crime, and stresses on housing, health and other infrastructure in urban areas.[26]

Despite these problems, there are strong vested interests that support the continuation and further extension of industrial forms of agriculture, most recently in the form of genetic modification of food crops. The purported rationale for this has been to address food shortages, declining productivity, hunger and malnutrition in the world (among others, see Adamu, 2000; de la Cruz, 1999; Sharma, 1999; Zhang, 1999). However, various studies have demonstrated that, while there is famine, hunger and malnutrition in some parts of the world, the proposition that there is a general scarcity of food in the world is a myth[27] (see Sen, 1981; Lappe et al., 1998; Mittal, 2000). A stronger criticism maintains that it is in fact the dominance of industrial agriculture that leads to displacement, marginalisation and impoverishment of a substantial proportion of the population, and that contributes to growing disparity, poverty, lack of access to resources for basic needs, hunger and malnutrition. For instance, without rights to resources and income, people lose their right to food.[28] Thus, further increases in food production through unsustainable forms of industrial agriculture, whether through the so-called 'green revolution' or the 'gene revolution', will not solve the problems of hunger and malnutrition (Altieri and Rosset, 1999; Rosset et al., 2000; Rosset, 2000a; Wertheim, 2000). What are necessary are forms of sustainable agriculture that also address the causes of poverty and inequality. It is in this respect that small farms may offer a significant contribution.

One of the most striking examples of the development of sustainable agriculture based on small farms may be observed in Cuba (Enriquez, 2000; Rosset, 2000b). Following the dissolution of the former USSR in 1991 and consequent cessation of support from the Soviet-led Council of Mutual Economic Assistance (COMECON), Cuba was deprived of material aid, production inputs and preferential access to export markets for its agricultural products, such as sugar and rice. These agricultural exports flowed from development policies and a production system that was biased against smaller private farms, and in favour of large state farms that relied on mechanised farming methods, chemical fertilisers and pesticides, with the associated population migration away from rural areas.

[26] Ikerd (2001a, p.7) has contended that "Virtually every environmental and social problem today can be traced to overuse, or misuse of the corporate, industrial paradigm of development."

[27] Prof Jean Ziegler, UN Special Rapporteur on the Right to Food, reported that, in 2000, 36 million people died of hunger or hunger-related illnesses, and over 800 million people were seriously and chronically malnourished. However, he emphasised explicitly that: "Hunger and malnutrition are not dictated by fate or a curse of nature; they are manmade. To die of hunger is to be murdered; a silent genocide. This silent tragedy occurs daily in a world overflowing with riches. A world which already produces enough food to feed the global population of 6 billion people. According to the UN Food and Agriculture Organisation, we can produce enough food to feed 12 billion people. . . ." Thus the problem is not one of food scarcity, but principally one of unequal wealth distribution and widening disparities. Citing World Bank data, Ziegler noted that "average income in the richest 20 countries is 37 times the average in the poorest 20 countries, a gap which has doubled in the last 40 years. More people live in extreme poverty now than 10 years ago. The equation is simple: those who have the money eat, those without suffer from hunger and often die" (Posner, 2001, p.3).

[28] The French organisation Action contre la Faim (Action against Hunger) noted starkly that, "Many poor people around the world do not get enough to eat because food production is geared to cash payment" (Ziegler, 2001, p.5).

The dissolution of COMECON resulted in a crisis that compelled major policy changes that led to the diversion of land from former state farms to smaller-scale cooperative and individual farming arrangements, to avoid potential food shortages by permitting people to grow their own food. More importantly, it led to a transformation away from the previously dominant method of agriculture in Cuba, in the form of heavy mechanisation and high inputs of chemical fertilisers and pesticides to produce monocultures such as sugar and rice for export, towards greater reliance on lower-input organic and natural farming practices geared towards mixed crops such as vegetables, root crops and bananas, for direct consumption and for sale in local markets, increasingly through direct marketing efforts by the producers themselves. This turn towards smaller-scale production and more direct incentives for increasing output has led to greater benefits for both producers and consumers. According to Enriquez (2000), at present "providing everyone who wants to farm with access to land is a key priority of the Cuban government . . . . Where de-peasantisation is becoming the accepted norm in most places, the Cuban government has launched a concerted effort to make and keep land available for small farmers." Thus, the crisis of Cuban agriculture in the 1990s was a crisis of the classical model of large-scale collective farms that has been significantly ameliorated by a shift towards smaller farms.

This process has parallels with developments in China (as well as Vietnam and Eastern Europe), where there have been significant benefits from an even more substantial shift towards household and family farms (see Gray, 1982; Oi, 1989; Bramall, 1993). However, such developments have a broader relevance beyond the transitional socialist economies. In the USA, within the heartland of Capitalist agriculture, Ikerd (2001b, p.6) has argued that the present industrialisation of agriculture, characterised by specialisation, standardisation and centralisation of control has put farmers in direct conflict with their ecological, social and economic environment: "As farms have become more specialised and more mechanised, they have become larger in size, and thus, fewer in number. The struggle for ever-greater economic efficiency has forced many farmers to fail so that a few might survive . . . . we are destroying our environment in the process of trying to produce cheap food . . . . we are destroying the social fabric of our society in the process of trying to make agriculture more efficient." Ikerd (2001b, pp.9-11) suggested that the twenty-first century will see the emergence in America of sustainable agriculture that is "ecologically sound, economically viable and socially responsible." These developments are also responding to innovative approaches to sustainable farming such as 'permaculture' developed by Bill Mollison (1988 and 1990) in Australia, 'natural systems farming' developed by Wes Jackson (1985 and 1994) in the USA, the 'push pull system' of inter-cropping developed by Dr Zeyaur Khan (Nielsen, 2001) in India and Africa,[29] and 'natural farming' developed by Masonobu Fukuoka (1978, 1985 and 1987) in Japan. These and other related systems have led to positive results in various locations around the world (see D'Souza and Ikerd, 1996; Mazhar, et al., 2001; Nielsen, 2001; Uphoff, 2001; Greenpeace, 2001; Pretty and Hine, 2001; Berton, 2001).[30]

[29] Nielsen (2001, p.18) noted that, "The push-pull system is an ideal option as it builds on existing resources, does not create dependency, is manageable by small farmers and does not pose a threat to the eco-systems. It is estimated that full adoption of the push-pull system by small-scale farmers in East Africa will increase food production sufficiently to feed 6-8 million more people. However, this system is of little interest to profit-oriented private companies, as it does not require any external inputs. And it is this very fact that may be the biggest obstacle to its dissemination."

[30] Indeed, farming activities need not be restricted to rural areas, but can also be conducted sustainably in

Such developments suggest that smaller scale sustainable agriculture could potentially move from the periphery to a mainstream role in the production of food, fibre and related products, with significant economic, ecological and social benefits. Among other effects, it would also help people, communities and countries to avoid or mitigate the recurring economic crises that now afflict modern economies. Furthermore, the demonstrated viability and sustainability of small-scale farming, compared to the hazards and problems resulting from large-scale agriculture, also serve to highlight serious problems associated with the mass production methods that originated in industry. Within the industrial sector itself, these problems have led to significant and evolving changes that are transforming the mass-production system.

THE DYNAMISM OF INDUSTRIAL CLUSTERS AND GLOBAL PRODUCTION NETWORKS

Increasingly, the dynamism of small firms has also been noticed in industry. This may be related to three sets of broader changes that are themselves interconnected: the growing importance of industrial clusters and global production networks; the spread of information communication technology (ICT); and a transition from the mass production system towards a sustainable production system.

The dynamism of small firms organised in the form of industrial districts has been noted by various observers, beginning with Alfred Marshall (1920, p.221) and extending to more recent studies of industrial clusters and networks in various parts of the world. Marshall suggested that industrial districts provided useful external economies that facilitated the division of labour among the participants. More recently, studies have highlighted the dynamism of industrial districts in Italy, producing shoes, furniture, musical instruments, processed foods, and other products, associated with clusters of firms in specific sectors and locations (Piore and Sabel, 1984). Sengenberger, et al., (1990) suggested that a shift towards smaller enterprises has also occurred in other industrialised countries. However, this capability is not limited to a few centres. It appears to exist in a range of locations around the world.

In developing countries, Nadvi (1995) provided analyses of industrial clusters and networks in Brazil, Mexico, Korea and India that engaged in producing a variety of products ranging from shoes to knitwear to electronics and other products. Tewari (1996) examined the dynamism of small manufacturing firms in the Ludhiana region of Punjab state in India. Similarly, Christerson and Lever-Tracy (1997) noted the existence of small firms in China that formed rural industrial clusters to produce a variety of goods for export markets, and that were effectively integrated into global commodity chains. These firms benefited from their links with overseas Chinese business networks, which helped to provide material, financial, information and other resources (Weidenbaum and Hughes, 1996; Cheah 2000b). On a broader front, the dynamism of such clusters and networks, combined with adaptive entrepreneurship and opportunities for technological leap-frogging, facilitated a process of ‘catching-up’ in Asia (Hobday, 1995; Cheah, 1998).

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urban locations. See Smit, Ratta and Nasr (1996), Smit, Ratta and Bernstein (1996), and Kaufman and Bailkey (2000).

The possibility for small enterprises to establish effective links and significant roles within global production networks has helped to reduce or eliminate the isolation and marginalisation previously associated with small firms (Humphrey and Schmitz, 1995; Berry, 1997; Ceglie and Dini, 1999; Cook, 2000; Kaplinsky and Readman, 2001). This has led to restructuring of national economies and the strengthening of 'regional architectures' in America, Europe and Asia, and opened up new opportunities for competition, innovation and growth in association with the emergence of cross national production networks (Borrus and Zysman, 1997a).

These developments are aided by the growing diffusion of information communication technology. ICT, comprising the computer, internet, telephone, facsimile, mobile cell phones, and their associated hardware, software, and networks, have provided human beings with a range of new and powerful tools. Cohen, et al., (2000, p.8) have contended that "the E-conomy[31] is about more than just better technology. It is about where and how these new technological tools, these tools for thought, are used by industries, organisations, and people to transform what they do and how they do it and to do wholly new things."[32] Evans and Wurster (1999) also suggest that the new technology alters the economics of information delivery, by removing the previous unavoidable trade-offs between 'richness' (quality of information) and 'reach' (number of recipients). This will alter the dynamics of business strategy and business operations. Specifically, "When everyone can exchange rich information without constraints on reach, the channel choices for marketers, the inefficiencies of consumer search, the hierarchical structure of supply chains, the organisational pyramid, asymmetries of information, and the boundaries of the corporation itself will all be thrown into question. The competitive advantages that depended on them will be challenged. The business structures that had been shaped by them will fall apart" (Evans and Wurster, 1999, p.37).

This process will create new forms of innovation and competition, introduce new players and strategies, and undermine previous pecking orders in industry and the economy. This will also provide new means and opportunities for smaller enterprises to enter the market and to find or create profitable spaces to operate in. It also provides possibilities for developing countries to advance the process of economic and social transformation, if they can introduce appropriate policies, infrastructure and institutions to capitalise on the opportunities (Holderness, 1995; Hamelink, 1997; Quibria and Tschang, 2001; Tschang, 2001),

In this process, 'Wintelism'[33] is changing the terms of competition and shifting control away from those engaged in the final assembly of products, so that market power can now be lodged anywhere in the value chain of production (Borrus and Zysman, 1997a and 1997b). Concomitantly, cross national production networks lead to a "dis-

[31] There are several other concepts in the literature that have an overlapping meaning or focus. They include: new economy, information economy, knowledge economy, internet economy, digital economy, weightless economy, attention economy, and network economy.

[32] For Kelly (1997), these developments lead towards a 'network economy' In this regard, Kelly pointed to "the widespread, relentless act of connecting everything to everything else. We are now engaged in a grand scheme to augment, amplify, enhance, and extend the relationships and communications between all beings and all objects. That is why the Network Economy is a big deal."

[33] This refers to the phenomenon associated with computer systems based on the alliance between Microsoft Windows software and Intel microprocessors.

integration of the industry's value chain into constituent functions that can be contracted-out to independent producers wherever those companies are located in the global economy. This strategic and organisational innovation, at an extreme, can convert production of even complex products into a commodity that can be purchased in the market. . . . together these developments promise to alter the kinds of product-markets and competitive strategies that can be pursued by small- and medium-sized firms and thus their place in world markets" (Borrus and Zysman, 1997b). These developments may be postulated to be a part of the fundamental changes occurring in the mass production system

In summary, the demonstrated capability of smaller firms to produce sustainably, and to form dynamic local clusters effectively connected to distributed production (service) networks with associated entities dispersed at various locations around the world, suggest that smaller firms have the ability to become a more effective force that can produce superior outcomes within a very different mode of production. Consequently, in time, this may constitute the foundation of a new phenomenon, a twenty-first century sustainable production system, associated with the diversified and sustainable small enterprise.

CONCLUSION

A large proportion of the population in Asia and elsewhere must look for development alternatives that are more sustainable during the years ahead, because the previous development strategies and engines of growth in the global economy have lost much of their potency. As Stiglitz (1998, p.17) noted, "Today, with the continuing decline in economic activity in East Asia, with the new crisis in Russia, with the contagion threatening economies elsewhere, faith in the market economy is eroding in many parts of the world. It is now clear that the emphasis on privatization, liberalization, and macroeconomic stability that dominated thinking about developing economies . . . neither fully captured the essentials of a market economy, nor provided a recipe for growth and stability, let alone for the broader goals of democratic, sustainable, and equitable development."

With much of the world's population beyond the reach of many of the world's business enterprises because their goods and services are not affordable, or are simply irrelevant to the needs of that population, those enterprises that cater largely to the wealthy are limited to a relatively small segment of the potential world market (see Illich, 1973). Indeed, those enterprises whose operations serve to make the rich richer, and the poor poorer, are directly and indirectly narrowing their potential client base further and, consequently, eroding their own long-term sustainability in this respect. Furthermore, in cases where the deepening of such social divisions compounds ethnic, religious and other differences, the result could be a very volatile environment that is not conducive to normal business activity and to further investment in that location. The social divisions, tensions and upheavals in Indonesia are among the most recent experiences that support this point.

In this regard, the demonstrated capability of small firms, firstly, to produce sustainably and, secondly, to form dynamic local clusters that can also be effectively connected to globally distributed networks, suggest that small firms have the ability to become a more effective force. It may be possible to promote a very different mode of production

with substantially better outcomes, if both sets of capabilities can be integrated effectively. If this can be achieved, small enterprises can play a more significant role in the evolving transformation to a more viable system of economy and society: a system where people matter, a system where natural capital and social capital are at least as highly valued as economic (financial) capital and, a system based on sustainable communities that are well integrated locally and well connected globally (see Schumacher, 1974; Hawken, et al, 1999).

With the extension of ICT and its associated networks, there is significant potential for more affordable and better integrated communication services to be provided, even to people in relatively isolated and economically impoverished locations. With this development, affordable but good quality educational, health and other services could follow. As these groups are increasingly connected to the providers of goods and services that can potentially be provided 'anywhere', 'anytime', and at a decreasing price or with 'no charge', the economic and other capabilities of these groups could improve significantly, including their ability to raise their purchasing power. This will make them more attractive to an even wider range of private and public providers of goods and services. Through such processes, these groups can be re-integrated into the mainstream economy and society.

Moreover, small sustainable enterprises, whose activities serve essential needs and whose operations help to reduce social disparities and alleviate societal tensions and conflict, generate virtuous circles that expand their own market potential over time, and generate positive externalities for the society as well. Furthermore, where small sustainable enterprises increase individual and community empowerment, security and opportunity, they concomitantly reduce the likelihood that people will become participants in corrupt and criminal activities.

Thus, for SMEs and other business enterprises, recovery from the crisis should not mean a return to 'business as usual'. To achieve a major re-orientation of business objectives and strategies, firms will need to adopt a significantly broader perspective in their planning and operational efforts. First, these efforts should take into account the evolving shift from the mass production system towards a sustainable production system, and capitalise on the new dynamics of the SPS. Secondly, firms must manage for multi-dimensional sustainability. To do so, it is necessary to recognise that the four principal dimensions of sustainability do not necessarily involve inherent trade-offs. Instead, the different dimensions of sustainability may actually be complementary and synergistic. In this context, the concept of 'sustainable advantage' acquires greater analytical and empirical significance over preceding notions of 'comparative advantage' and 'competitive advantage'. In short, managing for sustainable advantage in a sustainable production system is, or will be, the *sine qua non* for success. From this perspective, progress in the future may be spearheaded not by the large mega-corporation but by the diversified and sustainable small enterprise.

REFERENCES

Adamu, A. (2000), "We'll Feed Our People As We See Fit," Washington Post, 11 September, p.A23.

Altieri, M. and P. Rosset (1999), “Ten reasons why biotechnology will not ensure food security, protect the environment and reduce poverty in the developing world,” AgBioForum, 2(3 and 4): pp.155-162.
Anderson, C. (1997), "Values-based management," Academy of Management Executive, 11(4): pp.25-46.
Anderson, R. (1999), Mid-Course Correction: Toward a Sustainable Enterprise: The Interface Model, White River Junction, VT: Chelsea Green Pub Co.
Arthur, W. B. (1990), “Postive Feedbacks in the Economy,” Scientific American, 262: pp.92-99.
Arthur, W. B. (1996), “Increasing Returns and the Two Worlds of Business,” Harvard Business Review, 74(4): pp.100-109.
Ayres, R. (1996), “Technology, progress and economic growth,” European Management Journal, 14(6): pp.562-575.
Banks, G. (1999), “Keeping an eye on the beast: social monitoring of large scale mines in New Guinea,” Resource Management in Asia-Pacific, Working Paper 1999/21, Canberra: Australian National University.
Barraclough, S. and A. Finger-Stich (1996), “Some ecological and social implications of commercial shrimp farming in Asia,” UNRISD Discussion Paper no.74, Geneva: United Nations Research Institute for Social Development.
Bello, W., D. Kinley and E. Elinson (1982), Development Debacle: the World Bank in the Philippines, San Francisco, Institute for Food and Development Policy.
Berry, A. (1997), SME Competitiveness: The Power of Networking and Subcontracting, Washington, DC: Inter-American Development Bank.
Berton, V. ed., (2001), The New American Farmer: Profiles in Agricultural Innovation, Washington, DC: US Department of Agriculture.
Boafo-Arthur, K. (1999), “Structural adjustment programs (SAPs) in Ghana: interrogating PNDC’s implementation,” West Africa Review, 1(1): pp.1-25.
Borrus, M. and J. Zysman (1997a), “Wintelism and the Changing Terms of Global Competition: Prototype of the Future?” Berkeley Roundtable on the International Economy Working Paper no. 96B.
Borrus, M. and J. Zysman (1997b), “You Don’t Have to be a Giant: How the Changing Terms of Competition in Global Markets are Creating New Possibilities for Danish Companies,” Berkeley Roundtable on the International Economy Working Paper no. 96A.
Bramall, C. (1993), “The Role of Decollectivisation in China’s Agricultural Miracle, 1978-1990,” Journal of Peasant Studies, 20(2): pp.271-295.
Brookfield, H. and Y. Byron (1993), Southeast Asia’s Environmental Future: the search for sustainability, New York: United Nations University Press.
Carson, R. (1962) Silent Spring, Boston: Houghton Mifflin.
Ceglie, G. and M. Dini (1999), “SME Cluster and Network Development in Developing Countries: The Experience of UNIDO,” UNIDO Private Sector Development Working Paper no.2, Vienna: United Nations Industrial Development Organisation.
Cheah, H. B. (1998), “’Catching up’: Adaptive Entrepreneurship and Economic Development in Asia”, in Y. Takahashi, M. Murata and K. M. Rahman eds., Management Strategies of Multinational Corporations in Asian Markets, Tokyo: Chuo University Press.
Cheah, H.B. (2000a), " The Asian economic crisis: three perspectives on the unfolding problems in the global economy," in Frank-Jurgen Richter, ed., The East Asian

Development Model: Economic Growth, Institutional Failure and the Aftermath of the Crisis, London: Macmillan, pp.97-116.
Cheah, H.B. (2000b), "Raising the Dragon: Adaptive Entrepreneurship and Chinese Economic Development," in F. Richter ed., The Dragon Millennium: Chinese Business in the Coming World Economy, London: Quorum Books, pp.163-181.
Cheah, H. B. and M. Cheah (2002), "Sustainable development and sustainable management: Promoting economic, ecological and social sustainability in post-crisis Asia," in U. Haley and F-J. Richter eds., Asian Post Crisis Management: Corporate and Governmental Strategies for Sustainable Competitive Advantage, New York: Palgrave.
Chossudovsky, M. (1997), The Globalisation of Poverty: Impacts of IMF and World Bank Reforms, London: Zed Books.
Christerson, B. and C. Lever-Tracy (1997), "The Third China? Emerging Industrial Districts in Rural China," International Journal of Urban and Regional Research, 21(4): pp.569-588.
Cobb, C., T. Halstead, and J. Rowe (1995), "If the GDP is up, why is America down?" Atlantic Monthly, October, pp. 59-78.
Cobb, C., G. Goodman, and M. Wackernagel (1999), Why Bigger Isn't Better: The Genuine Progress Indicator, 1999 Update, San Francisco: Redefining Progress.
Cohen, S., J. B. Delong and J. Zysman (2000), Tools for Thought: What is New and Important about the 'E-conomy', Berkeley: University of California.
Colborn, T., D. Dumanoski and J. P. Myers (1996), Our Stolen Future: Are We Threatening Our Fertility, Intelligence, and Survival? A Scientific Detective Story, New York: Dutton.
Cook, P. (2000), "Support Mechanisms for Interfirm Linkages among SMEs: Impact and Assessment," IDPM Finance and Development Research Programme Working Paper no. 18, Manchester: Institute for Development Policy and Management.
Cope, B. and M. Kalantzis (1997), Productive Diversity: a new Australian model for work and management, Annandale: Pluto Press.
Cossar, L. (2000), "Paradise Potion," The Qantas Club, Winter, pp.20, 22.
Danaher, K. ed., (1994), 50 Years is Enough: the case against the World Bank and the International Monetary Fund, Cambridge: South End Press.
Dasgupta, S., H. Wang and D. Wheeler (1997a), "Surviving success: policy reform and the future of industrial pollution in China," World Bank Development Research Group Working Paper, Washington, DC: World Bank.
Dasgupta, S., H. Wang and D. Wheeler (1997b), "Bending the rules: discretionary pollution control in China," World Bank Development Research Group Working Paper no. 1761, Washington, DC: World Bank.
Davidse, J. (1983), "Characteristics of growth and limitations in electronics" Technological Forecasting and Social Change, 24(2): pp.125-135.
Davis, S. (1987), Future Perfect, Reading, MA: Addison-Wesley.
de Bono, E. (1992), Sur/petition: Going Beyond Competition, London, Fontana.
de la Cruz, R. (1999), "Philippines: Challenges, Opportunities and Constraints in Agricultural Biotechnology" in G. Persley and M. Lantin eds., Agricultural Biotechnology and the Poor, Washington, DC: Consultative Group on International Agricultural Research.
Dieter, H. (1998), "Crises in Asia or crisis of globalisation?" CSGR Working Paper no. 15/98, Coventry: Centre for the Study of Globalisation and Regionalisation.

Douthwaite, R. (1999), The Growth Illusion: how economic growth has enriched the few, impoverished the many and endangered the planet, Gabriola Island: New Society Publishers.
D'Souza, G. and J. Ikerd (1996), "Small Farms and Sustainable Development: Is Small More Sustainable?""Journal of Agricultural and Applied Economics, 28(1): pp.73-83.
Elaian, K. (1996), "Employment implications of small scale industries in developing countries: evidence from Jordan," Science, Technology and Development, 14(1): pp.80-101.
Enriquez, L. (2000), "Cuba's New Agricultural Revolution: The Transformation of Food Crop Production in Contemporary Cuba," Food First Development Report no. 14, Oakland, CA: Institute for Food and Development Policy.
Estes, R. (1992), At the Crossroads: dilemmas in social development toward the year 2000 and beyond, New York: Praeger.
Estes, R. (1996), Tyranny of the Bottom Line: Why Corporations Cause Good People To Do Bad Things, San Francisco: Berrett-Koehler.
Evans, P. and T. Wurster (1999), Blown to Bits: how the new economics of information transforms strategy, Boston: Harvard Business School Press.
Fombrun, C. (1986), Realising Value from the Corporate Image, Boston: Harvard University Press.
Fukuoka, M. (1978), The One Straw Revolution, Emmaus: Rodale Press.
Fukuoka, M. (1985), The Natural Way of Farming, Tokyo: Japans Publications Trading Company.
Fukuoka, M. (1987), Road Back to Nature: Regaining the Paradise Lost, Madras: Bookventure.
Gershuny, J. (1978), After Industrial Society? The emerging self-service economy, London: Macmillan.
Gill, S. (1998), The Pathology of Corruption, New Delhi: Harper Collins.
Ginzberg, E. and G. Vojta (1985), Beyond Human Scale: The Large Corporation at Risk, New York: Basic Books.
Glover, D. and T. Jessup (eds.) (1999), Indonesia's fires and haze: the cost of catastrophe, Ottawa: International Development Research Centre.
Gray, J. (1982), "China's New Agricultural Revolution," Institute of Development Studies (IDS) Bulletin 13(4): pp.36-43.
Greenpeace (2001), 208 Recipes Against Hunger: Success Stories for the Future of Agriculture, Amsterdam: Greenpeace International.
GRI (2000), Sustainability Reporting Guidelines on Economic, Environmental and Social Performance, Boston: Global Reporting Initiative.
Gross, N., P. Coy and O. Port (1995), "The technology paradox: how companies can thrive as prices dive," Business Week, 6 March, pp.36-44.
Hallberg, K. (2000), "A market-oriented strategy for small and medium-scale enterprises", International Financial Corporation Discussion paper no.40, Washington D.C: World Bank.
Hamelink, C. (1997), "New information and communication technologies, social development and cultural change," UNRISD Discussion Paper no.86, Geneva: United Nations Research Institute for Social Development.
Haq, K. (1999), Human Development in South Asia 1999, Oxford: Oxford University Press.
Harman, W. and M. Porter (eds.) (1997), The New Business of Business: Sharing responsibility for a positive global future, London: Berrett-Koehler Publishers.

Harper, A. and M. Israel (1999), “The killing of the Fly: state-corporate victimisation in Papua New Guinea,” Resource Management in Asia-Pacific, Working Paper 1999/22, Canberra: Australian National University.
Hawken, P., A. Lovins and L. H. Lovins (1999), Natural Capitalism, Snowmass, CO: Rocky Mountain Institute.
Hawley, S. (2000), “Exporting corruption: privatisation, multinationals and bribery”, The Corner House, June.
Hirschhorn, J. (2000), Growing Pains: quality of life in the new economy, Washington, DC: National Governors Association.
Hobday, M. (1995) "East Asian latecomer firms: learning the technology of electronics", World Development, 23 (7): pp.1171-1193.
Holderness, M. (1995), “The internet and the South: superhighway or dirt-track?” Panos Media Briefing no.16, October, http://www.panos.org.uk/briefing/internet.htm
Howard, M. (1993), Asia’s Environmental Crisis, Boulder: Westview Press.
Humphrey, J. and H. Schmitz (1995), “Principles for Promoting Clusters and Networks of SMEs,” UNIDO SME Program Discussion Paper no. 1, Vienna: United Nations Industrial Development Organisation.
IFC (2000), Paths Out of Poverty: The Role of Private Enterprise in Developing Countries, Washington DC: International Financial Corporation.
Ikerd, J. (1995), “The Industrialisation of Agriculture: Why We Should Stop Promoting It,” a paper presented at the Harold F. Breimyer Agricultural Policy Seminar, University of Missouri, Columbia, Missouri, 16-17, November, http://www.ssu.missouri.edu/faculty/jikerd/papers/BRSM1-95.htm
Ikerd, J. (2001a), “Sustainable Agriculture: It’s About People,” a paper presented at the Making Agriculture Sustainable Seminar, Lake Land College, Mattoon, Illinois, 11 December, http://www.ssu.missouri.edu/faculty/jikerd/papers/SusAgpeople.html
Ikerd, J. (2001b), “21st Century Agriculture: The End of the American Farm or the New American Farm,” a paper presented at ‘Partnerships for Sustaining California Agriculture’, Woodland, California, 27-28 March, http://www.ssu.missouri.edu/faculty/jikerd/papers/NAF5-EndAmericanFarm.htm
Illich, I. (1973), "Outwitting the ‘Developed’ Countries", in Henry Bernstein ed., Underdevelopment and Development. Harmondsworth: Penguin, pp.357-368.
Itami, H. (1987), Mobilizing Invisible Assets, Cambridge, MA: Harvard University Press.
Jackson, W. (1985), New Roots for Agriculture, 2nd ed., Lincoln: University of Nebraska Press.
Jackson, W. (1994), Becoming Native To This Place. Lexington: University of Kansas Press.
Jackson, W. and J. Piper (1989), "The Necessary Marriage Between Ecology and Agriculture." Ecology, 70: pp.1591-3.
Jain, A. (1992), “Social diversity and technology for sustainable development,” in S. Ito and Y. Yasuda eds., Nature and Humankind in the Age of Environmental Crisis, Kyoto: Industrial Research Centre for Japanese Studies, pp.241-252.
Kaufman, J. and M. Bailkey (2000), “Farming Inside Cities: Entrepreneurial Urban Agriculture in the United States,” Lincoln Institute of Land Policy Working Paper WP00JK1.
Kahn, H., G. Peters and L. Ponemon (1999), “Reputation assurance: the value of a good name,” re: Business, February, New York: PricewaterhouseCoopers.

Kaplinsky, R. and J. Readman (2001), Integrating SMEs in Global Value Chains: Towards partnership for Development, Vienna: United Nations Industrial Development Organisation.

Kayanula, D. aand P. Quartey (2000), "The Policy Environment for Promoting Small and Medium-sized Enterprises in Ghana and Malawi," IDPM Finance and Development Research Programme Working Paper no. 15, Manchester: Institute for Development Policy and Management.

Kelly, K. (1997), "New rules for the new economy," Wired, September, pp.140ff.

Korten, D. (1999), The Post-Corporate World: Life After Capitalism, San Francisco: Berrett-Koehler.

Korten, D. (2001), When Corporations Rule the World, 2nd ed., San Francisco: Berrett-Koehler.

Kurien, J. (1991), "Ruining the commons and responses of the commoners: coastal overfishing and fishermen's actions in Kerala state, India," UNRISD Discussion Paper no.2, Geneva: United Nations Research Institute for Social Development.

Kwa, A. (2001), Agriculture in Developing Countries: Which Way Forward? Small Farmers and the Need for Alternative Development-friendly Food Production Systems, TRADE Occasional Paper no.4, Geneva: South Centre.

Lappe, F., J. Collins, and P. Rosset (1998), World Hunger: twelve myths, 2nd ed., New York: Grove Press.

Larson, E., M. Ross and R. Williams (1986), "Beyond the era of materials", Scientific American, June, pp.24-31.

Lawler, E. (1997), "Rethinking Organisation Size," Organisational Dynamics, 26(2): pp.24-35.

Leakey, R. and R. Lewin (1995), The Sixth Extinction: patterns of life and the future of humankind, New York: Doubleday.

Lovelock, J. (1979), Gaia: A New Look at Life on Earth, Oxford: Oxford University Press.

Makridakis, S. (1989), "Management in the 21st century", Long Range Planning, 22(2): pp.37-53.

Marshall, A. (1920), Principles of Economics, 8th ed., London: Macmillan.

Mazhar, F., F. Akhter, J. Jony and R. Hague (2001), "Nayakrishi Andolon: Recreating Community based Organic Farming," Leisa Magazine, 17(2): pp.16-18.

Meadows, D. H., D.L. Meadows, J. Randers and W. Behrens (1972), The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind, New York, Universe Books.

Meadows, D.H., D.L. Meadows and Jorgen Randers (1992), Beyond the Limits: Confronting Global Collapse, Envisioning a Sustainable Future, Post Mills: Chelsea Green Pub. Co.

Miles, R., C. Snow, J. Mathews, G. Miles and H. Coleman (1997), "Organising in the Knowledge Age: Anticipating the Cellular Form," Academy of Management Executive, 11(4): pp.7-24.

Mirsky, J. (1999), "Nothing to celebrate: China's wasted half century," The New Republic, 11 October, 221(15): pp.30-35.

Mittal, A. (2000), "Enough Food for the Whole World," Washington Post, 15 September, p.A26.

Mollison, B. (1988), Permaculture: A Designer's Manual, Tyalgum, NSW: Tagari Publishers.

Mollison, B. (1990), Permaculture: a practical guide for a sustainable future, Washington, DC: Island Press.

Monden, Y. (1993), Toyota Production System: an integrated approach to just-in-time, 2nd ed., Norcross: Industrial Engineering and Management Press.
Nadvi, K. (1995), "Industrial Clusters and Networks: Case Studies of SME Growth and Innovation," Vienna: United Nations Industrial Development Organisation.
Nielsen, F. (2001), "The Push-Pull system: A viable alternative to Bt maize," Leisa Magazine, 17(4): pp.17-18.
North, D. (1990), Institutions, Institutional Change, and Economic Performance, Cambridge: Cambridge University Press.
Oi, J. (1989), State and Peasant in Contemporary China: The Political Economy of Village Government, Berkeley: University of California Press.
Oxfam International (1998), "East Asian 'recovery' leaves the poor sinking," Oxfam International Briefing, October, Oxford: Oxfam International.
Oxfam International (2000), "Debt relief and poverty reduction: failing to deliver," Oxfam International Briefing, April, Oxford: Oxfam International.
Pauli, G. (1995), "Industrial clusters of the twenty-first century," in F. Capra and G. Pauli eds., Steering Business Toward Sustainability, Tokyo: United Nations University Press.
Pauli, G., J. H. Faulkner, and F. Capra (2000) Upsizing: The Road to Zero Emissions, More Jobs, More Income and No Pollution, Sheffield: Greenleaf Publishing
Perry, M. and T.S. Teng (1999), "An overview of trends related to environmental reporting in Singapore," Environment Management and Health, 10 (5): pp.310-320.
Pine, B. J. (1999), Mass customisation: the new frontier in business competition, Boston: Harvard Business School Press.
Piore and Sabel (1984), The Second Industrial Divide: Possibilities for Prosperity, New York: Basic Books.
Porter, M. (1990), The Competitive Advantage of Nations, London: Macmillan.
Porter, M. (1997), "Creating Tomorrow's Advantages", in Rowan Gibson ed., Rethinking the Future, London: Nicholas Brealey.
Posner, L. (2001), Unequal Harvest: Farmers: Voices on International Trade and the Right to Food, Montreal, International Centre for Human Rights and Democratic Development.
Prahalad, C.K. (1997), "Strategies for growth", in Rowan Gibson ed., Rethinking the Future, pp. 62-75, London: Nicholas Brealey.
Pretty, J. (2000a), "Changing Agricultural Practices and the Impact on Biodiversity," University of Cambridge Committee for Interdisciplinary Environmental Studies, Allied Domecq Public Lecture, 16 March.
Pretty, J. (2001), "The Real Costs of Modern Farming," Resurgence, no.205, pp.7-9.
Pretty, J, and R. Hine (2001), Reducing Food Poverty with Sustainable Agriculture: A Summary of New Evidence, Colchester: University of Essex.
Quibria, M.G. and T. Tschang (2001). "Information and Communication Technology and Poverty: An Asia perspective", ADBI Working Paper 12, Tokyo: Asian Development Bank Institute.
Robinson, J. and J. Tinker (1998), "Reconciling ecological, economic and social imperatives: towards an analytical framework," in J. Schurr and S. Holtz (eds.), The Cornerstone of Development: integrating environmental, social and economic policies, London: Lewis Publishers.
Roddick, A. (2001), Business as Unusual: The Triumph of Anita Roddick, London: Thorsons

Root, H. (2000), "Suharto's tax on Indonesia's future," in F. Richter ed., The East Asian Development Model: economic growth, institutional failure and the aftermath of the crisis, London: Macmillan.
Rosset, P. (1999), "The Multiple Functions and Benefits of Small Farm Agriculture in the Context of Global Trade Negotiations," Food First Policy Brief no.4, Oakland: CA: Institute for Food and Development Policy.
Rosset, P. (2000a), "Genetic Engineering of Food Crops for the Third World: An Appropriate Response to Poverty, Hunger and Lagging Productivity?" a paper presented to the International Conference on Sustainable Agriculture in the New Millennium: The Impact of Modern Biotechnology on Developing Countries, Brussels, 28-31 May.
Rosset, P. (2000b), "Cuba: A Successful Case of Sustainable Agriculture," In F. Magdoff, J. Foster and F. Buttel eds., Hungry for Profit: The Agribusiness Threat to Farmers, Food and the Environment, New York: Monthly Review Press.
Rosset, P. (2001), Genetically Engineered Crops: Can they feed the Hungry and Reduce Poverty?" Leisa Magazine, 17(4): pp.6-8.
Rosset, P., J. Collins and F. Lappe (2000), "Lessons from the Green Revolution: Do We Need New Technology to End Hunger?" Tikkun, 15(2): pp.52-56.
Schiffer, M. and B. Weder (2001), "Firm size and the business environment: worldwide survey results", International Financial Corporation Discussion paper no.43, Washington DC: World Bank.
Schmitz, H. (1997), "Collective efficiency and increasing returns," IDS Working Paper no.50, Brighton: Institute of Development Studies.
Schumacher, E. F. (1974), Small is Beautiful: A Study of Economics as if People Mattered, London: Abacus.
Sen, A. (1981), Poverty and Famines: An Essay on Entitlement and Deprivation, Oxford: Oxford University Press.
Sengerberger, W., G. Loveman and M. Piore eds., (1990), The Re-emergence of Small Enterprises: Industrial Restructuring in Industrialised Countries, Geneva: International Institute for Labour Studies.
Sharma, M. (1999), "India: Biotechnology Research and Development," in G. Persley and M. Lantin eds., Agricultural Biotechnology and the Poor, Washington, DC: Consultative Group on International Agricultural Research.
Shilling, G. (1998), Deflation, Short Hills, NJ: Lakeview Pub. Co.
Nielsen, F. (2001), "The Push-pull System: A Viable Alternative to Bt Maize," Leisa Magazine, 17(4): pp.17-18.
Shiva, V. (2000), "Globalisation and Poverty," Resurgence, no.202, pp.15-19.
Smit, J., A. Ratta and J. Nasr (1996), Urban Agriculture: Food, Jobs and Sustainable Cities, New York: UNDP.
Smit, J., A. Ratta and J. Bernstein (1996), "Urban Agriculture: An Opportunity for Environmentally Sustainable Development in Sub-Saharan Africa," Building Blocks for Africa 2025 Series, Working Paper no.11, Washington, DC: World Bank.
Social Investment Forum (2001), Report on Socially Responsible Investing Trends in the United States, Washington, DC: Social Investment Forum Foundation.
Stabinsky, D. and N. Sarno (2001), "Mexico, Centre of Diversity for Maize, has been Contaminated," Leisa Magazine, 17(4): pp.25-26.
Stiglitz, J. (1998), "Must Financial Crises Be This Frequent and This Painful?" McKay Lecture, Pittsburgh, Pennsylvania, September 23, 1998.

Streeck, W. (1991), "On the institutional conditions of diversified quality production," in E. Matzner and W. Streeck eds., Beyond Keynesianism: the Socio-economics of Production and Full Employment, London: Edward Elgar.
Sturgeon, T. (1997), "Does manufacturing still matter? The organisational delinking of production from innovation," Berkeley Roundtable on the International Economy Working Paper no. 92B.
Tewari, M. (1996), "When the marginal becomes mainstream :lessons from half-century of dynamic small-firm growth in Ludhiana, India," Department of Urban Studies and Planning Doctoral Thesis, Cambridge, MA: Massachusetts Institute of Technology.
Townsend, A., S. DeMarrie and A. Hendrickson (1998), "Virtual Teams: Technology and the Workplace of the Future," Academy of Management Executive, 12(3): pp.17-29.
Tschang, T. (2001). "The Basic Characteristics of Skills and Organisational Capabilities in the Indian Software Industry", ADBI Institute Working Paper 13, Tokyo: Asian Development Bank Institute.
UNDP (2000), Human Development Report 2000, New York: United Nations Development Program.
UNITE (2000), "Sweatshops Behind the Swoosh," New York: Union of Needletrades, Industrial and Textile Employees.
UNRISD (2000), Visible Hands: Taking Responsibility for Social Development, Geneva: United Nations Research Institute for Social Development.
Uphoff, N. (2001), "The System of Rice Intensification: Agro-ecological Opportunities for Small Farmers?" Leisa Magazine, 17(4): pp.15-16.
Van Zyl, J. and B. Miller (1996), "Agrarian Structure in Poland: The Myth of Large-farm Superiority," World Bank Working Paper no.1596, Washington DC World Bank.
Vidal, J. (1998), McLibel: Burger culture on trial, New York: New Press.
Von der Weid, J. M. and J. M. Tardin (2001), "Genetically Modified Soybeans: Blessing or Course for Brazilian Agriculture?" Leisa Magazine, 17(4): pp.19-29.
Von Weizsäcker, E., A. Lovins and L. Lovins (1997), Factor Four: Doubling Wealth, Halving Resource Use, London: Earthscan
Wedel, J. (1998), " The Harvard boys do Russia," The Nation, 1 June.
Weidenbaum, M. and S. Hughes (1996), The Bamboo Network, New York: Free Press.
Weinberger, D. (2002), Small Pieces Loosely Joined: A Unified Theory of the Web, Cambridge, MA: Perseus Books.
Wertheim, M. (2000), "Can Biology End World Hunger?" Los Angeles Weekly, 7-13 July.
Wheeler, D. et al., (2000), Greening Industry: New Roles for Communities, Markets and Governments, Washington,DC: World Bank.
Womack, J., D. Jones and D. Roos (1990), The Machine that Changed the World, New York: Harper.
Wong, M. (2000) "Children toil in sweatshop," South China Morning Post, 27 August.
WBCSD (1996), Environmental Assessment: A Business Perspective, Geneva: World Business Council for Sustainable Development.
WBCSD (1999), Eco-efficiency Indicators and Reporting, Geneva: World Business Council for Sustainable Development.
World Commission on Environment and Development (1987), Our Common Future: From One Earth to One World, Oxford: Oxford University Press.

Young, A. (1928), "Increasing Returns and Economic Progress," Economic Journal, 38: pp.527-542.

Yunus, M. (1999), Banker to the Poor: Micro-lending and the Battle against World Poverty, New York: Public Affairs.

Zhang, A. (1999), "Agricultural Biotechnology Opportunities to Meet the Challenge of Food Production," in G. Persley and M. Lantin eds., Agricultural Biotechnology and the Poor, Washington, DC: Consultative Group on International Agricultural research.

Ziegler, J. (2001), Report by the Special Rapporteur on the Right to Food, to the United Nations Commission on Human Rights, E/CN.4/2001/53, New York: United Nations.

GEOGRAPHIC SCOPE AND EQUALITY OF INTERNATIONALIZATION

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ABSTRACT

This research project investigates the effect of a firm's internationalization of operations on performance. The study draws samples and collects data from small and medium sized multinational enterprises (SMMNEs) from an Asian developing country. Controlling for firm size, firm leverage, R&D intensity, advertising intensity, value activity diversity and industry effects, empirical results present two major findings. First, as hypothesized, the country scope of a firm's international operations in different locations has a positive effect on firm performance. Second, more equally dispersed foreign operations do not imply better firm performance, which contradicts to the findings of some recent studies. Dispersion equality, instead, shows an inverted U-shaped relationship with performance.

Key words: internationalization, country scope, dispersion equality, small and medium sized multinational enterprises (SMMNE).

INTRODUCTION

In the past twenty years, the globalization of markets and production has been accelerating. The degree of internationalization of firms also keeps increasing. How to effectively manage a firm's international markets and worldwide operations has become one of the most important topics in the field of international business strategy (Lu and Beamish, 2001; Hitt, Hoskisson and Kim, 1997).

This research investigates the effects of a firm's internationalization of operations on firm performance. To capture a firm's internationalization of operations, the study adopts two measures: the country scope and the equality index. The study conducts a questionnaire survey and collects data from internationalized firms. While previous studies mainly analyzed the internationalization of large multinational enterprises (MNEs) from U.S. or Europe, this study examines the geographic scope and dispersion equality of internationalization of small and medium sized multinational enterprises (SMMNEs) from an Asian developing country, Taiwan. The research funding of this empirical study is sponsored by Taiwan's National Science Council (NSC 89-2416-H-155-058).

LITERATURE REVIEW

This study draws from the literatures on internationalization of firms. Theoretically, internationalization improves firm profitability through (1) increased sales in prospective foreign markets; (2) diversification of risk of economic downturn in the domestic market; (3) lower costs via economies of scale in manufacturing; and (4) lower costs via economies of scope in R&D, marketing, and distribution systems. As Hitt, Hoskisson and Kim (1997) point out, the most prominent argument offered in the literature is that internationalization provides the opportunity to exploit the benefits of internalization -- performing many activities internally (Rugman, 1981). The benefits of performing activities internally include economies of scale, scope and learning (Kogut, 1985), exploiting relationships among business segments and geographic areas (Porter, 1986), sharing distinctive firm capabilities or core competences across business units (Hamel, 1991; Porter, 1990), and exploiting differences in factor markets (Porter, 1990).

Some studies have shown that firms with higher degree of internationalization achieve higher profitability (Buhner, 1987; Grant, 1987; Vernon, 1971), and achieve higher profit stability (Miller and Pras, 1980). However, other studies have reported negative (Michel and Shaked, 1986; Siddharthan and Lall, 1982) and non-significant findings (Brewer, 1981; Dunning, 1985; Rugman, Lecraw and Booth, 1985). In the literature, degree of internationalization has been operationalized using the following measures: foreign sales as a percentage of total sales (FSTS), export sales as a percentage of total sales (ESTS), foreign assets as a percentage of total assets (FATA), foreign profit as a percentage of total profit (FPTP), overseas subsidiaries as a percentage of total subsidiaries (OSTS), top managers' international experience (TMIE), psychic dispersion of international operation (PDIO), foreign employees as a

percentage of total employees, country scope, and entropy index. Different measures may capture different characteristics of a firm's internationalization.

Evidently, recent research focus of internationalization of firms has shifted from the linear effects, to the curvilinear effects. Furthermore, some studies begin to distinguish between the market dimension and operation dimension of international diversification (Tallman and Li, 1996; Chen, Nehrt and Guisinger, 1998). This study follows Ramaswamy (1995) in recognizing that a firm's configuration of overseas activities needs to be analyzed separately from its international market diversification, echoing Kogut's (1985) concepts. This is a theme that I will expand upon in this study.

The followings are some general problems in the literature:

(1) Inconclusive and Contradictory Empirical Results. While traditional theory suggests that firms with higher degree of internationalization achieve higher profitability, empirical findings have been inconclusive and contradictory (Ramaswamy, 1995; Sambharya, 1995). As Hitt, Hoskisson and Ireland (1994) urge, researchers have to put more work on theory development first, and then empirical testing.

(2) Varying Measures of Internationalization. There are many different measures for degree of internationalization (foreign sales ratio, foreign assets ratio, number of foreign subsidiaries, country scope, and entropy). Previous studies have adopted a variety of different measures to capture firm internationalization, sometimes for theoretical reasons, sometimes for the sake of convenience. A clear attempt must be made to match the measure to the theoretical construct of the study in question.

(3) Unclear Curvilinear Effects. Some recent studies argue that a curvilinear relationship exists between internationalization and firm performance (Grant, Jammine, and Thomas, 1988; Geringer, Beamish, and daCosta, 1989; Tallman and Li, 1996). However, the findings are inconclusive, perhaps due to differences in measures, sample and/or methodology. Consequently, the curvilinear effects of internationalization need to be further explored.

(4) Small Sample Size with Large MNEs across Different Industries. Most of the previous studies focusing on internationalization of firms used fairly small sample size (40 for Buhner, 1987; 53 for Sambharya, 1995). And the companies in previous

studies were often large MNEs across different industries. Researchers tend to sample large and highly internationalized firms based on their own definition. This may result in sample bias by excluding those companies with relative moderate or low degree of internationalization.

HYPOTHESES DEVELOPMENT

While most previous studies have primarily focused on a firm's internationalization from the market side, this study emphasizes the foreign operation aspects of a firm's international involvement. To capture the degree of a firm's geographic dispersion of foreign operations, the study adopts two measures: the country scope and the dispersion equality index. Though representing different characteristics of a firm's internationalization of operations, the two measures may are hypothesized to have positive effects on performance of small and medium sized multinational enterprises (SMMNE) from Asian developing countries. For a count-oriented measure like country scope, I would expect a positive linear effect on firm performance. Compared with relatively large and highly internationalizaed MNEs from US and Europe, SMMNEs from developing countries may be progressing through the early stages of international development. The benefits resulting from exploiting country differences, scale economies, and scope economies (Bartlett and Ghoshal, 1989; Ghoshal, 1987; Kogut, 1985; Porter, 1986), may be greater than possible governance costs resulting from organizational complexity, cultural differences, structural inertia, and uncertainty in transferring intangible assets (Gomes and Ramaswamy, 1999; Hofstede, 1980; Nelson and Winter, 1982; Hannan and Freeman, 1977; Caves, 1982). Therefore, contrary to the inverted U-shaped relationship argued in some previous studies on western MNEs, this study hypothesizes a positive linear relationship between country scope and firm performance.

Hypothesis 1: A firm's country scope of foreign operations has a positive linear relationship with firm performance.

For an entropy measure of internationalization (one that examines the equality of dispersion of a firm's foreign subsidiaries across different regions), the relationship is expected to be positive and linear. A firm with operations in ten different countries across different regions may outperform a firm with operations in ten different countries located in one same region. A firm with more equally distributed subsidiaries has better opportunities to exploit and capitalize location-based advantages in different national markets (Kogut, 1985). In addition, more equal

distribution across regions makes the firm less susceptible to perturbations (currency fluctuations, policy changes, labor problems, etc.) in any one of its locations (Ghoshal 1987) since economies in a region are more likely to move together than economies in different regions. An entropy measure is a more refined measure that can be devised to reflect not only the number of countries (or regions) in which a firm has operations, but also the equality (or inequality) of the number of subsidiaries in each country (or region). Thus hypothesis 2 is stated as follows:

Hypothesis 2: A firm's dispersion equality of foreign operations has a positive linear relationship with firm performance.

RESEARCH METHODOLOGY

Unit of Analysis: Firm

Firm is the unit of analysis in this study. This study considers a firm as a coordinated system and examines its internationalization. The dependent variable is firm performance measured in terms of an accounting-based performance index. The major theoretical construct is a firm's degrees international operations diversification, measured in terms of two variables: country scope and dispersion equality. In addition to controlling industry effects, the analysis also includes five firm-level variables as controls (firm size, R&D intensity, advertising intensity, debt ratio, and value activity diversity).

Sample and Data

The sample was drawn from Taiwan's manufacturing firms operating in four major industries: the food industry, the textile industry, the chemical industry, and the electronics industry. Data were collected from 83 multinational companies through interviews and questionnaires.

Operationalization of Variables

Firm Performance. This study uses return on sales (ROS) as the measure for firm performance. Previous studies have shown that ROS is a common accounting-based measure of firm performance.

Internationalization of Foreign Operations. In addition to the country scope count,

the study adopts an entropy index, a more refined measure using country scope data, to capture the dispersion of a firm's foreign subsidiaries (Errunza and Senbet, 1984; Miller and Pras, 1980; Sambharya, 1995). Based on environmental heterogeneity, this study divides the world into six regions: North America (Canada, Mexico, Bermuda, Puerto Rico), Western Europe, Pacific Rim (Japan, Korea, Australia, New Zealand), newly industrialized countries (Taiwan, Hong Kong, Singapore), centrally planned economies, and less developed countries (Sambharya, 1995). The entropy measure is calculated following this formula:

$$\textit{Equality entropy index} = -\sum S_i \ln S_i \qquad i = 1, 2, \ldots, 6$$

Where S_i = (# of foreign countries in which a firm has subsidiaries in region *i*) / (Total # of foreign countries in which a firm has subsidiaries)

The greater the number of regions a firm operates in, the more equally distributed the subsidiaries among different regions, and the larger will be the entropy index. This entropy measure is an improvement over simply counting the number of foreign subsidiaries or foreign countries in which the subsidiaries are located, as it reflects not only the number of foreign regions but also the equality of the number of subsidiaries in each region. More widely spread subsidiaries are likely to be less vulnerable to perturbations in individual markets and regions.

Firm Size. Firm size is a commonly used control variable. It is measured as the logarithmic function of a firm's total revenues. The expected effect is positive.

Firm R&D Intensity. A firm's R&D intensity, one type of ownership specific advantages, is used in previous studies to explain firm performance. R&D intensity is measured as the percentage of a firm's R&D expenditure to total revenue. The expected effect is positive.

Firm Advertising Intensity. A firm's advertising intensity is also used in previous studies to explain firm performance. Advertising intensity is measured as the percentage of a firm's advertising expenditure to total revenue. The expected effect is positive.

Firm Leverage (Debt Ratio). This study includes firm leverage as a determinant of risk. Firm leverage is measured as the percentage of total debt to equity. This leverage ratio shows the relative position of lenders and investors in the firm. A too-high leverage ratio means that more earnings go to pay debt and are not present in net income. The expected effect is negative.

Value Activity Diversity. This study includes a firm's value activity diversity to control the firm's degree of vertical integration. Value activity diversity is measured as the scope of a firm's upstream and downstream activities.

Industry Dummies. The study includes three industry dummies to control the industry effects of the four different industries: food, textile, chemical and electronic industries.

RESULTS AND DISCUSSION

Three regression models are presented in Table 1. Model 1 provides strong support for Hypothesis 1 -- a positive linear relationship between country scope and firm performance. Model 2 does not indicate a significant positive effect of the entropy index for dispersion equality as argued for Hypothesis 2. Model 3 then further tests a curvilinear relationship between equality entropy index and performance. A significant positive first-order term (Equality) and a significant negative squared term ($Equality^2$) indicate an inverted U-shaped relationship between dispersion equality and performance.

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Put Table 1 Here

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For control variables, the results show a significant negative effect for firm leverage as predicted. Significant and positive industry dummy variables indicate that the firms operating in electronic industry, chemical industry and textile industry have better performance than those in food industry. Results for firm size and value activity diversity do not show significant effects on performance. Results also report a significant negative effect for R&D intensity, which is not as predicted. One possible explanation is that R&D intensity may have a time lagging effect on performance, and this lagging effect will not be captured by this cross-sectional study.

Empirical results present two major findings. First, as hypothesized, the country scope of a firm's international operations in different locations has a positive effect on firm performance. Second, more equally dispersed foreign operations do not imply better firm performance, which does not confirm the findings of some recent studies. Dispersion equality, instead, shows an inverted U-shaped relationship with

performance (see Figure 1). One possible explanation for this interesting finding may lies in the sample selected. The sample firms analyzed in this research are relatively small and medium sized multinational enterprises (SMMNEs) from a developing country. These small and medium sized MNEs, compared to those large MNEs from developed countries, are still progressing through their early stages of international development. SMMNEs from developing countries may benefit from internationalizing their various operations into some neighborhood countries, but lack resources and experience to enter into other different areas and manage equally dispersed foreign operations.

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Put Figure 1 Here

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In conclusion, the contributions of this empirical study are threefold: (1) it focuses on a firm's internationalization of foreign operations, and distinguishes between country scope and dispersion equality of internationalization; (2) it investigates SMMNEs from an Asian developing country, and examines the effects of international operation configuration on firm performance; and (3) the empirical results indicate interesting findings about the inverted U-shaped relationship between dispersion equality and firm performance, which differ from those of previous studies on western large MNEs.

REFERENCES

1. Brewer, H. L. (1981), "Investors benefits from corporate international diversification", Journal of Financial and Quantitative Analysis, 16(1), pp.113-124.
2. Buhner, Rolf (1987), "Assessing international diversification of West German corporations", Strategic Management Journal, 8, pp.25-37.
3. Daniels, John D. and Jeffrey Bracker (1989), "Profit performance: Do foreign operations make a difference", Management International Review, 29(1), pp.46-56.
4. Delios, Andrew and Paul W. Beamish (1999), "Geographic scope, product diversification, and the corporate performance of Japanese firms", Strategic Management Journal, 20, pp.711-727.
5. Errunza, Vihang R. and Lemma W. Senbet. (1984), "International corporate diversification, market valuation, and size-adjusted evidence", The Journal of Finance, 39(3), pp.727-743.
6. Geringer, J. Michael, Paul W. Beamish and Richard C. daCosta (1989), "Diversification strategy and internationalization: Implications for MNE performance", Strategic Management Journal, 10, pp.109-119.

7. Ghoshal, Sumantra (1987), "Global strategy: An organizing framework", Strategic Management Journal, 8, pp.425-440.
8. Gomes, Lenn and Kannan Ramaswamy (1999), "An empirical examination of the form of the relationship between multinationality and performance", Journal of International Business Studies, 30(1), pp.173-188.
9. Grant, Robert M. (1987), "Multinationality and performance among British manufacturing companies", Journal of International Business Studies, 18(3): 79-89.
10. Grant, Robert M., Azar P. Jammine and Howard Thomas (1988), "Diversity, diversification, and profitability among British manufacturing companies, 1972-84", Academy of Management Journal, 31(4), pp.771-801.
11. Hitt, Michael A., Robert E. Hoskisson and Hicheon Kim (1997), "International diversification: Effects on innovation and firm performance in product-diversified firms", Academy of Management Journal, 40, pp.767-798.
12. Kim, W. Chan, Peter Hwang and William P. Burgers (1989), "Global diversification strategy and corporate profit performance", Strategic Management Journal, 10, pp.45-57.
13. Kim, W. Chan, Peter Hwang and William P. Burgers (1993), "Multinationals' diversification and the risk-return trade-off", Strategic Management Journal, 14, pp.275-286.
14. Kogut, Bruce (1985), "Designing global strategies: Profiting from operational flexibility", Sloan Management Review, 27(1), pp.27-38.
15. Lecraw, Donald J. (1981), "Internationalization of firms from LDCs: Evidence from the ASEAD region", in Krishna Kumar and Maxwell G. McLeod (eds.), Multinationals from Developing Countries. Toronto: Lexington Books, pp.37-51.
16. Lu, Jane and Paul Beamish. 2001. "The internationalization and performance of SMEs," Strategic Management Journal, 22, pp.565-586.
17. Michel, Allen and Israel Shaked (1986), "Multinational corporations vs. domestic corporations: Financial performance and characteristics", Journal of International Business Studies, 18(3), pp.89-100.
18. Mitchell, Will, J. Myles Shaver and Bernard Yeung (1992), "Getting there in a global industry: Impacts on performance of changing international presence", Strategic Management Journal, 13, pp.419-432.
19. Porter, Michael E. (1985), Competitive Advantage: Creating and Sustaining Superior Performance. New York: Free Press.
20. Porter, Michael E. (1986), "Changing patterns of international competition", California Management Review, 28(winter), pp.27-38.
21. Ramaswamy, Kannan (1992), "Multinationality and performance: A synthesis and redirection", Advances in International Management, 7, pp.241-267.
22. Sambharya, Rakesh B. (1995), "The combined effect of international diversification and product diversification strategies on the performance of US-based multinational corporations", Management International Review, 35(3), pp.197-218.
23. Sullivan, Daniel (1994), "Measuring the degree of internationalization of a firm", Journal of International Business Studies, 25(2), pp.325-342.
24. Tallman, Stephen and Jlatao Li (1996), "Effects of international diversity and product diversity on the performance of multinational firms", Academy of Management Journal, 39(1), pp.179-196.
25. Van Hoesel, Roger (1996), "Taiwan: Foreign direct investment and the transformation of the economy", in J. H. Dunning and Rajneesh Narula (eds.),

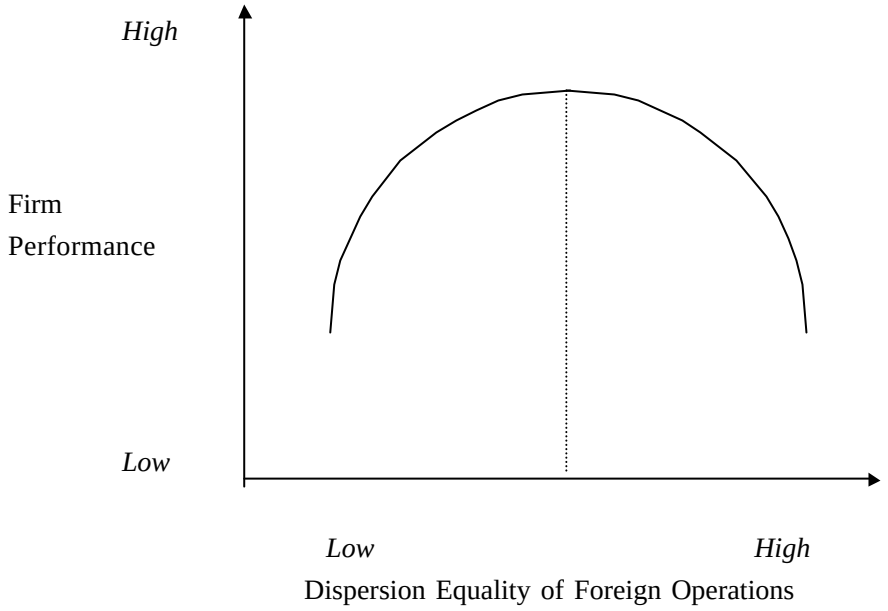
Foreign Direct Investment and Governments: Catalysts for Economic Restructuring. London: Routledge, pp.280-315.
26. Venkatraman, N. and Vasudevan Ramanujam (1986), "Measurement of business performance in strategy research: A comparison of approaches", Academy of Management Journal, 11(4), pp.801-814.
27. Vernon, Raymond (1966), "International investment and international trade in the product cycle", Quarterly Journal of Economics, 80, pp.190-207.

Table 1. Regression Results

	Model 1	***Model 2***	***Model 3***
Intercept	11.285 (12.408)	10.169 (10.445)	9.007 (12.922)
Country Scope	1.046 * (0.861)		
Equality		1.766 (3.680)	19.934 * (13.036)
Equality ^{2} (squared)			-14.000 * (10.347)
Firm Size	-0.736 (0.972)	-0.421 (0.973)	-0.670 (0.974)
Leverage--Debt Ratio	-0.033 *** (0.007)	-0.032*** (0.007)	-0.034 *** (0.007)
R&D Intensity	-0.976 ** (0.507)	-1.044** (0.510)	-1.116 ** (0.512)
Advertising Intensity	0.527 (1.052)	0.705 (1.055)	1.076 (1.096)
Electronics Industry	11.548 ** (5.908)	14.586*** (5.854)	12.199 ** (6.306)
Textile Industry	9.009 * (6.294)	11.383** (6.133)	8.409 * (6.456)
Value Activity Diversity	-2.295 (2.273)	-2.456 (2.172)	-2.656 (2.252)
Chemical Industry	12.071 ** (6.412)	14.908*** (6.265)	12.334 ** (6.610)
R^2	0.389	0.368	0.397
Adjusted R^2	0.314	0.299	0.315
F-value	5.163***	5.381***	4.748***

*Note: N = 83. Standard errors in parentheses. * p<.10; ** p<.05; *** p<.01.*

Figure 1. Performance Effect of Dispersion Equality



UNRELATED DIVERSIFICATION IN CHINESE CORPORATE VENTURING NETWORK

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ABSTRACT

Chinese enterprises often establish corporate ventures (CVs). The enterprise and CVs constitute a corporate venturing network. In this paper, a strong venturing relation is defined as that in which a parent company owns at least half of equity of a CV. CVs, with a duty to expand the parent company's business domains, often span across numerous industries. Since the parent company and CVs connected by strong venturing relations often share interests to a great degree, it would diversify into the upstream or downstream of CVs to protect CVs from environmental turbulence and accordingly become unrelated diversified. This paper examines the positive relationship between unrelated diversification of parent companies and their strong venturing relations. The finding highlights the impact of venturing relations on unrelated diversification.

Keywords: Unrelated diversification, corporate venture network.

INTRODUCTION

Diversification is an important topic in the field of strategy. The causes of diversification have been widely investigated. For instance, the relationships of diversification to resources (e.g. Chatterjee & Wenerfelt, 1991), to governance structures (e. g. Baysinger & Hoskisson, 1990; Hill & Snell, 1988), to transaction cost (e.g. Williamson, 1975), and to synergy (e.g. Markides & Williamson, 1994) have been extensively investigated.

If diversification can be viewed as a result of resource allocation decisions, the factors relevant to firms' resource allocation decisions would probably influence the degree of diversification. Following an interorganizational research perspective, many studies indicated the effects of interorganizational relationships on resource allocations. For instance, Ring and Van de Ven (1994) pointed out theoretical connections between resource allocation decisions and interorganizational relationships. Van de Ven (1976) indicated that interorganizational relationships bring organizations together and thus can acquire resources greater than the summation of each organization can. Mowery, Oxley, and Silverman (1996) found that equity joint ventures contribute to technology transfers between organizations. These findings suggest a theoretical connect between interorganizational relationships and resource allocation decisions.

In East Asia, Chinese enterprises often establish numerous corporate ventures (CVs). Venturing relationships are thus formed between the enterprise (parent company) and CVs. The theoretical connection provides a guide to study the effect of venturing relations on diversification. This paper's main argument is that the entrances of parent companies into emerging unrelated markets by establishing CVs would influence the degree of unrelated diversification of the parent companies. Following sections would be arranged in a sequence of theoretical background and hypothesis, methodology, statistic results and discussion.

THEORETICAL BACKGROUND AND HYPOTHESIS

Why firms become unrelated diversified? Past studies proposed several factors including risk reduction (e.g. Baysinger & Hoskisson, 1990; Hill & Snell, 1988), types and availability of resources (Chatterjee & Wernerfelt, 1988), reduction of transaction cost (Williamson, 1975), reduction of managers' employment risk (Lubatkin & Chatterjee, 1994), and pursuits of synergy (Williamson, 1994) and further growth (Hoskisson & Hitt, 1988).

However, interorganizational relationships, one of important spheres of organization activities, seem to be less studied in the unrelated diversification research. Since unrelated diversification can be viewed as a result of resource allocation decisions and interorganizational relationships have been recognized as a determinant of resource allocation decisions, interorganizational relationships can be expected to influence unrelated diversification.

Among numerous types of interorganizational relationships, ownership relationships are extremely important because owners are the final arbitrators of strategic decisions and recipients of profits/losses. Thus, a parent company owning a majority of equity of its ventures would probably try to keep those ventures' benefits. The try would lead the parent company to make resource allocation decisions different from decisions without such a consideration.

In East Asia, Chinese enterprises often establish corporate ventures (CVs). The parent company and its CVs constitute a corporate venturing network. Venturing relations connect, the parent company to its CVs. In this paper, a *strong venturing relation* is defined as that in which the parent company owns at least half of equity of CVs.

CVs' core businesses may be different from their parent company. As Hamilton and Kao (1990) suggested, Chinese enterprises often tend to conduct opportunistic diversification, which means that an enterprise with a vertically integrated product line as the main business line often stretches into unrelated markets by establishing corporate ventures. Here I further define an *unrelated strong venturing relation* as a relation that connects a parent company and a CV whose business is unrelated to the parent company's core business.

In Chinese society, there often exist centralized planning systems in corporate venturing networks, systems that run in an informal manner (Redding, 1990; Redding and Whitely, 1990). The informal centralized planning system often covers the parent company and CVs connected by strong venturing relations and directs the resource

allocation of whole corporate venture network.

The corporate venturing networks are critical in expanding parent companies' business markets and managing risk/uncertainty (Orru, Hamilton, and Suzuki, 1989). CVs in corporate venturing networks often assume the duties of expanding their parent company's business into unrelated markets. However, CVs take the duties with supports from their parent company. Parent companies connecting to CVs with unrelated strong venturing relations take CVs' final benefits/losses to a large degree. Therefore, parent companies would probably play the role of shielding CVs by reallocating their own resources. They would diversify into the downstream, upstream, or other task environments of CVs to decrease CVs' environmental uncertainty. According to Hamilton's observation (1997:249), for business groups in Taiwan, large-scaled enterprises usually provide mediate goods that serve as inputs for small-scaled enterprises. For these new small-scaled enterprises, establishing exchange relationships with large-scaled enterprises in the same business group reduces the resources needed for learning and assuming new roles.

As for why it is the parent company, not CVs themselves, that enters CVs' task environments, control is a critical consideration. According to the resource dependence theory (Pfeffer & Salancik, 1978), the parent companies can increase their control over CVs by providing their necessary inputs or absorbing their outputs. If the processing of inputs or outs is transferred from parent companies to CVs, parent companies would lose some control over CVs.

Control over CVs strengthens the effects of centralized planning systems of corporate venture networks. The centralized planning system lead to intensive coordination between the parent company and CVs. It makes the operation of the corporate venture network similar to a collective community as Astley and Van de Ven (1983) described. In a collective community, the parent company assumes the role of buffering environmental turbulence and thereby shelters CVs in the community (Astley & Fombrun, 1983).

Therefore, parent companies establishing more unrelated strong venturing relations would be more likely to enter unrelated areas and thus become more unrelated diversified. In other words, the more unrelated strong corporate venturing relationships parent companies engage in, the higher the degree of unrelated diversification of the enterprise they would be. Thus I propose the hypothesis.

Hypothesis: Unrelated diversification level of parent companies is positively related to the number of unrelated strong corporate venturing relations they engages in.

METHODOLOGY

Sample and Data Collection

The sample comes from public-owned companies in Taiwan's steel industry. I collect annual reports of companies from 1995 to 1999. I chose a single industry to control interindustry effects on unrelated diversification. Another advantage of choosing the

steel industry as research target is that the distribution of the number of venturing relations provides a good research setting (mean= 1.5472; standard deviation= 1.8212). Twenty-nine public-owned companies existed in steel industry during this period. Some companies were deleted because their sales category classifications did not exactly match 2-digit level SIC systems and thus their degrees of unrelated diversification cannot be computed. The resultant sample consists of 106 firm-years.

Measurement

Dependent Variable

Unrelated diversification. Unrelated diversification level is measured by entropy measure (Jacquemin & Berry, 1979; Palepu, 1985). Entropy is expressed as £Pi°ln(1/P*i*), where P*i* is the proportion of a firm's sales in SIC industry *i* across 2-digit SIC level and ln(1/P*i*) is the weight for each industry *i*.

Independent Variable

The number of unrelated strong corporate venturing relations an enterprise engages in. This variable is measured as the number of corporate ventures which satisfy following two criteria: (1) at least half of equity is owned by its parent company and (2) the core business differs from its parent company's at 2-digit level.

Control Variable

(1) Age. As firms grow, they may expand business domains. Therefore older companies may be more unrelated diversified than younger companies. This variable is measured as the number of years since founding. (2) Current asset ratio. Current assets are associated with unrelated diversification (Jensen ,1986). This variable is measured as dividing current assets by total asset. (3) R&D intensity. Intangible assets can be transferred only among related products (Porter, 1987), which implies a negative association between the ratio of intangible assets and unrelated diversification. This variable is measured by dividing R&D expenditures by sales. (4) Long-term debt ratio. Firms with greater debts would pay a stable amount of interests. Hence they may adopt unrelated diversification to decrease the fluctuation of revenues. Barton and Gordon (1988) indicated that the possibility of unrelated diversified firms to raise debt is higher than related diversified firms. Therefore, a debt ratio variable is controlled in this study. This variable is measured as the ratio of long-term debt to total assets. (5) Rate of return (ROA) in last year. Prior performance would influence important strategic decisions (Wiersema & Bantel, 1992; Krishnan, Miller & Judge, 1997). In this study, performance is measured as dividing returns by total assets. (6) Size. Size is measured as the natural logarithm value of the number of employee. (7)

Credit risk evaluation. This data is derived from Taiwan Corporate Credit Risk Index (TCRI), a synthetic index representing risk attitudes of enterprises. An enterprise with a greater value is more risky in decisions and investments. The index is complied by Taiwan Economic Journal, the largest professional company that provides comprehensive data for security and financial market analysis.

Model Specification

The data are of a pooled time series and cross-sectional structure. To correct for autocorrelation and heteroscedasticity problem, Kmenta's (1986) autogressive-heteroscedastic model is adopted. The model employs a two-stage generalized-least-squares method to sequentially correct for autocorrelation and then for heteroscedasticity problem.

STATISTICAL RESULTS

Descriptive statistics and Pearson correlation coefficients of variables are demonstrated in Table 1.

Table 2 reports statistical results of two-stage generalized-least-squares regression analysis. In model 1 ($p<.0001$, adjusted $R^2=.206$) containing only control variables, size (£ŧ-.064), current asset ratio (£ŧ.620) and R&D intensity (£ŧ27.730) are significant. In model 2 ($p=.0000$, adjusted $R^2=.247$), the hypothesis is supported (£ŧ.026). The more unrelated strong corporate venturing relations an enterprise engaged in, it would be more unrelated diversified.

Model 2 increases about 20 percent in adjusted R^2 over model 1 (model 2: 0.247; model 1: 0.206). The result shows the explanatory power of venturing relations on unrelated diversification.

DISCUSSION

This study finds that the more unrelated strong venturing relations parent companies engage in, they would be more unrelated diversified. This result confirms the viewpoint that enterprises' resource deployment decision would be influenced by their tight interfirm relationships. The findings have three implications: the reinspection of the causes of diversification, strategic behaviors of Chinese enterprises and the implications for organization boundary.

Table1: Descriptive statistics and correlation matrix [ab]

	Mean	S.D	1	2	3	4	5	6	7	8
1. Degree of unrelated diversification	9.462_10^{-2}	.1922	1.000							
2. Th e number of strong unrelated corporate venturing relationships	1.5472	1.8212	.074	1.000						
3.Age	27.8312	7.3788	-.259	-.041	1.000					
4.Size	6.2212	.8943	-.204	.303	.120	1.000				
5. Current asset ratio	.3610	.1294	.345	-.330	-.236	-.112	1.000			
6. R&D intensity	1.382_10^{-3}	2.611_10^{-3}	.076	.361	.042	.426	-.275	1.000		
7. Long-term debt ratio	.1526	9.441_10^{-2}	-.180	.126	-.044	.383	-.401	-.033	1.000	
8. ROA in last year	1.630_10^{-2}	6.376_10^{-2}	.095	-.168	-.011	.171	.264	.061	-.080	1.000
9. Credit risk index	5.9339	2.1034	.075	-.095	-.306	-.461	-.060	-.436	.142	-.523

a: absolute values greater than .258 are significant at the 0.01 level; absolute values greater than .203 are significant at the 0.05 level. (2-tailed)

b: n=106

Table 2: Results of 2-stage Generalized-Least-Squared Regression Analyses for Unrelated Diversification [ab]

	Model 1	Model 2
	_ (S.E.)	_ (S.E.)
Constant	-.027 (.221)	-.008 (.216)
The number of strong unrelated corporate venturing relationships		.026* (.010)
Age	-.002 (.003)	-.002 (.003)
Size	-.064** (.026)	-.078** (.026)
Current asset ratio	.620*** (.167)	.713*** (.169)
R&D intensity	27.730** (8.444)	24.338** (8.336)
Long-term debt ratio	.202 (.238)	.246 (.233)
ROA in last year	.261 (.330)	.382 (.325)
Credit risk index	.012 (.013)	.012 (.012)
adj. R^2	.206	.247
F-Value	4.889***	5.295***

a: * p<.05; ** p<.01; *** p<.001

b: n=106

Cause of Diversification

Past research on the causes of diversification usually assumed that enterprises are the units of optimization. That is, enterprises' own interests are their primary concerns, no matter the interests are optimized in terms of internal factors, such as the transfer of knowledge or competence within firms, (Markides & Williamson, 1994, 1996) or

external environmental factors such as catching the growth opportunities (Rumelt, 1974; Christensen and Montgomery, 1981). However, if enterprises are viewed as embedded in networks that act as interest-optimization units, then it is reasonable to argue that network interests will impact behaviors of enterprises affiliated with networks. But prior studies rarely discussed the impact of network interests on diversification. This study finds that corporate venturing networks significantly influence the degree of diversification in Chinese society where g*uanxi* is stressed (Hamilton, 1996). *Guanxi* serves as the conduit of resource flows. The mobilization of financial resources, the acquisition of production materials, and the market maintenance all can be achieved through g*uanxi* (Hamilton & Kao, 1990). Sometimes, *guanxi* can even serve as a kind of social support and thus can replace the function of institutional support (Xin & Pearce, 1996). Flows of both resources and social supports along interorganizational relations inevitably impact the deployment of internal resources, and in turn influence the degree of unrelated diversification.

Strategic Behavior of Chinese Enterprises

This study's findings support that Chinese enterprises would stretch their business domains into emerging market opportunities by establishing ventures and at the same time reallocate internal resources to protect these ventures, which finally leads to a high degree of unrelated diversification.

Strategies of Chinese enterprises are often driven by emergent business opportunities. In the 1990s, many industries in Taiwan, such as banking, newspaper, electrical communication and electrical power industries, all experienced deregulation periods. Deregulation in these industries brings numerous business opportunities and at the same time many business groups enter these industries by establishing ventures. This phenomenon is similar to “opportunistic diversification” as Hamilton and Kao (1990) indicated. For Chinese business enterprises, to grasp emergent business opportunities is the primary concern. It requires enterprises to establish new ventures. To enhance the survival possibility of new corporate ventures, parent companies would adjust resource deployment of resourceful enterprises. Thus, the degree of unrelated diversification of parent companies would be higher.

Moreover, Chinese enterprises tend to operate in a collective manner. Enterprises may engage in unrelated diversification that might be helpless in building and maintaining their own competitive advantage, but benefits the whole network they are affiliated with. To ensure that enterprises take the benefits of the network into account, it would be necessary to establish a beyond-venture-level command system that can guide important decisions of ventures strongly affiliated with the network and thus warrant the regular operations of the network as a mutually support system. It also implies that in Chinese society, strategies of a single enterprise reflect not only the intentions and interests of the management team at single business level, but also those at the network level.

Chinese enterprises incline to establish or join business networks. This study's findings corroborate Hamilton and Kao's (1990) observation that strongly affiliated enterprises would bolster mutually by serving as others' downstream or upstream. Such arrangements show their inclinations to erect nearly self-satisfying economic communities including production and marketing functions spanning industry value chains from the acquisition of raw materials to selling end products. As Tam (1990) suggested, Western enterprises are usually treated as entities performing comprehensive business functions including marketing, production, and financing, while in Chinese society each function often develops as legally independent enterprises that performs only a portion of a whole task assumed by Western enterprises. CEOs of Chinese enterprises and division managers of Western enterprises are also structurally equivalent to a certain degree. As a consequence, while in Western enterprises the coordination among functions is performed in a manner of commands, in Chinese enterprises the coordination among functions is performed in a manner of long-term relationship.

Implications for Organization Boundary

Networks are often viewed as an organizing mode between hierarchies and markets (Thorelli, 1986; Powell, 1990). Many studies have explored how networks influence organizational behaviors (e.g. Uzzi, 1996; Baker, 1990). Redding (1996) proposed that Chinese enterprises are in a situation of “strong linkage and weak organization”, which asserts that networks influence enterprises more than an organization’s internal characters do.

However, when linkages are so strong that it becomes impossible for linked organizations to calculate their own interests separately, a problem would arise that whether organizations' legal units equate to their interest-optimization units. Past studies usually implicitly equated the legal units to interest-optimization units. Consequently, data from financial reports of legally independent enterprises are viewed by researchers as reflecting enterprises' efforts to pursue their own interests. But as Redding and Whitley (1990) and Redding and Tam (1985) suggested, Chinese enterprises' decisions are usually influenced by their linkages to other organizations. Therefore, the Anglo-Saxon view that treats legally-prescribed entities as the “economic” units can not cogently explain economic actions and structures of Chinese enterprises. This study confirms Redding and his colleagues’ viewpoints. It indicates that in Chinese enterprises the financial data do not necessarily reflect the best benefits of enterprises, but the best benefits of all ventures strongly affiliated with each other. Therefore, the primary, though rarely clearly mentioned, task of investigating Chinese enterprises is to determine appropriate boundaries of organizational analysis.

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REFERENCES

Astley, W. G and Van de Ven, A H. 1983. Central perspectives and debates in organization theory. *Administrative Science Quarterly*, 28: 245-273.

Astley, W. G. and Fombrun, C. J. 1983. Collective strategy: Social ecology of organizational environments. *Academy of Management Review*. 8: 567-87.

Baker W. E. 1990. Market Networks and Corporate Behavior. *American Journal of Sociology*, 96: 589-625.

Barton, Sidney L; Gordon, Paul J. 1988. Corporate Strategy and Capital Structure. SMJ, 9: 623-632

Baysinger, B. & Hoskisson, R. E. 1990. The composition of boards of directors and strategic control: Effects on corporate strategy. *Academy of Management Review*, 15: 72-87.

Chatterjee, S. & Wernerfelt, B. 1991. The link between resources and type of diversification: Theory and evidence. *Strategic Management Journal*, 12: 33-48.

Christensen H. K. & Montgomery, C. A. 1981. Corporate economic performance: Diversification strategy versus market structure. *Strategic Management Journal*, 2: 327-324.

Hamilton, G. G. 1996. The organizational foundations of Western and Chinese commerce: A historical and comparative analysis. In Gary G. Hamilton (Ed.) *Asian business networks*: 43-57. Berlin: Walter de Gruyter.

Hamilton, G. G. 1997. Organization and market processes in Taiwan's capitalist economy. In Marco Orru, Nicole Woolsey Biggart, and Gary G. Hamilton (Eds.) *The economic organization of East Asia capitalism*, Newbury Pary NY: Sage: 237-293.

Hamilton, G. G. and Kao, C.-S. 1990. The institutional foundations of Chinese business: The family firm in Taiwan. *Comparative Social Research*, Vol. 12: 135-151. JAI Press.

Hill, C. W. L. & Snell, S. A. (1988) External control, corporate strategy, and firm performance in research-intensive industry. *Strategic Management Journal*, 9: 577-590.

Hoskisson, R. E. and Hitt, M. A. 1988. Strategic control systems and relative R&D investment in large multiproduct firms. *Strategic Management Journal*, 9: 605-621.

Jacquemin, A. P. and Berry, C. H. 1979. Entropy measure of diversification and corporate growth. *Journal of Industrial Economics*, 27: 359-369.

Jensen, M. C. 1986. Agency costs of free cash flow, corporate finance, and takeover. *American Economic Review*, 76: 323-329.

Kmenta, J. 1986. Elements of econometrics. NY: MacMillian.

Krishnan, Hema A; Miller, Alex; Judge, William Q. 1997. Diversification and top management team complementarity: Is performance improved by merging similar or dissimilar teams? *Strategic Management Journal*, 18: 361-374.

Lubatkin, M. and Chatterjee, S. 1994. Extending modern portfolio theory into the domain of corporate diversification: Does it apply? *Academy of Management Journal*, 37, 1: 109-136

Markides, C. C. & Williamson, P. J. (1996) Corporate diversification and organizational structure: A resource-based view. *Academy of Management Journal*, 39: 340-367

Markides, C. C. & Williamson, P. J. 1994. Related diversification, core competence and corporate performance. *Strategic Management Journal*, 15: 149-165.

Mowery, D. C., Oxley, J. E. & Silverman, B. S. 1996. Strategic alliances and interfirm knowledge transfer. *Strategic Management Journal*, 17, special issue: 77-91.

Orru, M., Hamilton, G. G. and Suzuki, M. 1989. Patterns of inter-firm control in Japanese business. *Organization Studies*, 10, 4: 549-74.

Palepu, K. 1985. Diversification strategy, profit performance and the entropy measure. *Strategic Management Journal*, 6: 239-255.

Pfeffer, J and Salancik, G. R. 1978. The external control of organizations. NY: Harper & Row.

Porter, M. E. 1987. From competitive advantage to corporate strategy. *Harvard Business Review*, 65(3): 43-59.

Powell, W. W. 1990. Neither market nor hierarchy: Network forms of organization. *Research in organizational behavior*, Vol. 12: 295-336. CT Greenwich: JAI Press.

Redding, S. G. 1990. *The spirit of Chinese capitalism*. Berlin, New York: de Gruyter.

Redding, S. G. and Tam, S. 1985. Networks and molecular organizations: An exploratory view of Chinese firms in Hong Kong. In K. C. Mun and T. S. Chan (Eds.) *Perspectives in international business*: 129-142, Hong Kong: Chinese University Press.

Redding, S. G. and Whitley, R. D. 1990. Beyond bureaucracy: Towards a comparative analysis of forms of economic resource co-ordination and control. In Steward R. Clegg and S. Gordon Redding (Eds.) *Capitalism in contrasting cultures* : 79-104, Berlin: Walter de Gruyter.

Ring, P. S. and Van de Ven, A. H. 1994. Developmental Process of Cooperative Interorganizational Relationships. *Academy of Management Review*, 19: 90-118.

Rumelt, R. P. 1974. *Strategy, structure and economic performance*. Cambridge, MA: Harvard University Press.

Tam, S. 1990. Centrifugal versus centripetal growth process: Contrasting ideal types for conceptualizing the developmental patterns of Chinese and Japanese firms. In Steward R. Clegg and S. Gordon Redding (Eds.) *Capitalism in contrasting cultures* : 153-183, Berlin: Walter de Gruyter.

Thorelli, H. B. 1986. Networks: Between markets and hierarchies. *Strategic Management Journal*, 7: 37-51.

Uzzi, B. 1996. The sources and consequences of embeddedness for the economic performance of organizations: The network effect. *American Sociological Review*, 61: 674-98.

Wiersema, Margarethe F. and Bantel, Karen A. 1992. Top management team demography and corporate strategic change. *Academy of Management Journal*, 35: 91-121.

Williamson, O. E. 1975. Market and Hierarchy. NY: Free Press.

Xin, K. R. and Pearce, J L. 1996. Guanxi: Connections as substitutes for formal institutional support. *Academy of Management Journal*, 39: 1641-1658.

INITIAL SCALE, CORPORATE VENTURING NETWORK, AND SURVIVAL

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ABSTRACT

Survival is one of the important goals for a business. Previous studies on liability of newness indicated that the survival rate of a new business is lower. This study further explores whether the survival rate of a new business would differ under different initial conditions. This study proposes the positive effects of initial scale and affiliation with a venturing network, and the negative interaction effect between them on the survival rate of new businesses. An empirical examination adopting Cox regression model confirms all hypotheses in samples from Taiwan security firms.

Keywords: initial scale, corporate venturing network, survival

INTRODUCTION

Survival is one of the important goals for businesses. Businesses keep striving for survival since their founding. Especially for nascent businesses, to survive is a severe challenge. Many studies indicated that a nascent business is more likely to disband. For instance, Starbuck and Nystrom (1981: xiv), after restructuring Crum's (1953) data, showed that only 38% of nascent businesses reach to age of five, while 65% of ten-year-old businesses survive

to age of 15 and 83% of fifty-year-old businesses attain age of 55. Numerous organizational ecology studies also found a lower survival rate of younger organizations (e.g. Hannan & Freeman, 1989; Freeman, Carroll, & Hannan, 1983).

Why nascent organizations are more likely to disappear? Liability of newness is a widely accepted explanation (Stinchcombe, 1965). It attributes the lower survival rate of nascent organizations to (1) their needs to learn or create new social roles under a condition of limited resources and (2) the absence of stable relationships with important external constituents.

Though the liability of newness argument is widely accepted and receives empirical supports, there still exists room for further elaboration (Tucker, Singh, & House, 1984). For instance, if a nascent business is easier to disband because of limited resources, then whether the survival rates of businesses with different amount of founding resources are different would become a question worthy of investigations. Similarly, it is also an interesting question whether a nascent business born with stable external relations would be less likely to disappear. This study therefore aims to extend the research on the survival rates of new businesses.

This study examines three effects. The first is the effect of founding resources on the survival rates of new businesses. The second is the effect of born relationships on the survival rates of new businesses. The third is the interaction effect between initial resources and born relationships on survival rates. As for the first effect, the liability of smallness argument suggests that the survival rates of small businesses would be higher because of their incapacity of raising funds, of assuming training expenditure, disadvantages in taxes, and unattractiveness to employees (Aldrich & Auster, 1986). Therefore, it can be inferred that businesses with a larger initial scale would be more capable of mitigate unfavorable environmental influence and then survive.

For the second effect, many network studies indicated the prevalence of networked-form organizations (e.g. Jarillo, 1988; Powell, 1990). A business can acquire necessary resources through network relationships (Chang & Hong, 2000). Embedded economic transaction relationships can also create unique values and encourage partners to share the values by transferring appropriate resources and knowledge and strengthening governance mechanism (Portes & Sensenbrenner, 1993; Uzzi, 1997). In this study, we put an emphasis on corporate venturing network, which a business is strongly embedded in. In a network composed of corporate venturing relations, a parent company may establish new corporate ventures (CVs). New CVs affiliated with a corporate venturing network can utilize the advantages that come with venturing relationships and enhance their survival rates.

While the second effect focuses on recipients of network resources, the third focuses on the parent company. If the parent company establishes a new CV in a small scale for the purpose of entering emerging business markets, the parent company would be more likely to retreat and terminate the CV once the CV falls into unexpected adverse environments. In other words, a firm's affiliation with a corporate venturing network and the firm's initial scale may have an interaction effect on its survival.

Particularly, Chinese businesses often choose markets in an opportunistic manner in which businesses may quickly enter, by establishing new and small CVs, and retreat from certain niches (Hamilton, 1997). It also suggests that affiliation to a corporate venturing network may moderate the effect of initial scale on survival rates in the Chinese context. Therefore, this study adopts an event history analysis and examines the effects of initial scale, affiliation

to a corporate venturing network, and the interaction effect between them on survival rates. The sample and data are collected from Taiwan's security firms.

THEORY AND HYPOTHESES

New businesses often face the challenge of survival. Since scale is closely associated with survival (Freeman, Carroll & Hannan, 1983), small firms face greater pressure of survival than large firms do (Aldrich & Auster, 1986; MacMillan, 1980). Initial scale particularly has a tremendous influence on survival (Brüderl, Preisendorfer, & Ziegler, 1992). A business with large initial scale may have more financial resources to struggle through environmental turbulence. It also may be capable of raising funds at a lower cost. Moreover, a government is more likely to concede regulations to large businesses, while a similar concession may not happen to small businesses. A large business also has an advantage in recruiting employees. It is equipped with internal labor markets and often provides better career development paths and stable job security, which helps it attract excellent employees. Therefore, large businesses have higher survival rates than small businesses (Aldrich & Auster, 1986).

In addition to the resource advantage noted above, environmental selection favors large businesses too. Large businesses usually have strong inertia and exhibit high stability. Since environments favor stable organizations, large businesses are more likely to survive (Hannan & Freeman, 1984). Large businesses are viewed by critical constituents stable in the future. That is, they can more easily gain legitimacy, which would make critical constituents more likely to establish exchange relationships with them. A key factor for the survival of new businesses is whether they can establish exchange relationships with other social actors (Pfeffer, 1987). Accordingly, businesses with large initial scale would have higher survival rates.

Hypothesis 1: New businesses with larger initial scale would have higher survival rates.

According to Stinchcombe's (1965) viewpoint, low survival rates of nascent businesses can be attributed to, on the one hand, that they must compete against market incumbents for establishing exchange relationships with suppliers, customers, and other critical constituents and, on the other hand, that they need to learn a set of new social roles in the business system. However, these two challenges can be dealt more easily within corporate venturing networks.

A corporate venturing network consists of a parent company and numerous CVs. Owning certain amount of equity of CVs, the parent company can influence CVs' strategic decisions. A coordination system with a function like central planning thus exists within a corporate venturing network. The coordination makes the corporate venturing network like a collective community, as Astley and Van de Ven (1983) described, within which some companies play a role of shielding others and mitigating environmental turbulence. That is, within a corporate venturing network, new CVs can establish transaction relations with the parent companies and thus avoid competition against market incumbents for establishing relationships with critical constituents. Moreover, an existent coordination system within the corporate venturing network gives new CVs a role model that allows new CVs to spend fewer resources in learning how to play their social roles. Furthermore, organizational ecologists asserted that environmental selection pressure favors high reliable organizations (Hannan & Freeman, 1984, 1989). Stable interorganizational interaction within a corporate venturing network provides CVs a reliable operational pattern that in turn contributes to CVs' higher survival rates than those of free-standing organizations (Miner, Amburgey & Stearns, 1990;

Baum, & Oliver, 1991). Affiliation with a corporate venturing network also enables CVs to share the parent company's legitimacy that facilitates mobilization of social resources (Stuart, Hoang & Hybels, 1999). All these enhance survival rates of new CVs in a corporate venturing network.

Hypothesis 2: Affiliation with a corporate venturing network would enhance survival rates of new businesses.

Affiliation with a corporate venturing network not only directly influences new CVs' survival rates, but also moderates the relationships between initial scale and survival rates.

In Chinese society, a business often launches CVs to expand into emerging business markets. Sometimes such an expansion is opportunistic (Hamilton & Kao, 1990). The CVs established in an opportunistic manner are often small-scale. In addition, Chinese corporate venturing networks often remain flexible in decision-making and respond rapidly to environmental changes (Whitley, 1992). This feature implies that the whole corporate venturing network may not necessarily have high commitments to all CVs, especially when a CV is small in scale and is only a trial into emerging business markets.

Moreover, within a corporate venturing network, there often exists a network-level management team in charge of deploying whole network's resources. Managers in the network-level management team sometimes occupy multiple managerial positions of businesses in the corporate venturing network (Hamilton & Kao, 1990). Accordingly, the whole corporate venturing network's benefits would influence CVs' resource allocation decisions. In other words, CVs in a Chinese corporate venturing network is not an independent unit in terms of calculation of economic interests, though they are legally independent. Therefore, if a new CV face adverse environmental conditions, the parent company may choose to retreat from the CV's business markets and end the new CV.

However, for a new business not affiliated with a corporate venturing network, it would behave like an economically independent unit, even it may be small in scale. Its dissolution would not be influenced directly by other businesses' decisions. On the other hand, once a new business, if not affiliated with a corporate venturing network, dissolve, it is often harder for managers to immediately find jobs in other businesses. So a higher commitment would exist in the business and make the business less likely to dissolve. By contrast, managers of businesses affiliated with a corporate venturing network can be rotated to other businesses in the same corporate venturing network. Therefore, a new business with small initial scale, if affiliated with a corporate venturing network, would be more likely to dissolve than its counterpart not affiliated with a corporate venturing network.

Nevertheless, the arguments mentioned above would not be suited to businesses with large initial scale. Since a parent company is unlikely to launch large new CVs in a trial manner, the parent company's commitments to large new CVs would not significantly differ from those of counterparts not affiliated with corporate venturing networks. Put differently, a business's affiliation with a corporate venturing network would make the business less likely to survive in case of a small initial scale than a business without such affiliation. As the initial scale becomes larger, the difference in survival rates would decrease gradually.

Hypothesis 3: In the Chinese society, affiliation with a corporate venturing network would strengthen the relation between initial scale and survival rates.

RESEARCH METHOD

Data collection

This study collects samples and data from Taiwan security firms. In Taiwan, the security industry can be traced to the establishment of "Security and Exchange Commission (SEC)", placed under the Ministry of Economic Affair, in 1960. Next year, Taiwan Stock Exchange Corporation (TSEC) funded by various private and state-owned enterprises began its operation and security trade started at that time. In 1988, the Taiwan security industry began to liberalize and intense competition in the industry emerged since then. Table 1 lists the total number of security firms (at risk), new-established firms (entry), and disbanded firms (exit) from 1962 to 2000. The numbers are calculated from data provided by TSEC.

Insert Table 1 about here

Taiwan security industry deregulated in 1988 at that time intense competition emerged. Therefore we choose firms established between 1988 and 2000 as samples. The number of security firms that ever existed from 1962 to 2000 in the industry is 448. Of the 448 firms, 37 firms established before the deregulation of security industry are excluded in this study. Four firms of the 411 remainders have missing data. Thus the final effective sample includes 407 firms, of which 147 firms are still existent in 2000. Table 2 shows the cross table of "whether still existent in 2000" and "the length of life time."

Insert Table 2 about here

Model specification

This study adopts an event history analysis to examine the impacts of initial size and business network system on the exit rate of security firms in Taiwan. Two key concepts in event history analysis are the risk set and the hazard (exit) rate. The risk set here is defined as the set of firms at risk of a given event, such as entry or exit, at a given time. The risk set in this study is the number of security firms in Taiwan. The hazard rate is defined as the probability of the occurrence of event within a particular year for the risk set at that year. The hazard rate can be formally defined as

$$h(t)= \lim_{s_0} \Pr[\text{exit}(t, t+s)|\text{alive at } t]/s$$

Pr[.] denotes the probability that a firm will exit in the interval from t to t+s. This article adopts Cox proportional hazard model (Cox,1972,1975). Here the event is defined as the dissolution of a firm. The event will be coded as 1 in case of dissolution and the years from birth to death are counted; as 0 in case of still being alive in 2000 and the years from birth to 2000 are counted. Therefore, in a Cox regression model, a positive coefficient means that a greater value of independent variable will lead to a higher probability of occurrence of the event. In this study, it will lead to higher probability of death.

The estimation model can be written as

$$\text{Log } h_i(t) = a(t) + b_1*\text{Lnasset}_i + b2*\text{Network}_i + b3*\text{Lnasset}_i*\text{Network}_i + b4*\text{Lifegrowth}_i +$$

$b5*Entrytiming_i+b6*Density_i(t)+e_i$

Measurement

Dependent variable

Log $h_i(t)$ is the probability that firm *i* dissolve in year t.

Independent variable

Initial scale ($Lnasset_i$) is measured by natural logarithm of firms' initial assets.
Affiliation with corporate venturing network ($Network_i$)_is measured by whether at least half of equity of firm *i* is owned by another company. It is coded as 1 if yes; as 0 otherwise. We get the data from secondary data published by TSEC and ***Business Groups in Taiwan*** published by China Credit Information Service, LTD (CCIS). CCIS, founded in 1966, collects business group information since 1974.

Control variable

Average industry growth rate over all years of firm *i*'s existence ($Lifegrowth_i$) is measured by the average of industry growth rate firm *i* experiences in its whole life.

Entry timing of firm *i* ($Entrytiming_i$) is measured by the year of firm *i*'s establishment minus 1960.

Population density ($Density_i(t)$), a time-varying explanatory variable, is measured by the number of security firms when firm *i* is t years old.

STATISTICAL RESULTS

Of the 407 firms included in this study, 260 firms dissolved before the end of 2000. The censored rate is 36.1%.

Insert Table 3 about here

Table 3 depicts means, standard deviations and Pearson correlations of variables. The highest value of correlations is 0.361. The problem of collinearity does not exist[1]. Three hypotheses are testified by an event history analysis. Table 4 presents the empirical results. In Table 4, model 1 includes control variables; model 2, examining main effects, adds independent variables to model 1; model 3 adds the interactive term to model 2 and examine the interactive effect.

Insert Table 4 about here

Hypothesis 1 suggests that large initial scale leads to a lower probability of the occurrence of event (defined as the disbanding of firms in this study). In model 2 of table 4, the coefficient of $Lnasset_i$ is -.2906 ($p<.001$). Hypothesis 1 is supported. Hypothesis 2 predicts that

[1] The collinearity test of regression analysis shows that a collinearity problem does not exist for the set of independent variables of this study.

affiliation with a corporate venturing network will lead to a higher survival rate. In model 2, the coefficient of $network_i$ is -.9521 ($p<.1$). It shows that affiliation with a corporate venturing network is negatively associated the occurrence of event. Thus hypothesis 2 is supported. In model 3, the coefficient of interactive term is -.0495 ($p<.1$). The results show that the effect of initial scale on survival rates for firms that are affiliated with corporate venturing network (-.3309=-.2814-.0495) would be stronger than that for firms that are free-standing (-.2814). In other words, hypothesis 3 is also supported.

As for control variables, the effect of $Density_i(t)$ is positive and significant in all three models. It means that a higher degree of competition is associated with a higher probability of firms' dissolution. The effect of $Lifegrowth_i$ is negative and significant in all three models, which suggests that higher average industry growth rate across life is associated with a lower probability of a firm's dissolution. The effect of $Entrytiming_i$ is positive and significant in all three models. Late entrants would be more likely to dissolve. The effects of all three control variables are as expected.

DISCUSSION

This study investigates main and interactive effects of initial scale and affiliation with corporate venturing network on firms' survival rates for a sample of Taiwan security firms. After controlling competitive density, average industry growth rate, and entry timing, this study finds that large initial scale and affiliation with corporate venturing network enhance survival rates, and that affiliation with corporate venturing network amplifies the effect of initial scale on survival rates. These results have following implications.

First, as expected, a firm with small initial scale is more likely to dissolve. This is consistent with the findings of previous studies (e.g. Brüderl & Schüssler, 1990; Delacroix, & Swaninathan, 1991; Delacroix, Swaninathan & Solt, 1989; Baum & Oliver, 1991, 1992). It confirms that liability of newness is particularly severe for small firms. The reason may be that firms with small initial scale are less capable of attracting qualified employees, face disadvantages of taxes and raising funds, and have fewer amount of resources to respond to environmental turbulence. Thus small firms' survival rates become lower. This finding suggests that if a new business is expected to keep alive for a longer time, it would be better to start with large scale.

Next, on the issue of the effect of network on survival rates, this study shows that affiliation with a corporate venturing network would enhance survival rates, a finding similar with Miner, Amburgey and Stearns (1990) and Baum and Oliver (1991). Networks provide the shielding function that protects businesses from environmental turbulence (Astley, 1985). Established stable interactive patterns within networks permit a new business, compared with its free-standing counterparts, to save the resources originally used to learn new social roles. Hence survival rates for new businesses affiliated with corporate venturing networks are higher.

In East Asia, businesses often operate in a shielding manner. For instance, inter-dependent relationships often exist among businesses in Japan. These relationships are critical in managing risk and uncertainty (Whitley, 1992; Orru, Hamilton, & Suzuki, 1989). As for Chinese enterprises, shareholdings, relational contracts and strategic alliances are also pervasive within networks. Central planning systems often dominate resource allocation decisions of businesses affiliated with networks (Redding, 1990; Redding & Whitely, 1990).

In Korea, businesses are often controlled by Chaebol, the operation of which often follows collectivism logic (Biggart, 1990). Since common interests exist among businesses affiliated with the same network (Chang & Hong, 2000), it is reasonable to believe that new businesses associated with networks are better protected and have higher survival rates.

Another explanation of network effects on survival rates is "contagious effects" of legitimacy (Zucker, 1988). That is, a firm closely linked with other highly-legitimate organizations can share their legitimacy, and thus can increase its ability to acquire resources. Its survival rates would enhance consequently. However, different parent companies may have different degree of legitimacy. If the degree of legitimacy of parent companies can be distinguished, it would contribute to the elaboration of network effects on survival rates.

An important finding of this study is the interactive effect between initial scale and affiliation with corporate venturing network on survival rates. The empirical results support that affiliation with corporate venturing networks strengthens the effect of initial scale on survival rates. To be more detailed, the same difference in initial scale would lead to greater differential survival rates in a group of new businesses affiliated with corporate venturing networks than those in a group of free-standing new businesses. This finding echoes the arguments of market commitment and strategic behaviors of Chinese businesses.

Free-standing businesses are both legally and operationally independent. Though differences in initial scale lead to different survival rates, we can reasonably assume those businesses, no matter large or small, and their managers have strong motivations of keeping businesses alive. By contrast, businesses affiliated with corporate venturing networks are legally, but not operationally, independent businesses. Strategic actions of such businesses reflect, more or less, the managerial intentions of their parent companies. Large initial scales may reflect parent companies' strong commitments to enter new markets. By contrast, parent companies' entries into emerging markets by establishing new businesses in small scale may be opportunistic trials.

Chinese businesses often seek opportunistic diversification (Hamilton & Kao, 1990). In Taiwan, when new business markets emerge, business groups will try to enter into those markets by establishing new ventures even the new markets are unrelated to their existent line of businesses. In the 1990s, many industries in Taiwan, such as security, banking and telecommunication industries, all underwent liberalization. As new business markets emerged in these industries, many business groups entered into these industries to grasp business opportunities. Business groups often have a larger amount of resources. Under a situation in which a resourceful business group enters new industries by establishing small corporate ventures, the entry would be more likely an opportunistic trial. If too many business groups try to enter, competition in these markets becomes severe and drives out some of those opportunistic trials.

In addition, since managers of corporate ventures can rotate to the business group's other enterprises, their commitments to corporate ventures would be lower than those of their free-standing counterparts. The factor also makes corporate ventures with small initial scales less likely to survive.

While above arguments are suited for Chinese businesses, it is a question worthy of further investigation whether similar arguments can hold under different cultural contexts. Though very few studies focused on this research question, some exceptions still exist such as Doi's

study (2000) on Japan manufacture industries. He pointed out that firms in industries of higher subcontracting ratio would be more likely to exit because of lower sunk costs of exit. This study finds that lower commitments would make firms more likely to exit. Since commitment is a determinant of exit probability just as sunk cost is, our study therefore echoes Doi's findings from a different determinant of exit. Carroll and Delacroix (1982), in a study on Argentine newspaper industry, indicated that newspapers founded in political turmoil periods would be more likely to be opportunistic ones and tend to retreat when environments become stable. Thus similar phenomena are not unique to the Chinese society. However, Baum and Oliver's study (1991) on child care service in Canada suggested that the effect of institutional linkages on reducing small-scale enterprises' disbanding rates is greater than that on reducing large-scale ones'. Their argument, from legitimacy recipients' perspective, is that small organizations would benefit from network relationships much more than large ones do. Their findings differ from ours, but the mechanisms proposed in two studies are similar in some aspects. While the actors in question are different, the similar focus is that our study and Baum and Oliver's both put an emphasis on the shielding function of network relationships. The different focus is that our study analyzes new businesses' survival rates from an angle of their parent companies, while Baum and Oliver's analyzed the same thing from an angle of businesses themselves. No matter what the case is, the interactive effects of scale and network relationships on survival rates under different cultural contexts are worthy of further explorations.

REFERENCES

Aldrich, Howard and Ellen S. Auster (1986) Even dwarfs started small: Liability of age and size and their strategic implications. In Barry M. Staw and L. L. Cummings (Eds.) Research in Organizational Behavior, 8: 165-198. Greenwich, Connecticut: JAI Press.

Amburgey, Terry L; Rao, Hayagreeva. 1996. Organizational ecology: Past, present, and future directions. ***AMJ*** , 39: 1265-1286

Astley, W. G. (1985) The two ecologies: Population and community perspectives on organizational evolution. ASQ, 30: 224-241

Baum J. A. C. and Oliver, C. (1991) "Institutional Linkages and Organizational Mortality" ***ASQ***, 36: 187-218

Baum J. A. C. and Oliver, C. (1992) "Institutional bmbeddedness and the Dynsmics of Organizational Populations" ASR, Vol. 57, August: 540-559

Bourgeois, L. J. 1981. On the measurement of organizational slack. AMR, 6: 29-39.

Brüderl, J. and Schussler, R. 1990. Organizational mortality: The liabilities of newness and adolescence. ***ASQ***, 35: 530-547.

Brüderl, Josef, Peter Preisendorfer, and Rolf Ziegler,. 1992. Survival chances of newly founded business organizations. ASR, 57: 227-242.

Cox, D. R., " Partial likelihood," Biometrika, 62, 1975: 269-276.

Cox, D. R., " Regression models and life tables, " Journal of the Royal Statistical Society, Series B34,1972: 187-220.

Crum, William Leonard (1953) The age structure of the corporate system. Berkely: University of California Press.

Cyert, Richard M., and James G. March,. 1963. A Behaviroal Theory of the Firm. Englewood Cliff, NJ: Prentice-Hall.

Delacroix, J. and Swaninathan, A. 1991. Cosmetic, speculative, and adaptive organizational change in the wine industry: A longitudinal study. ***ASQ***, 36: 631-661.

Delacroix, J., Swaninathan, A., & Solt, M. E. 1989. Density dependence versus population dynamics: An ecological study of failings in the California wine industry. ASR, 54: 245-262.

Dess, G. G. & Beard, D. W. 1984. Dimensions of organizational task environments. ASQ, 29: 52-73.

Doi, N. 2000. The determinants of firm exits in Japanese manufacturing industries. Small Business Economics, 13: 331-337.

Freeman, John H., Glenn R. Carroll, and Michael T. Hannan (1983) The liability of newness: Age dependence in organizational death rates. ASR, 48: 692-710.

Freeman, John, Glenn R. Carroll, and Michael T. Hannan,. 1983. The liability of newness: Age dependence in organizational death rates. ASR, 48: 692-710

Hamilton, G. G. 1997. Organization and market process in Taiwan's capitalist economy. In Marco Orru, Nicole Woolsey Biggart, Gary G. Hamilton (Eds.) The Economic Organization of East Asian Capitalism: 237-293. CA: Sage.

Hamilton, G. G. and Kao, C.-S. 1990. The institutional foundations of Chinese business: The family firm in Taiwan. ***Comparative Social Research***, Vol. 12: 135-151. JAI Press.

Hannan, M. T., & Freeman, J. (1984). "Structural inertia and organizational change." American Sociological Review, 49: 149-164.

Hannan, Michael T. and Freeman, John H. 1989. Organizational Ecology. Cambridge MA: Harvard University Press.

Jaccard, J., Turrisi, R., and Wan, Choi K. 1990. Interaction Effects in Multiple Regression. Newbury Park CA: Sage.

Miner, A. S., Amburgey T. L., and Stearns T. M. (1990). "Interorganizational Linkages and Population Dynamics: Buffering and Transformational Shields" ***ASQ***, Vol. 35: 689-713.

Pfeffer, Jeffrey. 1987. Bringing the environment back in: The social context of business strategy. In Teece, D. (ed.), The competitive challenge. Cambridge, MA.: Ballinger.

Redding, S. G. 1990. ***The spirit of Chinese capitalism***. Berlin, New York: de Gruyter.

Starbuck, William H. 1976. Organizations and their environments. In Marvin D. Dunnette (ed.), Handbook of Industrial and Organizational Psychology: 1069-1123. Chicago: Rand McNally.

Starbuck, William H. and Paul C. Nystrom (1981) Designing and understanding organizations. In Paul C. Nystrom and William H. Starbuck (Eds.) Handbook of Organizational Design. New York: Oxford University Press.

Stinchcombe, Arthur L. 1965. "Social structure and organizations." In James G. March (ed.) Handbook of Organizations: 141-193. Chicago: Rand McNally.

Thompson, James D. 1967. Organizations in Action. NY: McGraw-Hill.

Tushman, M. L. and Anderson, P. 1986. Technological discontinuities and organizational environments. ASQ, 31: 439-465.

Whitley, Richard 1992. Business Systems in East Asia: Firms, Markets and Societies. Thousand Oaks: Sage

Zucker, Lynne G. 1988. Where do institutional patterns come from? Organizations as actors in social systems. In Lynne G. Zucker (Ed.) Institutional Patterns and Organizations: Culture and Environment: 23-49. Cambridge MA: Ballinger Publishing Company.

Table 1 Number of Entry, Exit, and At Risk and Exit Rate of Taiwan Security from 1962 to 2000

Year	Number of new established firm (Entry)	Number of disbanding firm (Exit)	Total Number (At risk)	Exit rate %
1962	13	0	13	0.00
1963	0	0	13	0.00
1964	0	0	13	0.00
1965	0	0	13	0.00
1966	0	0	13	0.00
1967	1	0	14	0.00
1968	1	0	15	0.00
1969	0	0	15	0.00
1970	0	0	15	0.00
1971	1	0	16	0.00
1972	3	0	19	0.00
1973	1	0	20	0.00
1974	3	0	23	0.00
1975	1	0	24	0.00
1976	1	0	25	0.00
1977	0	0	25	0.00
1978	2	0	27	0.00
1979	1	0	28	0.00
1980	1	0	29	0.00
1981	0	0	29	0.00
1982	1	0	30	0.00
1983	0	0	30	0.00
1984	0	0	30	0.00
1985	0	0	30	0.00
1986	1	0	31	0.00
1987	0	0	31	0.00
1988	91	0	122	0.00
1989	182	2	302	0.66
1990	87	4	385	1.04
1991	3	31	357	8.68
1992	1	72	286	25.17
1993	4	23	267	8.61
1994	5	11	261	4.21
1995	4	19	246	7.72
1996	4	22	228	9.65
1997	7	21	214	9.81

1998	16	21	209	10.05
1999	4	9	204	4.41
2000	3	31	176	17.61
Total	442	266		

Table 2 Distribution of " Whether Existent in 2000" and " The Length of Life Time"

		In 2000		Total
		Existent	Disbanding	
The Length of Life Time	.00	3	1	4
	1.00	4	17	21
	2.00	15	34	49
	3.00	6	50	56
	4.00	4	29	33
	5.00	2	22	24
	6.00	3	15	18
	7.00	0	20	20
	8.00	1	23	24
	9.00	1	17	18
	10.00	29	9	38
	11.00	49	11	60
	12.00	33	13	46
Total		150	261	411

Table 3 Means, Standard Deviations and Pearson Correlations of Variables [a]

	Mean	STD	1	2	3	4	5
1 The length of life time	6.6496	3.8196					
2 Whether still existent in 2000	0.6350	0.4820	-.451				
3 $Lifegrowth_i$	-0.0146	0.2258	.550	-.350			
4 $Entrytiming_i$	30.9027	2.6596	-.430	-.336	.032		
5 $Lnasset_i$	19.7815	1.1705	.366	-.314	.232	-.045	
6 $Network_i$	0.0997	0.3000	.035	-.372	.254	.361	.327

a. Absolute value greater than .232 is significant at $p < .05$ level (2-tailed test)

Table 4 Cox-Regression Results [a,b,c,d]

	Model 1	Model 2	Model 3
$Density_i$(t) (Time-covariant)	.0084[+] (.0044)[c]	.0088* (.0044)	.0088* (.0044)
$Lifegrowth_i$	-9.3762*** (.6978)	-8.7562*** (.7057)	-8.7611*** (.7056)
$Entrytiming_i$	.2182 * (.1049)	.2445* (.1067)	.2439* (.1066)
$Lnasset_i$ (Hypothesis 1)		-.2906** (.0930)	-.2814** (.0932)
$Network_i$ (Hypothesis 2)		-.9521[+] (.5385)	
$Lnasset_i$ * $Network_i$ (Hypothesis 3)			-.0495 [+] (.0264)
Sig.	.0000	.0000	.0000
Chi Square	250.083	263.158	263.141
-2Log likelihood	2223.457	2198.343	2197.736
D. F.	3	5	5

a. Initial -2Log likelihood=2532.401
b. N=407
c. The number in parentheses is standard deviation.
*d. + <.1, * <.05, **<.01, ***<.001*

OFFERING PLACEMENTS TO PEOPLE WITH DISABILITIES WITHIN SMES: SOCIAL RESPONSIBILITY OR COMPETITIVE ADVANTAGE?

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ABSTRACT

Corporate responsibility is increasingly being taken seriously by businesses of all types. This paper considers one area of corporate responsibility, that of placements, and in particular placements for people with disabilities. Increasing the proportion of people with disabilities back into the labour market has been a goal for successive governments in the UK, yet the current legislation exempts many small organisations from current disability legislation. This paper reports on a European Social funded project that considers the extent of placements activity for people with disabilities provided by organisations in Northamptonshire, UK. It indicates that involvement and attitudes to placements for people with disabilities by Northamptonshire's organisations are both size and sectorally related and that increasing the level of this activity within organisations requires legislation and support and guidance from a wide variety of public agencies.

INTRODUCTION

According to Howells (UK Labour minister for corporate responsibility), there is clear evidence "that businesses of all sizes are taking corporate social responsibility (CSR) seriously"(Margolis (2001) p34). This area of corporate social responsibility (CSR) can include brand strength, a company's approach to managing its impact on the environment and its reputation with customers, suppliers and employees. A survey by Mori in 2000 (see Margolis 2001) found that a large proportion of SMEs were already involved in social responsibility, with around half of the 200 organisations in the study spending up to £10,000 per annum on activities in the local community in 1999. However, the survey revealed that SMEs are not yet defining CSR as something that can be incorporated into their core business activities, due to time pressures, costs and the effect on company profits. Spence and Lozano (2000) concur. They found that many small firms were unaware that what they were doing is ethical, and that they could use this as a marketing tool to improve their reputation. Reilly (2000) also found in a study in the US. that 80% of consumers questioned viewed a company more favourably if it supported a cause and two-thirds of the respondents would opt for a retailer associated with a good cause.

SMALL FIRMS AND THE AREA OF SOCIAL RESPONSIBILITY

The relevance of small firms to the social and economic environment in the UK is too significant to be discarded. In 2000 there were 3.7 million active businesses in the UK at the start of the year (Small Business Service, 2001). Of the entire business

population 25,000 were medium sized enterprises (50-249 employees) and less than 700 were large (250 or more employees). Small businesses, including those without any employees, therefore account for over 99% of businesses, 44% of non-government employment and 37% of turnover (Small Business Service).

There is a limited but growing range of work on ethics and small firms in Europe, see Vyakarnam (1995), Vyakarnam et al. (1997), Quinn (1997) and Pons et al. (1998). In most of the work the idea of ethics has been developed explicitly as a topic. However, as Spence and Lozano (2000) note, the difference in nature between small firms and large firms means that the consideration of ethical issues or questions within the small firm community needs care. It cannot always be assumed that small firm managers are happy and have knowledge of the language of ethics. Small-firm owner managers however, may have very firm personal convictions that include ethical perspectives and because they are the owner-mangers in small firms these permeate the organisation. Spence and Lozano (2000) also note that small firm owner-managers in the UK are also likely to be influenced to pay more attention to social and ethical issues by their employees. They further note that the law is important in influencing the organisations' position on ethics and policy makers should recognised that a system of self-regulation may not necessarily work.

PEOPLE WITH DISABILITIES AND ENTRY INTO EMPLOYMENT

One facet of social responsibility concerns the treatment of employees in general and the employment of people with disabilities. Within the UK the principle that underpins policy for the employment of disabled people has remained constant – the majority of disabled people are fully employable on their own merits in competition with non-disabled workers, providing that prejudice and discrimination are overcome. The mechanism in the UK by which the principle is put into practice has altered since the Disabled Persons (Employment) Act 1944. A social obligation – at one time discharged by the government – has given way to individual responsibility for action and self-policing. In addition over the last twenty years at least there has been a movement away from collective obligation towards self-reliance promulgated by the governments' stance over interference in the labour market and by its advocacy of supply-side solutions to economic difficulties. At the same time there has been pressure from a strong disabled people's movement that disabled people do not need "care" or "deserve" special provision. These factors, therefore were some of the pressures behind the repeal of much of the 1944 Act and the development of the Disability Discrimination Act (1995). The 1995 Act made it unlawful for an employer to discriminate against a disabled person in the arrangements which (s)he made for the purpose of recruitment or selection; in terms on which (s)he offered that person employment or by refusing to offer, or deliberately not offering him employment. The Act also made unlawful for employers to discriminate against someone with a disability in terms of promotion, transfer, training or receiving any other benefit. It is also the duty of the employer to provide steps that help the person with a disability to remain in work or to find work. These steps might include adjustments to premises, the allocation of some of the person with the disabilities' duties to others, altering the working hours, acquiring or modifying equipment, and providing supervision. However, the "reasonableness" of these changes was subject to practicability, financial costs, extent of disruption etc.

There are a number of problems with the Act. The principal concern is that it exempts firms employing less than 15 workers from the provisions of the Act, moreover, the DDA established an advisory body – the National Disability Council (NDC) which has no enforcement powers. The NDC was replaced with the Disability Rights Commission in April 2000, but the extent to which this has altered the behaviour of firms is a moot point.

Although people with disabilities are less likely to be employed in the mainstream workforce, when they do find work it is often low paid, low status and with poor working conditions (Thornton and Lunt, (1996), Berthoud et al (1993)). The Department for Education and Employment in the UK has argued that the cost of employing people with disabilities is generally low while the value to employers was high (DEE, 1998). Employers regarded the fact that making adjustments to the working environment was common sense in that it assisted them in obtaining the best person (with or without a disability). In addition, employees who had disabilities tended to have better punctuality and attendance records than people who did not have a disability. Nonetheless, people with disabilities are under-represented in professional and managerial jobs, on average earn less than people without disabilities, and are more likely to live in poverty, (Vancouver Declaration, 1992).

So how can people with disabilities be helped into the workforce and to what extent do SMEs partake in the take up of employees in disabilities? There have been various UK government initiatives to help people with disabilities back into the workforce. In the UK there has been the Disability Working Allowance which in October 1999 was replaced by the Disabled person's Tax Credit. Quota schemes were introduced for various sectors of the economy to ensure that disabled people are represented proportionately in employment. However, four government reviews of the quota arrangements between 1973 and 1991 referred to their ineffectiveness and these have subsequently been abandoned. Alternatively organisations can be encouraged to take on people with disabilities through financial incentives such as, tax deductions, relief of employer's national insurance contributions and the like. Payments may be made by the state to compensate employers who would otherwise be "out of pocket" because of employing people who impose extra costs, are less productive than non-disabled people, or both. Although the reasoning behind financial incentives is rarely made explicit, their existence may signal to the employer that disabled people have less to offer than others do.

Organisations may be encouraged to take on people with disabilities to improve their social standing in the community. Increasingly, businesses in the UK are being persuaded that business will gain, rather than lose from having a person with a disability amongst its employees. The argument is that it makes "good business sense" the focus being on the benefits, not the disbenefits that may befall the firm if it does employ someone with a disability. In the UK financial support for employing someone with a disability has rarely been targeted at employers, unlike schemes that have existed in the rest of Europe since such a view was considered antiethical where people with disabilities were expected to be employed on merit and in equal competition. Most of UK financial support for people with disabilities has sought to contribute towards the costs of adapting the working environment to meet the needs of a specific employee. However, the take-up has been poor and the few schemes that have been tried have been under-utilised. One of these schemes has been the

Supported Placements Scheme for people with severe disabilities. Under this scheme the employer paid only a portion of the wage and the state, through an agency, paid the remainder. There is evidence, however, that many employers do not know about the range of assistance available for such programmes. A report by the Scottish executive (2001) indicated that demand for places on supported employment programmes exceeds supply. Richards (2002) reporting on a study by Rinaldi and Hill using 56 employers in the London (UK) Borough of Merton noted that approximately 60% were not aware of the Disability Employment Advisor Programme located within the local Employment Service Job Centres. These provide assistance in areas such as accessibility, equipment, and training needs. Of the 40% who did know of the programme, only two-thirds knew how to contact the agency. A rather bleaker picture of employer support for disabled people and the sources of this support has been painted by Radar (2000). The study involving 1,200 small and medium sized enterprises found that 95% of smaller companies were unaware of the support available to meet disability needs in the workplace and almost 80% have no idea where to go for information and advice. As well as greater promotion of government support schemes, there needs to be awareness training, peer support and use of case studies to demonstrate effective practice. The Rinaldi and Hill study also found that a third of employers stated that their employment criteria would be different for people with mental health problems as opposed to disabled people generally. Whilst over 40% of employers thought that they could not make changes and/or adjustments to their work place for people with disabilities. Furthermore 17% did not feel that they were able to employ a person with a disability.

One aspect of supported employment is through placements and these have been supported by a number of organisations such as The National Autistic Society, the Royal National Institute for the Blind and in Northamptonshire (UK) Workbridge. It is this area of placements for people with disabilities that this paper seeks to report.

PLACEMENTS IN THE WORKPLACE

The idea of placements generally is not new. Work placements have existed for over 40 years within the context of undergraduate degree programmes. They offer students an opportunity for vocational learning and personal development. For students with disabilities and/or learning difficulties this opportunity can be a key to the world of work from which they might otherwise be excluded. Changes in the Disability Discrimination Act (DDA) introduced by the Special Educational Needs and Disability Act 2001, mean that institutions must take action to ensure disabled students have the same opportunities as others to benefit from work placements. The DFEE (1999) produced an overview of placement activity in both the UK and European Union looking at best practice and to encourage reflection on the issues of placement practice. They considered the idea of placement at all firm sizes and noted that placements in SMEs bring particular challenges and benefits. They argue that placements within SMEs can have a greater real and beneficial impact but that the quality of the placement will generally require closer monitoring (p10). However, the link between placements and the SME sector has not been strong. Traditionally graduates have sought placements in large organisations. Here managers are often well educated and have knowledge of the graduate market and what it can offer them. They are also in a position to monitor progress of any placement students and offer them a reasonable salary. There may also be strong links between placement and the

offer of full-time employment after the placement has finished. It may not only be the offer that is important but for the graduate to take-up the offer of employment. A number of small firms may perceive that graduates may not like to work for them since they cannot offer high salaries, moreover the graduate is likely to leave for other employment afterwards. However, from the government's perspective the SME sector provides a major growth area of the economy, and if organisations want to compete in ever-higher quality markets then they may depend upon higher levels of skills and knowledge in their workers. One way of getting these is through placements. It could be argued that once an SME is willing to take part in graduate placements or placement for people at school then they may also be willing to see the benefits that can accrue from taking on disabled workers. Not only for the aspect of CSR but also because they are getting better employees.

PROJECT BACKGROUND AND METHODOLOGY

Workbridge[1] an independent charitable organisation was awarded European Social Funding in 2001 to investigate Employers' attitudes to disability with the county of Northamptonshire (UK). More specifically the research sought to explore in depth attitudes and actions of employers with regard to recruiting and providing facilities for people with disabilities. The project consisted of two phases:

Phase one:

500 telephone interviews using a structured questionnaire with individuals who managed the human resource (HR) element within the different organisations. The areas covered in the survey included the facilities that organisations provided for people with disabilities and the organisations' involvement with placements generally and placement for the disabled in particular. The questionnaire further covered issues such as the level at which placements were offered in the organisation, whether a placement had lead to full-time employment, and the benefits and costs from employing or having on placement someone with a disability.

Phase two:

20 in-depth interviews with organisations to further examine issues of social responsibility.

This paper reports on the results associated with phase one.

The telephone questionnaire was devised with consultation with a range of individuals who had experience with helping disabled people back into the workplace and/or were helping people with disabilities obtain placements. Having gone through a number of iterations the questionnaire was piloted on a small group of Northamptonshire's organisations. The research was concerned with obtaining 500 completed questionnaires. Because the response rate was expected to be quite low 2500 organisations were drawn from Northamptonshire Chamber database with the expectation that there would be a 20% response rate to the request for a telephone interview. The sample of 2500 organisations was selected to match the proportion of business units in the various SIC sectors that existed in the Northamptonshire economy. The business units were then divided up amongst the districts within the

Northamptonshire economy. Therefore when the telephone interviewers had filled the quota for one sector within a particular district, they would move onto the same sector in another district. The 500 organisations completing questionnaires were chosen to be organisations that employed 10 people or more, since the disability legislation currently exempts organisations below 15 employees.

Sector differences can be highly significant in small firm research (see Curran and Blackburn, (1994)), and it might be expected that size differences would also influence the organisation's demand for and utilisation of people with disabilities in the workplace. It is these two variables that the paper will concentrate on. The results from the questionnaires were analysed using SPSS and a number of frequencies and cross-tabulations are discussed below.

RESULTS

Table 1, Total number of employees

Firm size (employees)	Frequency	Percentage
1 - 9	47	9.4%
10 - 49	332	66.4%
50 - 249	94	18.8%
250 +	24	4.8%
Non-respondents	3	0.6%

Table 1 shows the total number of firms categorised by size responding to the telephone questionnaire survey. Although the original sample was chosen only to include firms with 10 employees or more, over 9% of the respondents were in the 1-9 employee category. This is likely to have occurred because the organisation has down-sized since providing its details to the Northamptonshire Chamber database. One advantage that now arises from the result it that it also permits some analysis to be undertaken with regard to the micro organisations (organisations with 9 or less employees). As Table 1 further indicates two thirds of the sample were small organisations with almost 19% medium sized enterprises.

Table 2 Industry Type

Industry type	Frequency	Percentage
Primary	1	0.2%
Manufacturing	61	12.2%
Construction	42	8.4%
Wholesale	121	24.2%
Hotels/restaurants	29	5.8%
Transport	29	5.8%
Financial services	8	1.6%
Business services	124	24.8%
Private education	26	5.2%
Other	59	11.8%

Table 2 shows the distribution of respondents by sector with the proportions matching the business unit distribution within the county of Northamptonshire. Business services and wholesale provide the largest proportion of business units in the county, though many of these will be small organisations. These sectors were re-categorised for further analysis into eight categories, placing primary in with "others" and putting financial services and business services into one group

FACILITIES PROVIDED FOR PEOPLE WITH DISABILITIES

Table 3 provision of facilities for people with disabilities (percentages)

Company size	Disabled parking spaces*	Easy access to buildings *	Flexible working hours	Toilets for the disabled*	Specialised chairs for the disabled*	Specialised computer equipment*
1-9	10.0%	54.0%	40.0%	24.0%	2.0%	2.0%
10-49	33.9%	70.3%	50.0%	47.6%	11.5%	6.7%
50-249	54.3%	73.4%	100.0%	63.8%	14.9%	9.6%
250+	95.7%	91.3%	69.9%	82.6%	39.1%	43.5%
Total	38.2%	70.2%	50.5%	49.9%	12.55	8.5%

**Results significant at the 99% level*

In terms of facilities provided for people with disabilities, as firms grow they are more likely to offer or provide these facilities. Large firm were more 9 times more likely to provide disabled parking spaces than micro firms (0-9 employees) and over three time as likely to provide toilets for the disabled than were micro firms. The only category in which there was not a growth in provision from micro to large firms was in the provision of flexible working hours. These results are significant at the 99% level. One explanation for this progression of provision for disabled workers as the organisation grows in size is that the disability legislation currently exempts firms with less than 15 employees. Furthermore, many of the provisions are costly and both micro and small firms may find it more difficult to meet the charges of provision. Even if there are grants available for specialised equipment as noted earlier, knowledge of these and to whom they can turn to may be lower at the small/micro firm level. Overall, in the aggregate, organisations were most likely to offer easy access to buildings and less likely to offer specialised chairs and computer equipment for employees with disabilities.

When the data is examined by sector, it was the construction sector that were least likely to offer the range of facilities outlined in Table 3 whilst private education was the sector that was more likely to offer these facilities. In fact over 90% of private education establishment offered easy access to buildings, and a similar proportion provided toilets for the disabled. (Results which are significant at the 99% level). None of the construction companies in the sample offered specialised chairs for people with disabilities, whilst this sector along with the hotel/restaurants sector were least likely to provide specialised computer equipment for people with disabilities.

REASONS FOR PROVIDING FACILITIES FOR DISABLED PEOPLE

When asked why they offered specialised facilities to people with disabilities, the primary reason organisations reported was because it was as a result of government legislation (21%). Very few organisations offered facilities for people with disabilities though pressure from the government (3.4%). This suggests that if changes are to be made it requires government legislation to force these through. Employees and staff with disabilities are unlikely to encourage many organisations to offer facilities to people with disabilities.

Table 4 shows the facilities provided for people with disabilities measured by size of organisation.

Table 4, why facilities are offered by size of organisation

Company size	As a response to government pressure*	As a response to government legislation	As a response to complaints by employees	Have customers with disabilities	Have staff with disabilities**
0-9	0%	10.0%	2.0%	18.0%	0%
10-49	3.6%	20.3%	2.7%	14.6%	6.7%
50-249	2.1%	28.7%	4.3%	12.8%	10.6%
250+	13.0%	21.7%	13.0%	0%	17.4%

** Significant at the 95% level*
*** Significant at the 99% level*

It would appear that both micro and small organisations are unlikely to offer voluntarily, special facilities to people with disabilities, but are equally likely compared with large firms to offer special facilities for people with disabilities if they are forced to do so through government legislation. Smaller firms appeared not be pressurised to offer facilities to people with disabilities from their own employees – perhaps because they do not employ many people with disabilities. However, smaller firms were more likely than larger firms to offer specialised facilities because they had customers with disabilities.

When examined by sector, private education establishments were more likely to offer the facilities as a response to government legislation, with manufacturing and construction the least likely to do so (a result significant at the 95% level). It was also the case that the hotels/restaurants sector were more likely to offer facilities because they have customers with disabilities, whilst transport companies were least likely to do so (a result significant at the 99% level). Nonetheless, there were more similarities that differences by sector than there were by size of organisation

PLACEMENT INITIATIVES

Table 5 indicates that although organisations were more likely to offer work experience for school pupils, it was generally the case that the smaller the organisation the less likely they were to offer both placements for graduates and placements for people with disabilities. In fact 60% of the micro firms in the same

did not offer any form of placement initiatives, a result that was significant at the 99% confidence level. Where placements had been offered the normal length was for period of three months or less with approximately two-thirds of organisations offering this type of placement.

Table 5, During the previous twelve months as the company offered any of the following placement initiatives

Company size	Placements for graduates*	Placements for the disabled*	Work experience for schools*	None*
0-9	10.0%	8.0%	30.0%	60.0%
10-49	15.8%	8.2%	53.0%	37.0%
50-249	24.5%	14.9%	60.6%	30.9%
250+	39.1%	26.1%	65.2%	21.7%
Total	17.9%	10.3%	52.7%	37.4%

** Significant at the 99% level*

Table 6 shows the involvement in placement schemes by sector.

Table 6 – Involvement in placement schemes by sector

	Placements for graduates	Placements for the disabled*	Work experience for schools*	None*
Manufacturing	16.4%	1.6%	45.9%	45.9%
Construction	9.5%	2.4%	54.8%	38.1%
Wholesale	18.2%	19.0%	59.5%	35.5%
Hotels/Restaurants	6.9%	10.3%	41.4%	44.8%
Transport	10.3%	10.3%	34.5%	55.2%
Fin./Bus. Services	23.5%	6.1%	44.7%	42.4%
Private Education	23.1%	18.3%	73.1%	7.7%

** Significant at the 99% level*

It appears that the wholesale, financial/business service and private education sectors are those most involved with offering placements for graduates. However, when it comes to placements for people with disabilities, only the private education and the wholesale sectors are involved to any degree. Less than 3% of the organisations in manufacturing and construction are involved with placements for this group. Work experience activities are prevalent amongst all sectors, and as the final column of Table 6 indicates the transport sector is least likely to be involved with form of placement schemes, whilst private education is the sector most likely to be involved.

Placements can be of many types; however, the majority of organisations (70%) offered placements at the manual/operative level, with a further 27% at skilled levels. Generally, the higher the level of occupation within the organisation the lower is the probability of a placement being offered. There were no significant differences by size of organisations with both micro enterprises and small firms mainly offering placements (when they had done so) for people at the manual/operative level. Similarly the levels at which placements were offered within the different sectors

were very similar with all sectors more likely to offer placements at the manual/operative level.

POST-PLACEMENT SCENARIOS

Placements can also be an access route to full time permanent employment. Just over 56% of organisations had offered at least one of the people that they had on placement a full-time post afterwards and as Table 7 indicates, this procedure was as likely to happen in smaller firms as it was to large organisations.

Table 7 Have any placements led to permanent contracts for employees?

Organisation size	Yes *	No
0-9	73.6%	26.3%
10-49	51.2%	48.8%
50-249	59.7%	40.3%
250+	82.4%	17.6%
Total	56.3%	43.8%

**Result significant at the 95% level*

When this question is examined by sector it was the manufacturing, transport and finance/business services sectors for which over 50% of organisations had turned at least one placement into permanent employment. The private education sector (26.1%) was least likely to have done so.

Although organisations could offer one or more of their placement employees a full-time contract, the majority of organisations (75.9%) only offered a full time contract to one in four of the people that had on placement with them. This feature was true for all companies irrespective of size and sector.

CURRENTLY OFFERED PLACEMENTS TO PEOPLE WITH DISABILITIES

Organisations were asked again if they currently offered placements to people with disabilities. Taking all organisations together, 48% confirmed that they currently offered placements to people with disabilities. This result is much higher than the one provided in Table 5 and may indicate their willingness to offer placements rather than actually offering placements. It was also the case that it was the larger firms that were more willing to offer placements as Table 8 indicates.

Table 8 Currently offer placements for people with disabilities

	0-9	10-49	50-249	250+
Offer placements*	26.3%	43.3%	58.2%	66.7%

** Results significant at the 95% level*

Table 8 therefore, confirms the result that not only are larger organisations presently involved with placements but they are also currently more willing to offer placements to people with disabilities. Once again when examined by sector there were no

significant differences between sectoral groups. However whereas over half of the organisations in the Wholesale, Hotels /Restaurants, Transport and Business/Financial services sectors currently offering placements to people with disabilities, only 28% of the organisations in the construction sector would do so.

EXTERNAL SUPPORT FOR PLACEMENTS

One of the issues already established in the literature earlier was that small firms do not know to whom they can turn for support and guidance in dealing with employees with disabilities. When the sample were asked whether given appropriate guidance and support organisations would consider offering a placement to a person with a disability, over 80% of organisations said they would do so. In fact over 90% of micro, small and large organisations were in this category, compared with 76% of medium-sized organisations. When examined by sector one sector stood out from the rest. Only 40% of the organisations in the transport sector would consider offering a placement to a person with a disability given appropriate guidance and support compared with over 80% of organisations in other categories.

Further evidence as to the lack of information, and need for guidance, concerning the employment of someone with a disability is provided by Table 9, which shows the willingness of the organisation to be contacted by a variety of disability support agencies from Northamptonshire

Table 9 Willingness to be contacted by the local disability support agencies

	0-9	10-49	50-249	250+	Total
Willingness to be contacted by local disability support agencies*	58.5%	48.9%	36.0%	63.6%	48.6%

** Significant at the 99% level*

As Table 9 indicates almost 60% of micro businesses and almost 50% of small firms were willing to be contacted by the local support agencies about the possibility of offering placements to people with disabilities.

CURRENTLY EMPLOY A PERSON WITH A DISABILITY

Table 10 indicates whether the respondents in the sample currently employed a person with a disability.

Table 10, Currently employ a person with a disability

	0-9	10-49	50-249	250+	Total
Currently employ a person with a disability*	10.2%	22.7%	40.4%	73.9%	27.2%

** Significant at the 99% level*

Approximately 27% of organisations in the sample currently employed someone with a disability. What was most striking was that only 10.2% of micro organisation were in this position compared with over 70% of large organisations. The majority of

SMEs did not currently employ someone with a disability. The results when examined by sector indicated no significant differences between the different sectoral groups. Between 20-30% of organisations in each of the sectoral groups currently employed someone with a disability.

SUPPORT FOR AND KNOWLEDGE OF DISABILITY ISSUES

Approximately 50% of micro, medium-sized and large businesses supported their person(s) with disabilities, with the main form of support being mentoring schemes for the person with a disability or other supportive networks. By sector, however, none of the organisations in the construction sector supported their employees who had a disability, this compares with majority of organisations in the hotels/restaurants, finance/business services and private education sectors. (A result which is significant at the 95% level)

Where they had employed someone or, had on placement someone, with disability, the main type of disability of the employee were those with physical disabilities (65%), then learning disabilities (36.5%) followed by those with controlled mental illnesses (16.1%). This pattern was true for all sizes of businesses units within the sample.

There was little evidence to suggest that micro enterprises or small firms were less aware of mental health issues compared with bigger organisations in the sample. In fact the micro organisations were most aware, though for all organisations almost 70% considered that their awareness levels were sufficient. Perhaps not surprising given the earlier comments about the construction sector, it was this sector which had least awareness of mental health issues (33.3%). This compares with over 75% for organisations in the Hotels/restaurants, Transport, Financial/Business services and private education sectors.

REASONS FOR NOT EMPLOYING SOMEONE WITH A DISABILITY

Table 11, indicates that it may not be that small or micro enterprises do not have the facilities or desire to employee a disabled person but that people with disabilities do not seek them out. Perhaps even support agencies have less inclination in approaching these smaller organisations for placements.

Table 11 reasons why someone with a disability has not been employed or offered a placement.

	No person applied for a placement*	No person applied for employment **	Not the type of work useful for disabled people	Access issues**	Heath and safety issues*
0-9	74.0%	32.0%	12.0%	18.0%	24.0%
10-49	61.5%	28,5%	10.9%	7.9%	10.6%
50-249	43.6%	19.1%	6.4%	5,3%	6.4%
250	17.4%	4.3%	-	-	-
Total	57.3%	26.0%	9.7%	8.0%	10.7%

** Significant at the 99% level*
*** Significant at the 95% level*

As Table 11 indicates the smaller the organisation the less likely they will have been approached either for both employment or for a placement by someone with a disability. Micro firms in particular were also more likely to consider that issues with access and health and safety were constraints to employing someone with a disability. It is possible that disabled employees realise that small firms have fewer facilities and will be unable to cater for their needs and this leads to them to not apply either for a placement or for employment with these organisations.

Table 12 Sectoral differences for not offering a placement

	No person with a disability has applied for employment	No person with a disability has applied for a placement*	It is not the type of work disabled people find useful*	There are access issues	There are health and safety issues*
Manufacturing	47.5%	4.9%	1.6%	1.6%	3.3%
Construction	66.7%	31.0%	31.0%	7.1%	19.0%
Wholesale	54.5%	28.9%	12.4%	5.8%	10.7%
Hotels/Restaurants	58.6%	31.0%	-	13.8%	10.3%
Transport	51.7%	34.5%	24.1%	13.8%	17.2%
Fin./Bus. Services	62.1%	20.5%	8.3%	9.1%	8.3%
Private educ.	61.5%	53.8%	-	7.7%	26.9%

** Significant at the 99% level*

When examined by sector, Table 12 indicates that for the manufacturing sector at least the reasons for not offering a placement to someone with a disability is not due to the lack of applications with only 4.9% suggesting that no person had applied. It appears to be the other sectors to which fewer people with disabilities are applying. Both the construction sector and the transport sector were more likely to argue that the

sector they were in made it less attractive for people with disabilities because of the nature of the work involved. As the final column suggests one factor could be health and safety issues at work.

BENEFITS AND COSTS OF EMPLOYING A PERSON WITH A DISABILITY

Table 13 illustrates the benefits from employing or having on placement people with a disability.

Larger organisations appeared more socially aware of the local community benefits that could arise from employing or having someone on placement within their organisation. It has been shown earlier that larger organisations were more likely to have employed or had on placement a person with a disability, therefore it was not surprising to find that these organisations had improved their knowledge of disability issues more. Moreover, there appeared to have been many positive effects from employing people with disabilities permeating through their existing workforce. There was little evidence to suggest that productivity had been improved for any of the organisations in the sample. But where it had been improved it was more likely to have occurred in large organisations rather than SMEs.

Table 13 Perceived benefits from employing or having on placement someone with a disability.

	Improved image in the local community*	Improved organisational knowledge of disability issues*	Improved workforce's knowledge*	Improved productivity	Improved workforce's tolerance towards people with disabilities
0-9	4.0%	4.0%	6.0%	2.0%	4.0%
10-49	3.3%	10.0%	9.7%	1.2%	9.1%
50-249	8.5%	18.1%	22.3%	4.3%	21.3%
250+	26.1%	65.2%	47.8%	13.0%	34.8%

** Significant at the 99% level*

By sector none of the organisations in the manufacturing, construction and transport sector considered that a perceived benefit from employing or having on placement someone with a disability improved their image of the local community. In fact these three sectors were also less likely than other sectors to consider that offering a placement or employing someone with a disability had improved the organisation's knowledge of people with disabilities- results that are statistically significant at the 99% level. Organisations in the construction sector were also less likely that other organisations to consider that placements had resulted in improved workforce knowledge about people with disabilities. However it was the organisations in the manufacturing sector and those in financial/business services that were less likely to consider that placements had improved their workforce's tolerance to wards people with disabilities. For all organisations irrespective of sector there was little indication that productivity had improved by employing someone or having on placement someone with a disability.

Along with the benefits that can accrue from employing or having on placement someone with a disability there could be a number of dis-benefits. The numbers are too small to consider for any statistical analysis when examined by size of organisation or by sector. Nonetheless, for all organisations there does not appear to be any great recognition that productivity was reduced when organisations had employed or had on placement someone with a disability.

CONCLUSIONS AND POLICY IMPLICATIONS

From the initial analysis of the data some important policy conclusions can be drawn about organisational take-up of people with disabilities. Spence and Lozano (2000) suggested that small firm owner-managers were likely to be influenced in social and ethical issues by their employees. The results form this research suggests that in respect of employing or having on placement someone with a disability this does not appear to be the case. They further argue that the law is important in determining the organisation's ethical position and there is evidence here that confirms this. Left to a system of self-monitoring or voluntary agreements SMEs do not appear to wish to develop facilities for people with disabilities or take on for placement or employ someone with a disability. Therefore the switch from social obligation discharged by the government to individual responsibility for action and self-policing is likely to see some SME sectors not taking-up many people with disabilities.

The Disability Discrimination Act (1995) listed a number of steps that organisations might need to make to adapt their organisation towards employing someone with a disability. The results from this study appear to confirm this with physical alterations to the fore, such as parking space for the disabled, ease of access to building and, toilets and flexible working hours.

The DDA (1995) currently exempts organisations with 15 employees or less from the act. This may have reduced the red tape for small businesses and this position is unlikely to change before a new European directive comes into operation in 2006. Because they are exempted it could be argued that these smaller firms are less likely to be active in employing or having on placement someone with a disability. A scenario confirmed here.

The DEE (1998) commented that the cost of employing someone with a disability was low while the value to employers was high. For some SMEs this does not appear to be the case. Monetary costs particularly costs of facilities and buildings, may prevent them from developing employment for people with disabilities. Nonetheless for the total sample of organisations examined here, the disbenefits were outweighed by the benefits. In particular there appeared to be no fall in productivity, though conversely many organisations were unable to show that productivity had increased.

There is evidence from this study to support the Vancouver declaration (1992) that people with disabilities are under-represented in professional and managerial jobs. The results from this survey have shown that where placements are offered they are more likely to be in manual/low skilled areas.

The idea that organisations employ people with disabilities to improve their social standing is partially supported by large organisations, but very few small or medium sized enterprises concurred with view.

The Scottish executive (2001) suggested that many employers do not know about the range of assistance available for supported placements. The evidence form this study suggests that this is the case, more particularly for smaller firms and for organisations in all sector but transport. In particular this study reveals that there are a pool of inactive organisations who would be willing with the right guidance and support to consider employing or having on placement someone with a disability.

The use of placements has traditionally been targeted at large organisations and this still appears to the case here. Therefore there is scope for the support agencies to develop further placements within the small firm sector. This is true both for graduates and for placements for people with disabilities. The DFEE (1999) also noted the link between placements and full time employment. Although just over half the organisations in this sample had offered at least one of their placement employees full-time employment afterwards, this was less likely for micro organisations. In fact there appears to be only a one in four chance that organisations will turn a placement into full-time employment.

The Rinaldi and Hill study (see Richards 2002) suggests that employers would apply different criteria to people with mental health problems than they would for people who had other types of disability. This study supports this view with organisations in this sample more willing to offer employment or a placement to someone with a physical disability and less likely to offer an opportunity to someone with a controlled mental illness. Furthermore Rinaldi and Hill suggested that there was a group of organisations that did not feel they were able to employ a person with a disability. Micro firms fall into this category, as do those in the transport and construction sectors.

One objective of the Workbridge study was to widen the database of organisation to which they could contact to place people with disabilities. The results from this study show that there are particular sectors for which the proportion or level of employees with disabilities is low. This suggests that there is scope for improving Workbridge's contacts within the local community. However, many of these organisations will need

to be supported and they can be further re-assured that their productivity level will not vary a great deal through employing or having someone on placement who has a disability.

There are also a large group of organisations that are less active in the placement and employment of people with disabilities. These currently lie outside of the UK legislation. They however, could be encouraged to take a more active part in providing employment for people with disabilities but are probably less likely to do so unless they are forced to.

Notes

1, Workbridge is a local independent charity, based in Northampton (a county in the East Midlands of the UK). For over 20 years it has been providing help and support to people with a variety of mental health problems and similar kinds of disabilities. Many people have been helped back into employment as a result of the support and assistance it has provided.

Bibliography

Berthoud, R., Lakey, J. and S. Mckay, (1993), *The economic Problems of Disabled people*, London: Policy Studies Institute.

DEE (1998) Disabled workers in the workplace, HMSO.

Department for Education and Employment (1999), *Learning from UK and EU Funded Placement Projects*, London.

Disabled Persons (Employment) Act, 1944 (1944), 7 and 8 Geo. 6., Ch 10, London, HMSO
Disability Discrimination Bill (1995) [Bill 32], London, HMSO.

Margolis, A. (2001), Social Conscience, *Financial Management*, July/Aug, pp34-35.

Pons, F., Belenguer, E. and J Felix Lozano, (1998), "The participation of Workers in the company" paper presented at the European Business Ethics Network conference on *The Ethics of Participation* (Leuven, Belgium), 9-1, September.

Quinn, J.J. (1997), "Personal Ethics and Business Ethics: The Ethical Attitudes of Owner/Managers of Small Businesses", *Journal of Business Ethics, 16(2), pp119-127.*
Radar (2000), *Jobs Worth: Disability in Small Business*, London.

Reilly, J, (2000), "Charitable work sells at a number of firms", *Marketing News*, 34(19), p46.

Richards, L (2002), Insufficient Concern: Attitudes towards employment and disability analysed in Britain, *Disability World*, March No. 12.

Scottish Executive, (2001) Implementing Inclusiveness Realising Potential, Edinburgh.

Small Business Service (2001), Small and medium-sized Enterprise (SME) Statistics for the UK, 2000.

Spence, L.J. and Lozano, J.F. (2000), Communicating about ethics with small firms: experiences from the UK and Spain, *Journal of Business Ethics*, 27, pp43-53.

Thornton, P, and N. Lunt (1996), *"Employment for Disabled People social obligation or individual responsibility"*, Report for the Department of Employment, HMSO.

Vancouver Declaration, (1992) Disabled People's International.

Vyakarnam, S. (1995), "Focus groups: Are they Viable in Ethical Research?" *Business Ethics: A European Review*, 4(1), pp24-29.

Vyakarnam , S. Bailey, A., Myers, A. and D. Burnett, (1997), "Towards an Understanding of Ethical behaviour in Small Firms", *Journal of Business Ethics*, 16(15), pp165-1636.

VENTURE CAPITAL: MATURATION OR STAGNATION?

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ABSTRACT

Numerous researchers have pointed out the differences between venture capital in the United States and Europe; some have focused on the differences between venture capital in the United States and Asia; a few have noted the differences between the industry in the United States and other regions. Cultural attitudes toward entrepreneurship or toward risk taking in investment have been used to explain some of these differences. Few researchers have focused on the venture capitalists themselves, their training and their changing attitudes.

Venture capital has changed. Having its origins in the moneyed classes in the United States, venture capitalists successfully created greater wealth for those willing to face the uncertainty involved in high risk, potentially high return, new ventures. That success, and the economic growth associated with it, became the 'Holy Grail', sought by individuals and by nations. The industry grew and matured. Governments tried to stimulate new or further venture capital fund development. More capital flowed into the hands of professional financial managers, trained in concepts of risk diversification and hedging investment strategies. The market place captured venture capital and venture capitalists succumbed to economic rationalism.

The investment strategies of venture capitalists, as reported in research papers and government reports from the past 20 years, have been examined to determine the specific differences between regions of the world. A longitudinal analysis has been undertaken on the industry in the United States and Australia; while a cross sectional analysis has been performed on these countries and with the addition of Hong Kong and the European Union. It can be seen that over time there is an increase in capital flows but a gradual change in the type of risks undertaken by investors. It would appear that current venture capitalists are, in all regions, conservative in their investment strategies.

INDUSTRY BACKGROUND

The first use of the term ‘venture capital’ is reputed to have occurred in 1946 in a discussion between JH Whitney and Benno Schmidt. Whitney, who had inherited $US 179 million, had founded an investment development fund whose purpose was to supply capital to those who had difficulty obtaining it from more traditional sources. When Whitney asked Schmidt how this fund could be separated, in the minds’ of the public, from investment banks, Schmidt suggested the term ‘venture capital’ (Gallese, 1990, 33). Whitney’s original impulse to differentiate his fund’s practices from investment bankers worked, at least for a period. Venture capital became synonymous with risky, potentially high return technological investments.

Beginning in the early '80's, those writing about venture capital as well as venture capitalists themselves began to differentiate between 'traditional' or 'classical' venture capital and venture capital as practiced 'today'. The industry was said to be "in the process of becoming more structured and rational, more mature and more efficient" (Brophy, 1981, 26). Traditional venture capital was still associated with speculation or risk taking with an emphasis on new ventures, often technological ones. It was 'private' money, professionally managed always growth oriented and always providing management assistance. While venture capitalists did not necessarily take voting control or provide equity, they were always interested in taking rewards through capital gains (Dauten, 1951, 278; Bylinsky, 1967, 104; Dorsey, 1977). However, a 'new breed' of venture capitalist was coming into the industry with the result that investments were being made in later stages of enterprise development (Dizzard, 1982, 117; Adler, 1984, 6; Kotkin, 1984,66).

One explanation for this shift in investment emphasis in the venture capital industry was that it had become a "victim of its own successes" (Kotkin, 1984, 66). Briefly, investors, seeing the high returns in the industry, wanted some of the action. Money flooded into the hands of venture capitalists who sought assistance in placing this capital under management. They turned to the business schools for apprentices. These new market entrants applied the principles learned in tertiary institutions to their investments, trading off higher returns for lower risks. In addition, the large sums of money under management required monitoring and, with few trained and experienced personnel to participate on the boards of young and struggling companies, investors found it easier to place larger tranches of funds in later stage investments. The transformation in venture capital investing was hurried by the expectations of the fiduciaries of investor groups such as pension funds. Large fund managers were not used to taking high risks and limited the sorts of investments that could be made with their capital (Bygrave and Timmons, 1992).

Research examining this shift in the focus of venture capital has provided explanations ranging from those already mentioned, such as higher levels of capital (Kotkin, 1984) and the influence of pension funds (Bygrave and Timmons, 1992) to economic cycles affecting venture capital exits through IPOs (Gompers, 1998). However, little research has targeted the changing venture capitalist. Early venture capitalists such as Whitney and Hillman came to venture capital with a variety of backgrounds. Hillman, for example, was on the board of PNC Financial, General Electric, Cummins Engines and Chemical New York (Slutsker, 1983). He had, at least at the board level, a broad exposure to industry. General Doriot, often considered the father of venture capital (Bygrave & Timmons, 1992), was typical of the first American venture capitalists in that he was not primarily a financier. Holding the rank of a brigadier general in the U.S. Army, he was a manager of people, not capital. At the Pentagon he was a planner and a director of research and development for the war department (Bylinsky, 1967). These are no longer the typical venture capitalists.

A quick glance through the current lists of venture capitalists in Asia, Europe, Australia, and even America shows a high number of individuals with business school training (68%, 70%, 68% and 64% respectively). Many have all their degrees in commerce. Even those with other first degrees usually have MBAs and many of these are from the same schools. One implication of this is that the theories taught in studies

of commerce, those which emphasise the control of risk through diversification, that teach how to hedge investments in order to reduce risk, which emphasise the rational nature of economic man over the psychological and social aspects, the assumption of efficient markets when determining price, and believing that all available information is reflected in stock prices, have changed the strategies employed in the venture capital industry. While not asserting that such training is solely responsible for the flattened returns now associated with the industry (Murray, 1998; Mason and Harrison, 2000), it is worth examining the changing profile of industry players.

In this paper the background of venture capitalists today and a generation ago are examined in order to determine whether a shift in the training and experience of industry players can be associated with a shift in the investment strategies employed by venture capital funds. While only a preliminary exploration of this relationship is undertaken, if such an association is confirmed it has implications for policy makers and national economic incentive programs around the world.

This paper is organised as follows. The next section covers the approach used to determine the changes that have occurred in venture capital and the training of venture capitalists from various parts of the world. There follows a description of the characteristics of venture capital and venture capitalists in the United States and Australia from two periods, 1987 and 2002. Venture capitalists from both Europe and Hong Kong are also assessed although the only data available on these industry players is from 2002. An analysis of the data collected, using descriptive statistics, and non-parametric tests of significance is undertaken to determine whether there are any significant differences between groups in countries or over time. Should differences in training exist in parallel with changes in industry focus, it may be inferred (although not proven) that there is a relationship between training and investment strategies. Finally, conclusions are drawn about the future of venture capital and, particularly, the role of policy makers in furthering a healthy industry.

METHODOLOGY

Information on strategies employed in venture capital both in the mid-1980's and today has been gathered from academic literature, government and media publications The data is assessed as a longitudinal analysis of risk and venture capital investment strategies. The literature reviewed had suggested that changes in industry strategies were gradual, thus a year-by-year study was considered inappropriate. Instead, a minimal period that could yet demonstrate a new generation of industry players was estimated to be around 15 years. Because the study was begun in 2002, the 15 year generational analysis required an examination of annual reports that listed the qualifications and experience of the fund's major participants as far back as 1987. This information was available in only two of the four regions under examination. This data was then compiled and compared to current information made available by venture capital firms on the internet in all four regions, Austraila, Asia (Hong Kong), the United States and Europe.

An analysis of industry players, using descriptive statistics, was undertaken using SPSS for windows. First simple frequencies were employed to determine the percentages of individuals falling into various categories. It was apparent that changes

had occurred; Chi-squared tests were then run to determine the significance, if any, of these changes.

Examining the data collected herein through the perspective of economic and institutional theory provides insights into the direction in which the industry is heading. It also allows us to identify changes that have occurred over time that parallel changes in managers' backgrounds. Because the evolution of institutions can lead to either "economic growth or to stagnation and economic decline" (Snooks, 1993,143), the understanding gained from this analysis is translated into suggestions for venture capital policies that support the former and avoid the latter.

A LONGITUDINAL ANALYSIS OF RISK AND VENTURE CAPITAL INDUSTRY STRATEGIES

Venture capitalists are and have always been as risk-averse as any rational investor (Wells, 1974, p.161). However, the strategies employed by venture capitalists to minimise risk have varied over time. Not only have venture capitalists congregated in particular regions, the northeast and west of the United States (Brophy 1984; Bygrave, Timmons and Fast 1984) or the major capital cities in Australia, there was also general agreement that the venture capital industry had become increasingly specialised (Robinson 1987; Gorman 1989; Swartz 1991). This specialisation, at least in the earlier period being studied herein, limited the extent to which risk could be avoided through diversification (Blair, 1985, p.5). Stage and technology preferences, as well as geographical preferences were also found in the research undertaken by Tyebjee and Bruno (1984), again indicating investment strategies influenced by factors other than risk, at least in the United States, at that time.

Venture capital investors, retired from successful business ventures, brought a repertoire of business skills and contacts as well as money to the endeavour. Entrepreneurs came to value these contributions as much if not more than the financial assistance provided (Sweeting, 1991, p.6; Miller, 1985, p.116). Venture capitalists used their specialised knowledge to inform their due diligence, and their expertise in particular areas to assist their portfolio companies, thus directly reducing the risk of their investments.

The efforts of venture capitalists to manage the risks of their portfolio companies, with their own expertise in business development, created phenomenal economic growth. Claims about returns in the industry varied, Robinson (1987), who reported the results of long-term investments based on capital gains achieved after tax, found a range of returns for various funds between 25-40%. Bygrave (1989) found that returns to venture capital funds averaged around 20% over the last forty years with a peak at 32% in 1980[1].

Such returns are attractive. Money flooded into the hands of venture capitalists who sought assistance in placing this capital under management. They turned to the business schools for apprentices. By the early 1980's a shift had occurred in the levels of experience held by venture capital managers. Those with fifteen to twenty years of

[1] These returns then started to drop until, at the end of 1985, they were less than 10% (Bygrave *et al*, 1989).

experience were being superseded by those with only two to three years (Dizzard, 1982, p.106; Roberts, 1983; Brophy, 1984, p.6). The need to draw on a less experienced, albeit a well-trained, new generation of venture capitalists resulted in a gradual shift of emphasis in venture capital (Anon., 1984, p.28; Ham, 1984, p.22). One that appears to have continued to today. Thus a comparison is made, in this paper, between the focus of investment strategies 15 years ago and those prevalent today.

The majority of the new generation of venture capitalists were said, in the '80's to have a business school background (Dizzard, 1982, p.106; Bygrave, 1989, p.74). It would appear that in much of the world this is even more true today. A second comparison, made in this paper, is between the educational and experiential backgrounds of venture capitalists 15 years ago and today. Those with business school backgrounds, it is assumed will approach investments more conservatively due, at least in part, to their academic financial training. This training has re-enforced the disillusion with technology investments that resulted from new issue market failures in 1984 (Juilland, 1987, p.31) and has altered investment strategies and moved them away from early stage investments (Gompers, 1998).

Research undertaken into risks borne by those investing in smaller innovative growth businesses, hypothesises that the risk of loss on the investment decreases as the venture matures (Novotny and Searles, 1971; Hoban, 1976; Bancroft and Burgin, 1977; Dorsey, 1977; Thackray, 1981; Tobias, 1982; Torpey and Viscione, 1987; Marshman and Schlank, 1987; Bygrave, 1989). Given the need to decrease uncertainty, to practice techniques for controlling risk, and as a consequence of the diminished risks associated with later stage investments, the newer venture capitalists would be expected employ investment strategies that include a predominance of late stage companies in their portfolios.

REGIONAL DIFFERENCES IN VENTURE CAPITAL

The European and Australian venture capital industries were really only beginning development in the mid-1980's, while the Asian industry could not be said to have begun until the early 1990s. All began their practice by adopting the strategies that were being used by the their counterparts in the United States. Asian venture capitalists, those trained in the American tradition, made some investments in early stage ventures but the majority of private equity was and continues to be invested in the high growth technology and life science sectors; management buyouts predominate[2] (Bushrod, 2001; Naqi, 2002). The European industry has never focused on early stage investments and had been primarily known for late stage and non-technological investments (Rausch, 1999). Australia began with a focus on early stage investments by setting up Management Investment Companies (MIC's) to cater to the requirements of businesses needing seed capital (Espie, 1983; BIE, 1987; *MICLB Annual Reports*, 1984-91). The scale of these MICs, with relatively low levels of capital under management[3], meant that they could not directly finance projects

[2] The statistics given in Table 1, based on information from the *Asian Venture Capital Journal*, contradict this common assertion among researchers, at least for Hong Kong. An explanation for the disparity lies in the controlling interests of US funds in Hong Kong.

[3] A $20 million maximum of tax concessional capital could be raised by MICs in any given year (McKeon and Ryan, 1989, p 384). Only venture capital companies that were licensed by the MICLB

needing $3-5 million dollars in the later stages (some of these funds had less than $A5 million to invest (DITAC, 1988)). The need for an increased capital base was obvious and, indeed, led to a number of mergers among small Australian funds. By the time the MIC programme ended, in 1991, a new initiative focusing on later stage and larger investments was promulgated through another Government initiative, Pooled Development Funds (PDFs). The focus of PDFs was on later stage investments including but not limited to those in newly issued ordinary shares provided the total value of the company did not exceed $A30 million. Additionally PDFs were only allowed to take minority positions in their portfolio companies (*PDF Act*, 1992). As with their Asian, European and American counterparts, most of the new players, and many of the experienced venture capitalists as well, found that risks were greatly reduced when investments were concentrated in the later stages of a portfolio company's development (Dizzard, 1982, p.108; Juilland, 1987, p.31).

A study by Manigart *et al.* (2002) randomly sampled venture capitalists from four European countries and the United States. They felt that their results were "representative of the countries studied" (p.300) despite the data on investment stages being different from that put out by the European Venture Capital Association. The stage distribution of investments suggests that while 46% of United States investments are in early stage companies only 17% of the European countries sampled[4] had investments in these stages. According to the *Asian Venture Capital Journal* (1999), 39% of venture capital is invested in seed and start-up financing in Hong Kong. At the other extreme, 50% of the European countries in the Mangart sample were involved in acquisitions, buyouts and other late stage investments, compared to 23% in the United States and only 14% in Hong Kong. Finally, the European and American samples had similar proportions of their investments in expansion and development capital (33% and 31% respectively) while Hong Kong had a very large proportion (47%) of its investments in portfolio companies at this stage of investment. Australia, according to the *Australian Venture Capital Journal* (2001, p.8), has had an upsurge in early stage investments of 28% at the seed level and 50.7% at the start-up level. This translates into 30.2% of invested capital being placed with early stage portfolio companies. Also providing a strong contrast to the European environment and appearing similar to its Asian neighbour, Australia claims only 17.4% of investments in the later, acquisition, buy-out and other category. The largest proportion of capital invested in Australia is said to be placed in expansion stage developments, 52.5%.

However, before assuming that Australia and Hong Kong are investing on a par with the United States, a reminder, definitions of stages change from country to country. In Australia "investment in small listed companies, [is considered] as expansion phase investment" (*PDF Report*, 1997-98, p.7). While no similar corrosion of terms has been identified in Hong Kong, the numbers involved would suggest that these definitions should be investigated more closely[5].

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could raise tax concessional capital, and this only within prescribed amounts. Investors in MIC's received a 100 % tax concession on their investment with claw back provisions if the capital was withdrawn prior to 4 full years. Thus the maximum size of MICs was $A40 million.

[4] 17% in the UK, 12% in France, 21% in the Netherlands, 18% in Belgium (Manigart et al. 2002, p.299)

[5] The average fund size in Hong Kong is USD100 million (Naqi, 2002). The average number of professionals per fund is 5.7 (Cornelius, 2002). Given 39% of investment dollars are said to be made

Table 1: Comparison of levels of investment within each stage

	Early Stage Investments (%)	Expansion Stage Investments (%)	Acquisition, Buy-out and Other Stages of Investment (%)
United States	46	31	23
Hong Kong	39	47	14
Australia	30.2	52.5	17.3
Europe	17	33	50

AN ECONOMIC AND INSTITUTIONAL PERSPECTIVE

Venture capital appears to follow market cycles fairly closely. Schumpeter suggested that an innovator, through his or her innovation, throws the economy into disequilibrium. Thus an exogenous economic cycle is begun that continues with a number of innovations arising from the original until a saturation point is reached. The economy then settles into a new period of equilibrium with fewer and fewer disruptive innovations occurring (McFarling, 2000).

From the venture capitalist's perspective, this cyclical behaviour would coincide with the existence of good entrepreneurial ventures in which to invest. However, given the economic law of supply and demand, a further cycle comes into play. As good investment opportunities arise in the beginning of a Schumpeterian economic disruption, profits for investors rise. As profits rise, more dollars flow into the hands of venture capitalists but, as the cycle continues and innovations start to diminish, there are more dollars than good venture \s to absorb them. As a result, profits begin to fall and investors retreat. According to Whelan (2001), and following the arguments of Minsky, together Schumpter and Keynes can be allied to explain the role of profit seeking in economic activity and the effect of this behaviour on institutions.

Keynes, in the General Theory, argued that socio-economic factors had a direct impact on the saving/consuming behavior of individuals (Tin, 2000). That is, the degree to which individuals could bear the uncertainty of future income (profit) versus current consumption depends, at least in part, on the investor's willingness to bear risk. The risk, in the case of venture capital, is not only the risk of a variable or uncertain future income stream but also the risk of placing that capital with an agent who then acts for the principal (investor) by placing that money with particular entrepreneurs.

Investors do not place their trust in venture capitalists blindly. Venture fund performance is likely to differ due, theoretically, to their heterogeneity (Naqi, 2002). Thus, as rational market players, information will be sought about the quality of agents (venture capitalists) who will be acting for the investors. Asymmetrical

in early stage funds, each professional is managing over USD16 million in such investments. Early stage investments generally absorb less than USD1 million in the first round. Time factors alone would indicate that each professional in Hong Kong could not be managing this load and later stage investments as well.

information, however, appears to be an historic cause of venture capital market inefficiency (Cooper and Carlton, 1979; Chan, 1983; Lustig and Leinbach, 1983). Therefore, competition for the investor's dollar forces venture capitalists to demonstrate their future proficiency in the portfolio company selection process.

Investors, because they cannot assume that past performance will be indicative of future performance, have come to rely on various institutional norms that provide industry players with legitimacy (Wells, 2001). Those who most successfully convince the investing public of their leadership and reputation receive the greatest proportion of the resources (capital) available. Institutional theory explains how this eventually leads to homogeneity in the organizational culture.

DiMaggio and Powell (1983, p.152) describe the process by which organizations conform. Newcomers, those with the least experience in the field, mimic those who have been operating for a longer period. That copying or "mimetic isomorphism" is greatest where there is the greatest uncertainty. Thus, by copying existing funds, new funds increase their chances for survival (DeMaggio and Powell, 1983, 155). Norms are then created within the industry that confer professional status on those adopting appropriate behaviours (Wells, 2001).

A "profession" has been defined by Fogarty (2001) as:

> a complex configuration of work experiences that generates a systematic yet abstract body of knowledge to solve complex and dynamic problems that cannot be addressed by routinized actions.

He goes on to point out that the professionalisation of the institution (industry) has dual benefits. First is the confirmation that employees possess the skills that are being sought (thus the role of universities in the conferral of professional degrees, eg the MBA) and second is the signal to outsiders (investors) that this organization meets their needs through highly trained personnel. This 'like' training leads to standardization or 'normative isomorphism'.

Finally, coercive isomorphism comes into play with government regulatory bodies imposing constraints upon institutional players (Boons, 2001). Thus, institutions evolve over time, changing as the individuals who comprise the institution respond to their environment and each other in an iterative process. The changing investment trends of venture capital firms over the 15-year period, looked at from an institutional perspective can be said to be a response to the endogenous maturation or institutionalisation in the industry combined with a response to exogenous factors in the economic cycle.

DATA COLLECTION AND ANALYSIS

A longitudinal study of the training and experience of venture capitalists is warranted, given the hypothesis that training (normative and mimetic isomorphism) impacts upon the investment strategies of industry players through institutionalisation.

A total of 86 separate venture capital funds from four regions, Australia, Asia (Hong Kong), the United States and Europe and involving 521 (Australia, 192; Hong Kong,

69; US, 178; Europe, 82) industry specialists made up the database. The European and Asian numbers are lower due to the fact that only data from 2002 was collected.

Spreadsheets providing information on the company, its officers and their qualifications as well as their background experience were put together in separate matrices depending upon the year and origin of the company. No significant differences in the backgrounds and qualifications of venture capitalists were observed between larger and smaller funds. Qualifications obtained were first classified as undergraduate or postgraduate with information upon the type of degree also collected. It was apparent that a difference occurred over time in the number of industry participants who were certified or chartered public accountants, thus this information was also included in the matrices used for comparative purposes.

Experience as a category, required a large degree of subjective judgement based upon information provided. For example, information on the background of a venture capitalist could range from a list of directorships to specific named companies founded by the individual. All publicly provided information on venture capitalists' experience was divided into one of five categories. These categories included money management and consulting; industry experience; business law; government employment and 'other'. Thus a research physicist would be categorised as having 'other' experience as would a trial judge or medical doctor. The first category, 'money management and consulting' was combined as experience in these areas was believed, by the authors, to have less to do with creating wealth than with controlling it. 'Industry experience' was also a broad category, including as it did everything from managing a restaurant to being a managing director of a major listed company. Those employed in industry to manage the finances of a firm were categorised as having industry experience. The latter category, industry experience, appears to be vital to a venture capitalist if he or she was to add value to their portfolio company. That is, they would be able to draw from actual, not theoretical, knowledge to aid in the development of their portfolio companies. Those in the areas of business law or government employment were less difficult to categorise as people either were or were not employed in these areas.

An analysis of these industry players, using descriptive statistics, was undertaken using SPSS for windows. First simple frequencies were employed to determine the percentages of individuals falling into various categories. It is interesting to note the close experiential similarity between venture capitalists from the European Union and those from Hong Kong. Both reflect the characteristics of venture capitalists from the United States in 1987.

Table 2: Sampled venture capitalist experience/backgrounds

	US 1987	US 2002	Australia 1987	Australia 2002	Hong Kong 2002	Europe 2002
Money Market	54%	40%	32%	64%	55%	56%
Industry	36%	54%	49%	23%	34%	31%
Other	10%	6%	19%	13%	11%	13%

The educational qualifications of venture capitalists were also summarised. Both MBAs and specified business degrees were counted together in the category of 'business degrees' while MBAs were also considered independently of other qualifications. The other broad areas that were often listed in annual reports and on internet sites included legal training and engineering (including but not limited to IT areas). Information about accountancy certification, at times provided without information about educational training, was included in a separate category. Other qualifications were so broadly spread that they were not specifically included in the summary tables or the analysis. However, the number of postgraduate qualifications in any discipline, apart from MBAs, has also been included in the summary tables below.

Table 3: Qualifications of sampled venture capitalists

	US 1987	US 2002	Australia 1987	Australia 2002	Hong Kong 2002	Europe 2002
MBAs	41%	48.5%	18%	37%	32%	33%
Business	64%	64%	48.5%	68%	68%	69.5%
Accountancy	8%	4%	16%	29%	20%	30%
Law	9.5%	6%	7.5%	16%	½%	2%
Engineering	16%	30%	12%	9%	15%	17%
Higher Degrees	33%	23%	16%	8%	25%	34%

Again, on a surface appraisal, venture capitalists from Hong Kong and Europe bear a striking resemblance to each other. Their resemblance to venture capitalists in the US, however, have faded.

Chi square tests were run to determine whether there were significant as well as apparent differences in variables over time and between regions. The calculated ρ value, in all cases, was extraordinarily small indicating that the changes in the experience levels were invariably significant. First, the two countries where information was available on venture capital funds from both 1987 and 2002 were compared. It was expected that there would be a significant difference between the experience and training of venture capitalists from one period to the next. Less anticipated but also significant was the difference in the background experience of venture capitalists from one region to the next.

Table 4: Changes in venture capital experience/background over time

1987 / 2002		Value	df	Asym.Sig. (2-sided)
USA	Pearson χ^2	12.26	2	.002
Australia	Pearson χ^2	44.053	2	.000

Table 5: Changes in venture capital experience/background over regions

		Value	df	Asym.Sig. (2-sided)
USA & Australia in 1987	Pearson χ^2	17.088	2	.000
All regions in 2002	Pearson χ^2	52.838	4	.000

Variations in educational levels were also examined using Chi square tests. These were run based on the number of people in each time period/region that had particular

qualifications. Again, the Chi-square tables represent a bivariate analysis of the same 15 year spread in both the United States and Australia. The test was run first to determine any significant variation over time in the numbers of MBAs, business degrees and higher degrees and, secondly, on these degrees plus qualifications in accountancy, law and engineering.

Table 6: Qualifications

1987 / 2002		Value	df	Asym.Sig. (2-sided)
USA 3 degrees	Pearson χ^2	25.896	2	.000
USA 6 degrees	Pearson χ^2	32.353	5	.000
Australia 3 degrees	Pearson χ^2	45.216	2	.000
Australia 6 degrees	Pearson χ^2	10.992	5	.052*

** This latter is significant at 5% only.*

THE PLAYERS

Simply in terms of frequency, there are far more individuals in the current crop of venture capitalists with business degrees than there were 15 years ago. Examining the differences country by country first, Australian venture capitalists today are more likely to have an MBA and less likely to have an engineering or science degree than they were in 1987. It is also apparent that there are far more certified or chartered accountants operating in the industry than there were in the past. Along with this latter qualification, there has been a significant increase in the number of venture capitalists who list their experience as money management or consulting rather than providing evidence of specific industry experience. In fact, the level of industry experience mentioned has been more than halved in the Australian sample.

Another interesting phenomenon is the Australian venture capital industry's reliance on solicitors. In 2002, 75% of the funds in Australia had an in-house, legally trained member of the venture team whilst in the United States only 25% of funds had lawyers in-house. These intermediaries, often referred to as 'gatekeepers' in the venture capital industry, have a less consultative role in the United States (Gompers & Lerner, 1999, p.20).

The sample from the United States, randomly selected from Silver's guide to practitioners published in 1987, suggested some contrasts with the data from the same period in Australia. There were, for example, fewer first qualifications in commerce[6] but a similar number of MBAs. What stood out, however, was the disproportionately smaller proportion of qualified accountants with careers in venture capital. Given the assumed conservatism that is associated with this degree, some support for the hypothesis is already evident.

The change that has occurred in the sample of venture capitalists from the United States is the reverse from that in Australia. Where Australia appears to be moving away from industry experience and qualifications other than business ones, the United

[6] This may be a result of the way degrees are listed. That is, a Bachelor of Arts or Science in the USA may represent a Bachelor of Economics or Accountancy but, it isn't specified as such. The number of commerce undergraduate degrees may be under-represented in the data.

States is moving toward greater levels of experience in industry and a higher proportion of degrees outside of business, particularly in engineering. This is clearly due, at least in part, to the greater American emphasis on investments in IT. It may also be a move back toward the skills, qualifications and experience of venture capitalists as they were originally configured.

The inclusion of cross sectional data on Hong Kong and Europe demonstrates that, at least in terms of their educational training in commerce, the Asians and Europeans in the sample are very similar to Australians in the current period. Venture capitalists in Hong Kong, while having fewer accounting degrees than either Europeans or Australians, have, like their European and Australian colleagues, emphasised this qualification more than have any generation of American practitioners. The Europeans and Asians are also similar in having a higher proportion of individuals with engineering qualifications and/or higher degrees in other areas than have the Australians despite the fact that Australians have a greater focus on technological investments. Hong Kong, contrasted to the rest of Asia, has de-emphasised technological investment concentrating instead on investments in consumer related products (Naqi, 2002).

PATTERNS OF INVESTMENT

The Australian industry, by the figures available in this analysis of industry players, would appear to be placing a greater emphasis on the ability to understand and manage money than on being able to confront particular industry problems through either technical training or experience. The United States, by contrast, appears to be favoring hands-on experience in industry as well as technical qualifications for competency in venture capital. Whether this difference is due to culture (normative isomorphism), training (mimetic isomorphism) or government initiatives (coercive isomorphism) is open to question. It is probable that each group is supplying the qualifications most recognised as necessary by fund subscribers.

In 1978, nearly one-third of the money in the United States industry was supplied by private individuals and wealthy families; in 1989, only 6% of American venture capital funds were supplied by this group (Sexton & Kasarda, 1992, p.404). Still in the United States, by 1987 pension funds were the major investors in new rounds of venture capital financing, providing some 39% of the total funds invested (BIE, 1993). Australian venture capital, while never supplied solely by wealthy individuals, has undergone a similar metamorphosis in the past 15 years. When the industry was first kicked off by the development of Management Investment Companies, the Government's tax incentives insured a wide dissemination of shares, in listed venture capital firms, across the investing public. For a number of reasons, not least the nature of fiduciary regulations, superannuation funds were not participants in the industry. However, publicity and Government pressure as well as the changing profile of the local industry has resulted in an increased rate of institutional participation with the concomitant demands for 'responsible' investment strategies.

Since institutional economics is evolutionary (Keaney, 2001, p.97), it helps explain the change in the investment trends of venture capital firms over the 15-year period under study. Tertiary business training and experience in managing funds is reflected in the altered investment patterns perceived in the venture capital industry. Thorstein

Veblen said "the situation of today shapes the institutions of tomorrow by altering or fortifying a point of view or a mental attitude handed down from the past" (Keaney, 2001, p.104). Hence the change in venture capital trends that started in the early 1980s has continued to date. That trend has been towards lower technology investments in an increasing variety of industries (Sexton & Kasarda, 1992), that is, a move toward diversification.

The industry now appears, worldwide, to be governed by qualified MBAs who make relatively (compared to the past) conservative investments in diverse industries. Apart from the United States, the emphasis has not been on technological investments. Where the Europeans have placed their greatest faith in buy-outs, turn-arounds and other late stage investments, venture capitalists in Hong Kong have focused on consumer durables and Australians have, ostensibly, concentrated on expansion stage developments. However, 'expansion stage' as defined in this country includes many of the later stage investments preferred in Europe.

CONCLUSIONS AND IMPLICATIONS

Significant changes have occurred in the venture capital industry over the past 15 years. New entrants have become established players in both Europe and Australia. The fledgling industry in Asia has, despite the economic tribulations in the region, established a profile very similar to that of the Europeans. The profile of established venture funds in the United States has changed, again significantly. Investment strategies have, largely, turned away from early stage entrepreneurial and technological ventures toward later stage expanding or reforming enterprises. As venture capitalists resist investment in the early stages of portfolio company development and direct the flow of funds away from this sector, the finance gap, identified over the years by numerous researchers, reasserts its primacy.

The basis for venture capital decision-making is profit maximisation, or, from the perspective of the financial theorist, wealth maximisation. The approach to that end will vary, depending upon the skills and training, the background of practitioners. The population of investors is, to varying degrees, risk averse as are the venture capitalists acting for them. The human tendency to invest in areas of familiarity, especially when having the fiduciary responsibility for capital from pension funds and other institutional investors only heightens the influence of normative and mimetic isomorphic institutional factors. Venture capitalists want to maintain their reputation and do so through standardised choices. They depend upon their 'reputational capital' for their very survival. Hence a venture capitalist's intellectual training and other structural changes in the industry have influenced attitudes towards risk taking in investment, explaining why venture capitalists don't venture anymore.

In conventional economic terms, if markets are to be made to work, then there must be a matching of demand and supply around a 'market clearing' price. However, the 'economic drivers' amongst venture capital suppliers are not the same as those that drive the interests of small business start-ups. It is possible and defensible, though, for governments (whose economic and social status are affected by these flows of capital) to intervene given that individual "preferences are not fixed and stable, but will generally be shaped and changed" by institutional factors (Greenaway, Bleaney & Stewart, 1991, p.799) including coercive isomorphism.

If venture capitalists are to 'reap the legendary returns of the late 1970s and early 1980s' (Sexton & Kasarda, 1992, p.423) there should be a re-evaluation of what it means to be a venture capitalist. If government's are to promote economic development through venture capital initiatives, there should be a reconsideration of which players should be supported. It has been shown that the training of venture capitalists has changed over the past 15 years. At the same time, it can be demonstrated that the strategies employed by venture capitalists have also changed in parallel with their training. Government efforts to promote the industry need to change. Rather than focusing on initiatives that increase the capital available to all players in the industry, there should be some consideration given to the types of players most likely to adopt strategies that will begin to close the finance gap.

FURTHER RESEARCH

The institutional approach, used in this research to explain the historical changes in venture capitalist's activities, would be strengthened if the examination took in earlier generations of industry players. Additionally, an analysis of the training undertaken, at what schools and with what emphasis, as well as an indication of where venture capitalists were apprenticed, would better test the mimetic and normative isomorphic institutional assertions than the generalised degree and experience data collected for this paper has done.

It is likely that funds managed by venture capitalists entering this industry at a later stage in their careers are better able to leverage their investments with management support. This proposition has not been tested as data on the age of venture capitalists and specific data on other work experience was not available when the research began.

While no difference in the training of venture capitalists from funds of different sizes was apparent in the data, size, as measured by capital under management, and the number of employees per fund, has an impact on investment strategies and should be examined in more detail from the institutional perspective.

BIBLIOGRAPHY

Adler, F.R., 1984, "The venture capital business", IMEDE conference, (photocopy), June, pp.11-35.

Anon., 1984, "Who's got leverage?", *Wall Street Journal*, June 21, p.28.

Anon., 2001, title, Australian Venture Capital Journal, #96, March, p.8.

Asian Venture Capital Journal, 1999, *THE GUIDE TO VENTURE CAPITAL IN ASIA*,, tenth edition (Hong Kong: AVCH Holdings).

Bancroft, P., W.T. Burgin, 1977, "Basic aspects of capital investing", in S. Rubel, *GUIDE TO VENTURE CAPITAL SOURCES*, 4th ed., Capital Publishing Corporation, Chicago, pp.45-87.

Bushrod, L., 2001, title, *European Venture Capital Journal*, March, pp.42-45.

Bureau of Industry Economics, 1993, “Venture and development Capital in Australia and Japan”, Australian Government Publishing Service, Canberra.

Bureau of Industry Economics, 1987, *REVIEW OF VENTURE CAPITAL IN AUSTRALIA AND THE MIC PROGRAM*, Australian Government Publishing Service, Canberra.

Blair, F., 1985, "All you ever wanted to know about venture capital", *Chicago Tech Connection*, May/June, pp.3-5.

Boons, F., L. Strannegard, 2000, “Organizations coping with their environment”, *International Studies of Management and Organization*, Vol.30, #3, Fall, pp.7-17.

Brophy, D.J., 1981, "Flow of venture capital 1977-1980", *Frontiers of Entrepreneurship Research*, pp.246-280.

Brophy, D.J., 1984, *Venture capital market in the United States*, Graduate School of Business Administration, University of Michigan, Ann Arbor.

Bygrave, W., 1989, *VENTURE CAPITAL INDUSTRY: A RESOURCE EXCHANGE PERSPECTIVE*, Ph.D. Thesis, Boston University, pp.279.

Bygrave, W.D., J.A. Timmons, 1992, VENTURE CAPITAL AT THE CROSSROADS, Harvard University Press, Boston.

Bygrave, W., J.A. Timmons, N.D. Fast, 1984, "Seed and start- up venture capital investing in technological companies", *Frontiers of Entrepreneurship Research*, pp.1-17.

Bylinsky, G., 1967, "General Doriot's dream factory", *Fortune*, August, pp. 103-107+.
Cooper, I.A., W.T. Carlton, 1979, "Dynamics of borrower- lender interaction: partitio ning final payoff in venture capital finance", *The Journal of Finance*, Vol.34, #2, May, pp.517-529.

Cornelius, BH and SA Naqi, “Resource exchange and the Asian venture capital fund/portfoio company dyad”, *Venture Capital*, in press.

Chan, Y.S., 1983, "On the positive role of financial intermediation in allocation of venture capital in a market with imperfect information", *The Journal of Finance*, Vol.XXXVIII, #5, December, pp.1543-1561.

Dauten, C.A. and M.T. Welshans, 1951, "Investment development companies", *Journal of Finance*, Vol.VI, #3, September, pp.276-290.

Department of Industry, Technology and Commerce, 1988, *AUSTRALIAN VENTURE CAPITAL DIRECTORY*, Australian Governement Printing Service, Canberra.

DiMaggio, P.J., W.W. Powell (1983), "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields", *American Sociological Review*, V48, April, pp147-160.

Dizzard, J.W., 1982, "Do we have too many venture capitalists?", *Fortune* October 4, pp.106-119.

Dorsey, T.K., 1977, *THE MEASUREMENT AND ASSESSMENT OF CAPITAL REQUIREMENTS, INVESTMENT LIQUIDITY AND RISK FOR THE MANAGMENT OF VENTURE CAPITAL FUNDS*, Ph.D. Thesis, University of Texas-Austin.

Espie, Sir F. *et al.*, 1983, *DEVELOPING HIGH TECHNOLOGY ENTERPRISES IN AUSTRALIA*, Australian Academy of Technological Science, Parkville Victoria, April.

Fogarty, F., M.W. Dirswith, 2001, "Organizational socialization as instrument and symbol: An extended institutional theory perspective", Human Resource Development Quarterly, Vol12, #3, pp.247-266.

Gallese, L.R., 1990, "Venture capital strays far from its roots", *Business World: New York Times Magazine*, April 1, pp.24-39.

Greenaway, Bleaney & Stewart, 1991.

Gompers, P.A., 1998, "Venture capital growing pains: should the market diet", Journal of Banking and Finance, Vol.22, #6-8, August, pp.1089-1104.

Gompers, P., J. Lerner, 1999, THE VENTURE CAPITAL CYCLE, MIT Press, Massachusetts.

Gorman, M., 1989, "What do venture capitalists do?" *Journal of Business Venturing*, V.4, pp.231-248.

Ham, P., 1984, "Management buy-outs: the fast start new ventures", *Rydges*, May pp.22-24.

Hoban, J.P., 1976, "Characteristics of Venture Capital Investments", in *DISSERTATION ABSTRACTS INTERNATIONAL*, University Microfilms International, Ann Arbor Michigan, p.4469-A.

Juilland, M.J., 1987, "What do you want from a venture capitalist", *Venture*, August, pp.30-35.

Keaney, M., 2001, ECONOMIST WITH A PUBLIC PURPOSE, Routledge, London.

Kotkin, J., 1984, "Why smart companies are saying NO to venture capital", *INC.*, August, pp.65-75.

Lustig, I.L. and P.A. Leinbach, 1983, "The small firm effect", *Financial Analysts Journal*, May/June, pp.46-49.

Manigart S., K. De Waele, M. Wright, K. Robbie, P. Desbrieres, H.J. Sapienza, A. Beekman, 2002, Determinants of required return in venture capital investments : a five-country study, Journal of Business Venturing, Vol17, pp.291-312.

Marshman, F.C., C. Schlank, 1987, "More capital, less risk", *Venture*, August. pp.36-40.

Mason C.M., RT Harrison, 2000, "Is it worth it? The rates of return from informal venture capital investments", Journal fo Business Venturing, Vol.17, pp.211-236.

McFarling, B., 2000, "Schumpeter's entrepreneurs and common's sovereign authority", *Journal of Economic Issues*, Vol.34, #3, pp.707-721.

McKeon,R. J.A. Ryan, (1989), "Evaluation of programs promoting technological innovation-The Australian experience", *Research Policy*, Vol. 18, p 379-388.

Management Investment Company Licensing Board, 1984-1991, *Annual Reports*, Australian Government Printing Service, Canberra.

Miller, R., M. Cote, 1985, "Growing the next silicon valley", *Harvard Business Review*, July/August, pp.114-123.

Murray, G.C., 1998, "Why has the investment performance of technology-specialist, European venture capital funds been so poor?", *Research Policy*, Vol.27, #9, December, pp.947-976.

Naqi, S.A., 2002, A RESOURCE EXCHANGE PERSPECTIVE OF VALUE ADDED IN VENTURE CAPITAL FIRM/PORTFOLIO COMPANY NETWORK DYADS, PhD Thesis, University of Wollongong, Australia.

Novotny, E.G., D.J. Searles, 1971, *VENTURE CAPITAL IN THE U.S.: AN ANALYSIS*, New Enterprise Systems, Cambridge MA.

PDF Act (Pooled Development Funds Act) 1992, No. 100 of 1992, Parliament of the Commonwealth of Australia.

PDF Registration Board, 1997-98, Pooled Development Funds Program Annual Report 1997-98, Commonwealth of Australia.

Rausch, L.M. 1999, "Venture capital investment trends in the United States and Europe", National Science Foundation Directorate for Social, Behavioral and Economic Science, NSF 99-303, Oct. 16.

Roberts, J.L., 1983, "Venture firms lack people experience", *Wall Street Journal*, December 8, pp.1-7.

Robinson, R.B., 1987, "Emerging strategies in the venture capital industry", *Journal of Business Venturing*, Vol.2, pp.53-77.

Sexton, D. L., J. D. Kasarda, 1992, THE STATE OF THE ART OF ENTREPRENEURSHIP, PWS-KENT Publishing Company, Massachusetts.

Silver, A.D., 1987, *WHO'S WHO IN VENTURE CAPITAL*, 3rd ed., John Wiley and Sons, New York.

Slutsker , G., 1983, "The quiet billionaire", *Forbes*, Vol.134, #15, December, pp.100-101.

Swartz, J., 1991, "The future of the venture capital industry", *Journal of Business Venturing*, Vol.6, pp.89-92.

Snooks, G. D., 1993,HISTORICAL ANALYSIS IN ECONOMICS, Routledge, London.

Sweeting, R.C., 1991, "Early-stage new technology based businesses: interactions with venture capitalists and the development of accounting techniques and procedures", *British Accounting Review*, #23, pp.3-21.

Thackray, J., 1981, "Is the venture capital boon getting out of hand", *Institutional Investor*, November, pp.201-216.

Tin, J., 2000, "Life-cycle hypothesis, propensities to save, and demand for financial assets," *Journal of Economics and Finance*, Summer, pp.110-121.

Tobias, R., 1982, "The role of government in innovation", in J.M. Bennett, R.E. Cooke-Yarborough and G.C. Lowenthal (eds) *VENTURE CAPITAL AND TECHNOLOGICAL INNOVATION IN AUSTRALIA*, NSW Division of ANZAAS Inc., Sydney.

Torpey, WJ., J.A. Viscione, 1987, "Mezzanine money for smaller businesses", *Harvard Business Review*, May/June, pp.116- 119.
Tyebjee, T.T., A.V. Bruno, 1984, "A model of venture capitalist investment activity", *Management Science*, September, Vol.30,#9, pp.1051-1065.

Wells, W.A., 1974, *VENTURE CAPITAL DECISION MAKING*, Ph.D. Thesis, Carnegie-Mellon University.

Wells R., 2001, "Culturally mediated nature of organizational change", Health Care Management Review, Vol. 26, #2, Spring, pp.80-84

THE CAPABILITIES, PROBLEMS AND STRATEGIES OF EXPORTERS IN EMERGING MARKETS – AN EMPIRICAL ANALYSIS OF MALAYSIAN MANUFACTURERS

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ABSTRACT

There is a substantial literature on small and medium-sized enterprises (SMEs) in Malaysia, including a sub-literature that examines how SMEs have responded to the financial crisis. There are, however, no studies that examine the characteristics of Malaysian exporters or the related issue of how the mindset of Malaysian exporters have responded to the pressures of increased levels of globalisation. This paper addresses this shortcoming in the literature through reporting the results of a mail-out survey of Malaysian exporters, the majority of whom are SMEs, which was conducted in August 2001. The paper will examine how the capabilities, problems and strategies of successful and less successful Malaysian exporters have differed, with a view to identifying common characteristics and processes underpinning successful exporting behaviour.

INTRODUCTION

Following the Asian financial crisis the competitiveness of Malaysia's export sector has taken on added significance. Small and medium-sized enterprises can play a crucial role in this process. In the mid-1990s SMEs, defined in Malaysia as firms up to 200 employees, were responsible for 84 per cent of manufacturing establishments, employed 42 per cent of the manufacturing workforce and produced 28 per cent of total manufacturing value added (Abdullah 1999: 24-28, Foong 1999). While value added per

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employee increased in Malaysia for all firm sizes between the mid-1970s and mid-1990s, "the relatively low contribution of Malaysian SMEs to the total value added of the manufacturing sector is seen as a bottleneck to achieving rapid industrialization" (Foong 1999, 81). This could be addressed through an increase in SME exports given that the SME share of exports in Malaysia is only 15 per cent, which is less than OECD countries where the SME share of exports is, on average, greater than 25 per cent (Hall 1995).

In a period of rapid trade liberalisation, increasing importance is being attached to globalisation in both Asia and other parts of the world. As global competition has intensified many SMEs have had to adopt international perspectives (Litvak 1990, Karagozoglu & Lindell 1998). From an APEC point of view, the main driving force is the move towards increasing economic interdependence, open regionalism and the liberalisation of flows of goods and services. The enormous potential for SMEs to contribute to the economic development of the Asian region will be underutilized if SMEs are not able to adapt to the competitive pressures that open regionalism brings.

There is a substantial literature on SMEs in Malaysia, including a sub-literature that examines how SMEs have responded to the financial crisis (see eg Chee 1986, Abdullah 1999, 2000, Mohd. Rosli 2000, Mohd. Rosli *et al* 2001). There are, however, no studies that examine the characteristics of Malaysian exporters or how the mindset of Malaysian exporters have responded to the pressures of increased levels of globalisation. This paper addresses this shortcoming in the literature through reporting the results of a mail-out survey of Malaysian exporters, the majority of whom are SMEs, which was conducted in 2001. The objective of the paper is to examine how the capabilities, problems and strategies of successful and less successful Malaysian exporters have differed with a view to identifying common characteristics and processes underpinning successful exporting behaviour. The remainder of the paper is set out as follows. The next section contains a brief literature review and sets out the research questions more fully. Section three gives an overview of SMEs in Malaysia. The methodology and results of the empirical study are set out and discussed in section four. The final section discusses the implications of the results and offers some suggestions for future related research.

PREVIOUS LITERATURE

This study is situated within the literature that examines the problems faced by SMEs, in particular in small open economies, in a period of rapid trade liberalisation. The literature on SME export activity is substantial and varied. First, there is a considerable literature on strategies SMEs follow when entering export markets (see eg Baird *et al* 1994, Kaynak *et al* 1987, Dalli 1995, Douglas 1996). Some studies have focused specifically on the relationship between firm size and export behaviour (Bonaccorsi 1992, Culpan 1989). Others have examined the performance characteristics of SME exporters (see eg Bijmott & Zwart 1994, Katisikeas *et al* 1996, Naidu & Prasad 1994). A second strand of the literature has focused on the nature and process of the internationalisation of SMEs, rather than exporting behaviour (see eg Baird *et al* 1994, Chetty *et al* 2000).

This study is located in the first strand of the literature. The questionnaire that we sent to firms is modeled closely on that used in previous studies by Bagchi-Sen (1999) and Bagchi-Sen & MacPherson (1999), which look at issues facing exporters in the Niagara border region between Canada and the United States and a study by Karagozoglu & Lindell (1998), which concentrates on US technology exporters located in Northern California. These researchers use mail-out surveys to examine the capabilities of SME exporters, barriers SMEs have faced in exporting and strategies that successful SME exporters have used to overcome these barriers. The specific research questions that this study addresses are similar to these studies. This study will focus on how successful and less successful exporters in Malaysia differ in terms of the following aspects: characteristics (size and age); capabilities (management and marketing, financial, technological and external contracting capabilities); barriers to export market development (firm-specific versus external barriers) and strategies to address the barriers.

OVERVIEW OF SMES IN MALAYSIA

The output of SMEs was worth about 20 per cent of GDP in 1990 and this figure is projected to increase to 50 per cent of GDP by 2020 (Abdullah 2000, 8). SMEs in Malaysia are located in four main sectors; namely, agriculture, construction, manufacturing and services. Of these, manufacturing is the most important. The majority of SMEs in manufacturing are concentrated in processing and production of raw materials such as food, beverage, clothing and textiles, chemical products and wood products as well as manufacturing electrical and electronics appliances (Abdullah 2000, 7). The main export-oriented industries are clothing and textiles and electronics and electrical equipment. These industries provide two-thirds of manufacturing value added, 40 per cent of manufacturing employment and 80 per cent of exports (Abdullah 1999, 31-33). Ethnic Chinese own about 80 per cent of SMEs in Malaysia. Chinese ownership of SMEs is particularly dominant in the electrical machinery industry (Rasiah 2001). However, the number of SMEs owned by ethnic Malays is increasing, especially in handicrafts, food processing and furniture products (Abdullah 1999, 30-31).

THE EMPIRICAL STUDY

Research Methodology

To get information on the variables of interest, in August 2001 we conducted a mail-out survey of a sample of exporting manufacturers in Malaysia. We selected these companies from those listed as exporters in the 1999 Federation of Malaysian Manufacturers (FMM) directory. In total, the questionnaire was mailed to the owners or CEOs of 1000 FMM member firms. The survey was designed to cover questions that have been asked in previous studies of exporting manufacturers in other countries (Karagozoglu and Lindell, 1998; Bagchi-Sen, 1999 and Bagchi-Sen & MacPherson 1999). It was also informed by interviews with the CEOs or owners of a small number of Australian SMEs involved in Malaysia and Malaysian firms with trade and investment connections to Australia that we have carried out over the past three years (see Smyth & Wills 2000, Dogan *et al* 2001).

Prior to sending out the questionnaire we pre-tested it on a small sample of firms to check for cultural sensitivity and understanding and some modifications were made to the questions following this exercise. Most of the questions (such as barriers to entry and firm capabilities) required respondents to answer on a five-point sale. Others (such as the value of exports) required a discrete objective response. Following a series of reminders we received 57 responses (response rate 5.7 per cent); of which, 53 (response rate 5.3 per cent) contained valid responses for the issues of interest in this paper.[1] While the response rate was very low, it was not entirely unexpected. We experienced a similar response rate to our requests for interviews when conducting case studies of Malaysian exporting firms in previous research. The response rate has also been low in previous studies that have used mail-out surveys in Malaysia, even in studies with the imprimatur of the Ministry of Entrepreneur Development (see Edwards *et al* 2001, Rosli *et al* 2001).

Characteristics of the Companies

The survey was mailed to both SMEs and large firms. The proportion of SMEs in the sample is slightly lower than the proportion of total manufacturing firms that are SMEs. As noted in the introduction, in the mid-1990s SMEs made up 84 per cent of manufacturing firms in Malaysia (see Abdullah 1999, 24-28). Of the firms which responded to the survey for which we have valid information for this study, 40 firms or 75 per cent are SMEs, where SMEs are defined as firms with up to 200 employees. Table 1 shows the location of the sample firms. Over 40 per cent of the firms are located in Selangor alone. Almost 65 per cent of the firms are located in Selangor, P. Pinang or Johor. The ownership of the firms is given in table 2. The majority of firms who responded are either foreign owned (22.8 per cent) or owned by ethnic Chinese (54.4 per cent). The sample also includes firms owned by Bumiputras (7.0 per cent), Indians (1.8 per cent) and majority government owned (1.8 per cent). Table 3 shows the sample firms according to their major product line. Firms producing metal products, chemical products, electronics and electrical equipment, wood products and food and beverage products make up about 70 per cent of the firms from whom we received responses.

Discussion of the Results

Age and Size

Table 4 breaks down successful and less successful exporters according to the age and size of the firm. A successful exporter is defined as a firm which has over 20 per cent of its sales from exports, while a less successful exporter is defined as a firm which has up to 20 per cent of its sales from exports. This is consistent with the definition used by Bagchi-Sen (1999, 239). There are 35 successful exporters (66 per cent) and 18 less successful exporters (34 per cent) in the sample. Several previous studies have found a clear link between industrial export performance and size (see eg Cavusgil 1984, Denis & Depelteau 1985, Samiee & Walters 1990). In his study of Canadian SMEs in the Niagara border region Bagchi-Sen (1999) found that all less successful exporters were relatively small in size, where size was measured using sales volume. The relationship between size and exporting, however, was much less clear-cut for successful exporters.

For the SMEs in this sample there is no clear relationship between size and success as an exporter. The majority of micro enterprises (up to 50 employees) and small enterprises (51-100 employees) are successful exporters, while less than 50 per cent of medium-sized enterprises (101-200 employees) are successful exporters. The relationship between size and export success, though, is much clearer when we consider large firms (firms with more than 200 employees) with 85 per cent of large firms classified as successful exporters. Bagchi-Sen (1999) suggests that in general successful exporters are older, more established firms. He found that over one-half of the successful exporters in his sample had been in existence for more than 20 years, while a little over one-third of less successful exporters had been in existence for a similar period. There is no clear relationship between age and export success for the firms in this study. Two-thirds of both successful and less successful exporters have been in existence for more than 10 years; 35 per cent of successful exporters have been operating for more than 15 years, while 39 per cent of less successful exporters have been operating for the same period.

Capabilities

Tables 5 to 8 break down successful and less successful exporters according to their capabilities. Tables 5 and 6 give the results for a range of management, marketing and technological capabilities. Tables 7 and 8 compare successful and less successful exporters according to various financial and external contracting capabilities. Generally speaking, differences between successful and less successful firms for most capabilities are statistically insignificant. The exceptions are spending on international market research (table 7) and long-term relationships with subcontractors/suppliers (table 8). Successful exporters statistically spend more on international market research at the 5 per cent level than less successful exporters in the sample. Similarly, successful exporters in the sample are better at forming and maintaining long-term relationships with subcontractors/suppliers at the 5 per cent level than less successful exporters.

Barriers to Exporting

Bagchi-Sen (1999) considers internal and external barriers to exporting. Internal barriers include small size, lack of operating capital, financing requirements, lack of in-house expertise, risk willingness and management time requirements. External barriers include difficulties in forming international partnerships, domestic and foreign competition, tariff levels, cultural distance and lack of distribution channels. Karagozoglu and Lindell (1998) found that the major obstacles to exporting for small and medium sized technology companies in California involved both internal and external barriers. Karagozoglu and Lindell (1998) found that the biggest barrier was difficulties in forming international partnerships (external), while the second biggest was lack of managerial expertise and competence to exploit international business opportunities (internal). Karagozoglu and Lindell (1998), however, do not compare successful exporters with less successful exporters or test the statistical significance of their results.

Bagchi-Sen (1999) found that each of the internal barriers he considered was statistically different between successful and less successful Canadian exporters. On the other hand,

differences in external barriers between successful and less successful exporters were mostly statistically insignificant. Table 9 compares the views of successful and less successful exporters in this study on a number of internal and external barriers to exporting. Overall, in two-thirds of cases, the specified barrier was considered more of a problem by less successful exporters than successful exporters; however, unlike in Bagchi-Sen's (1999) study none of the differences are significant. Consistent with Bagchi-Sen's (1999) findings, though, there are substantial differences between internal and external barriers. The mean values for internal barriers are consistently lower for successful exporters, while the mean values for external barriers are higher for successful exporters in several categories, including domestic and foreign competition, tariff and non-tariff barriers and difficulties obtaining information about global markets. Baagchi-Sen (1999, 240) points out that because successful exporters are more export-oriented, they are faced with foreign competition and protection issues on a day-to-day basis and therefore these problems are often considered more of a hindrance *vis-à-vis* less successful exporters given the management time that is needed to address them.

Strategies to Overcome Barriers

Table 10 shows strategies that successful and less successful exporters have used to overcome barriers to exporting. For each of the strategies, the respondents indicated either (A) it had been implemented, (B) there were plans to implement it, (C) it could not be implemented due to resource or skill constraints or (D) it was not needed. The most common external strategies that exporters have implemented are "forming tighter relationships with customers" and "forming long-term relationships with sub-contractors and suppliers". At least 80 per cent of successful exporters and 70 per cent of less successful exporters have implemented each of these strategies. This finding is consistent with the results of previous studies, such as Karagozoglu and Lindell (1998), which have emphasised the importance of strategic partnership arrangements for a firm's international orientation. Strategic partnerships have been viewed as a means for the firm to control uncertainty (Williamson 1985), share assets (Pfeffer and Nowak 1976) and strengthen its market position (Forrest 1990, Karagozoglu and Lindell, 1998).

On the other hand, the external strategies which exporters have had most trouble implementing because of resource or skill constraints are "forming tighter relationships with trade associations and chambers of commerce" and "entering into international cooperative alliances". Karagozoglu and Lindell (1998) found that about twice as many firms in their sample emphasised the difficulties of forming international cooperative alliances than domestic cooperative alliances. The results from this study indicate that while successful and less successful Malaysian exporters have more trouble forming international alliances than domestic alliances due to resource or skill constraints, the difference is most pronounced among successful exporters. The percentage of successful exporters who stressed the resource constraints on forming international partnerships (28.6 percent) was double the percentage of successful exporters who stressed the resource constraints on forming domestic partnerships (11.4 per cent). This result, which at first seems surprising, might be explained if successful exporters spend more time in

the international market place and are therefore more aware of the problems associated with forming international alliances than less successful exporters.

The most common internal strategies that exporters have implemented are "constantly improving existing products" and "constantly improving manufacturing methods". About 70 per cent of successful exporters and 75 per cent of less successful exporters have either implemented or plan to implement "reengineering", although, at the same time, respondents considered it to be the most difficult internal strategy to implement because of resource and skill constraints. Slightly more firms have implemented, or plan to implement, TQM programs than reengineering; just over 80 per cent of successful exporters and 75 per cent of less successful exporters have either implemented or plan to implement TQM programs. The characteristics of reengineering that are most often mentioned are radical changes (Hammer and Champy 1993, Hill and Wilkinson, 1995) and fundamental rethinking (Hammer and Champy 1993, Champy 1995).

Thus, while there are similarities between reengineering and TQM, relative to TQM, reengineering involves significant risk, extensive training and the involvement of top management in designing and implementing reengineering projects (Dixon *et al* 1994, Hammer and Champy, 1993). Champy (1995) suggests that reengineering involves a complete overhaul of a firm's system of beliefs and values. Richardson and Wei (2001) point out that Malaysia's enterprise culture is not well placed to deal with the bluntness that is part and parcel of reengineering. For instance, cultural traits such as politeness make it difficult for managers to tell subordinates that there is a need to improve performance or be forced to leave the firm. This might help to explain why a high proportion of firms see resource and skill constraints as a barrier to its implementation.

CONCLUSIONS

This paper has examined differences in the capabilities, problems and strategies of successful and less successful exporters in Malaysia, using the results of a survey of FMM members, the vast majority of whom are SMEs. The results suggest that in terms of capabilities, spending on international market research and the ability to forge strong long-term relationships with subcontractors/suppliers are the main differences between successful and less successful exporters in the sample. While the differences are not statistically significant, less successful exporters see internal barriers as bigger barriers to exporting than successful exporter. On the other hand, reflecting their greater presence in export markets, successful exporters in the sample generally ranked external barriers as more important obstacles to exporting than less successful exporters.

When viewing these results, one has to bear in mind, the low response rate and therefore relatively small sample size. While we have argued above that the low response rate was not unexpected, it is still an important limitation that has to be taken into account when considering the results. Future research on the issues facing Malaysian exporters in general and SMEs in particular can pursue several channels. Two areas, on which we collected data in the questionnaire used for this study, and which will be the subject of future papers, are the motives of exporters (see Karagozoglu & Lindell, 1998) and the

transaction costs confronting exporters using alternative export channels (see Abdel-Latif & Nugent 1996, Kim *et al* 1997). At a time of increasing globalisation, further studies such as these are needed for exporters in Malaysia as well as other emerging Asian economies if we are to understand the factors determining their export success.

Table 1
Sample Firms According to Location

Selangor	23	(40.35)
P.Pinang	8	(14.04)
Johor	6	(10.53)
Malacca	5	(8.77)
Federal Territory - Kuala Lumpur	4	(7.02)
Perak	4	(7.02)
Negeri Sembilan	2	(3.51)
Pahang	2	(3.51)
Trengganu	2	(3.51)
Sabah and Sarawak	1	(1.75)

Notes:
Includes information for all 57 respondents

Table 2
Sample Firms According to Ownership

Ownership	**Number of Firms**	
51%-100% owned by Chinese	31	54.39
51%-100% Foreign Owned	13	22.81
51%-100% owned by Bumiputra	4	7.01
51%-100% owned by Indians	1	1.75
51%-100% Government Owned	1	1.75
Other	6	10.53

Notes: Includes information for all 57 respondents, no information for one firm

Table 3
Sample Firms According to Major Product

Metal Products	13	23.21
Chemical	11	19.64
Electronics and Electrical Equipment	6	10.71
Wood Products	6	10.71
Food and Beverage	3	5.35
Cosmetics and Toiletries	2	3.57
Paper Products	2	3.57
Plastics	2	3.57
Textile, Leather and Wearing Apparel	2	3.57
Car Batteries	1	1.79
Car Components	1	1.79
Compressed Air Filter	1	1.79
Industrial Explosives	1	1.79
Minerals	1	1.79
Office Furniture	1	1.79
Palm Oil	1	1.79
Poultry Equipment	1	1.79
Refrigeration Services	1	1.79
Telecommunications	1	1.79

Notes: Includes information for all 57 respondents, no information for one firm

Table 4
Successful versus Less Successful Exporters According to Age and Size

TYPE	***N***	**AGE OF THE FIRM (YEARS)**					**SIZE OF THE FIRM (Number of Employees)**			
		0-5	6-10	11-15	16-20	>20	1-50	51-100	101-200	More than 200
Successful	35	4	8	11	5	7	10	8	6	11
Less Successful	18	_	6	5	2	5	6	3	7	2
Total	53	4	14	16	7	12	16	11	13	13

Notes: Based on information for 53 respondents for which we have valid information for this study

Table 5
Successful versus Less Successful Exporters According to Management and Marketing Capabilities

CAPABILITY	SUCCESSFUL	LESS SUCCESSFUL	CALCULATED *t*-VALUE
Promotions Designed for Foreign Markets	2.83 (35)	3.12 (16)	0.88
Personnel with Expertise in Export Activities	2.51 (35)	2.69 (16)	0.51
In House Research on Foreign Markets	3.03 (35)	3.31 (16)	1.04
Post Sale Servicing Specific to Products	3.28 (35)	2.87 (15)	-0.45
Management's Ability to Follow Developments in Foreign Markets and Technologies	2.37 (35)	2.24 (17)	-0.47
Management's Ability to Develop New Strategies	2.26 (35)	2.18 (17)	-0.29
Overall Strength in the Area	2.56 (33)	2.81 (16)	0.86

Notes:
Calculated t-statistics assume that both groups have equal variance. The critical value using a two-tailed test is 2.00 at 5 per cent. Respondents were asked to "rate the strength of your company ***relative to other exporters*** *in the same industry" and were told "in each case having more, doing more, spending more or being better than any other firm would mean that your firm is stronger relative to others". Respondents answered on a Likert scale from 1 to 5, where 1=strong and 5=weak. We do not have answers from all of the 53 firms for all categories. Figures in parenthesis are the number of firms for which we have valid responses in each category.*

Table 6
Successful versus Less Successful Exporters According to Technological Capabilities

CAPABILITY	SUCCESSFUL	LESS SUCCESSFUL	CALCULATED *t*-VALUE
Spending on Research and Development	2.68 (35)	3.18 (17)	1.44
Personnel with Advanced Engineering and Science Degrees	2.63 (35)	2.76 (17)	0.46
Unique Technologies, Products and Services	2.51 (35)	2.41 (17)	-0.4
Product Capacity to Meet Foreign Demand	2.11 (35)	2.41 (17)	1.16
State of the Art Plant and Equipment	2.48 (35)	2.65 (17)	0.52
Ability to Improve Existing Manufacturing Methods	2.17 (35)	2.24 (17)	0.26
Ability to Introduce New Technologies on a Continual Basis	2.43 (35)	2.29 (17)	-0.47
Reengineering	2.63 (35)	2.59 (17)	-0.14
Overall Strength in this Area	2.46 (34)	2.33 (15)	-0.26

Notes:
Same as table 5

Table 7
Successful versus Less Successful Exporters According to Financial Capabilities

CAPABILITY	SUCCESSFUL	LESS SUCCESSFUL	CALCULATED *t*-VALUE
Spending on Advertising in Foreign Markets	3.68 (35)	4 (16)	1.2
Spending on International Market Research	3.60 (35)	4.25 (16)	2.53*
Management Development Programs	2.85 (34)	3.00 (17)	0.53
Availability of Capital to Finance Exports	2.26 (35)	2.56 (16)	0.88
Overall Strength in the Area	2.65 (33)	3.00 (15)	1.14

Notes:
Same as table 5.
*indicates that there is a sýgnificant difference between the two groups of exporters in the respective category at the 5 per cent level.

Table 8
Successful versus Less Successful Exporters According to External Contracting Capabilities

CAPABILITY	SUCCESSFUL	LESS SUCCESSFUL	CALCULATED *t*-VALUE
Tighter Relationships with Customers	1.83 (35)	1.94 (18)	0.45
Long-term Relationships with Sub-contractors/Suppliers	1.80 (35)	2.39 (18)	2.42*
Tighter Relationships with Government Agencies	2.83 (35)	3.17 (18)	1.16
Tighter Relationships with Trade Associations and Chambers of Commerce	3.09 (35)	3.06 (18)	-0.1
Overseas Ethnic Connections	3.34 (35)	3.39 (18)	0.15
Domestic Cooperative Agreements and Alliances	3.23 (35)	2.71 (17)	-1.64
International Cooperative Agreements and Alliances	3.29 (35)	3.47 (17)	0.58
Political Connections	3.83 (35)	4.18 (17)	1.11
Overall Strength in this Area	2.79 (34)	2.67 (15)	-0.59

Notes:
Same as table 5.
**indicates that there is a significant difference between the two groups of exporters in the respective category at the 5 per cent level.*

Table 9
The Views of Successful and Less Successful Exporters on Barriers to Exporting

BARRIERS TO EXPORTING	SUCCESSFUL	LESS SUCCESSFUL	CALCULATED *t*-VALUE
Small Size	2.08 (35)	2.59 (17)	1.52
Lack of Operating Capital	2.6 (35)	2.76 (17)	0.45
Financial Requirements	2.5 (34)	2.65 (17)	0.41
Lack of Managerial Experience and Competence to Exploit International Business Opportunities	2.54 (35)	2.88 (17)	0.95
Difficulties in Forming International Partnerships	2.71 (35)	2.82 (17)	0.32
Management Does Not Have Enough Time	2.28 (35)	2.35 (17)	0.2
Lack of Willingness to Take Risk	2.34 (35)	2.70 (17)	1.13
Strong Competition from Foreign Producers	3.54 (35)	3.24 (17)	-0.89
Strong Competition from Malaysian Producers	2.57 (35)	2.29 (17)	-0.81
High Tariffs Imposed by Foreign Governments	3.08 (35)	3.00 (17)	-0.24
Foreign Trade Barriers other than High Tariffs	2.94 (35)	2.82 (17)	-0.34
Lack of Ethnic Connections in Foreign Country	2.41 (35)	2.48 (17)	-0.22
Cultural Distance as a Barrier to Successful International Partnerships	2.2 (35)	2.47 (17)	0.98
Unavailability of Distribution Channels in Foreign Markets	2.94 (35)	2.94 (17)	-0.004
Difficulties in Gathering Information About Global Markets, Technologies and Competitors	2.91 (35)	2.37 (16)	-1.53

Notes:
Respondents answered on a Likert scale from 1 to 5, where 1=not a problem and 5=severe problem. We do not have answers from all of the 53 firms for all categories. Figures in parenthesis are the number of firms for which we have valid responses in each category.

Table 10
Strategies to Overcome Barriers to Exporting

STRATEGIES	SUCCESSFUL				LESS SUCCESSFUL			
	A	B	C	D	A	B	C	D
Develop New Products on a Continual Basis	19 (55.9)	12 (35.3)	2 (5.9)	1 (2.9)	10 (58.9)	5 (29.4)	1 (5.9)	1 (5.9)
Constantly Improve Existing Products	29 (80.6)	4 (11.1)	1 (2.8)	2 (5.6)	12 (80.0)	2 (13.3)	_	1 (6.7)
Broaden Product Line Significantly	16 (45.7)	13 (37.1)	3 (8.6)	3 (8.6)	12 (70.6)	2 (11.8)	2 (11.8)	1 (5.9)
Expand Research and Development Efforts	12 (34.3)	15 (42.9)	7 (20.0)	1 (2.9)	11 (64.7)	4 (23.5)	2 (11.8)	_
Introduce New Technologies on a Continual Basis	11 (31.4)	19 (54.3)	2 (5.7)	3 (8.6)	11 (68.8)	4 (25.0)	1 (6.2)	_
Constantly Improve Existing Manufacturing Methods	20 (57.1)	11 (31.4)	2 (5.7)	2 (5.7)	15 (93.8)	_	1 (6.2)	_
Find New Markets	18 (51.4)	14 (40.0)	2 (5.7)	1 (2.9)	13 (76.5)	4 (23.5)	_	_
Enter New Markets Before Competitors Move In	11 (31.4)	14 (40.0)	5 (14.3)	5 (14.3)	7 (41.2)	6 (35.3)	3 (17.6)	1 (5.9)
Seek Protection Against Foreign Imports	2 (5.7)	11 (31.4)	4 (11.4)	18 (51.4)	1 (6.3)	1 (6.3)	2 (12.4)	12 (75.0)
Try to Become Leaders Within the Market Segment	14 (40.0)	12 (34.3)	5 (14.3)	4 (11.4)	7 (41.2)	8 (47.1)	2 (11.7)	_
Adopt Price Based Competitive Strategies	18 (51.4)	13 (37.1)	2 (5.7)	2 (5.7)	6 (35.3)	9 (52.9)	_	2 (11.8)
Adopt Non-Price Based Competitive Strategies	20 (57.1)	12 (34.3)	2 (5.7)	1 (2.9)	11 (64.7)	5 (29.4)	1 (5.9)	_
Form Tighter Relationships with Customers	28 (80.0)	6 (17.1)	_	1 (2.9)	15 (88.2)	2 (11.8)	_	_
Form Long-term Relationships with Sub-contractors/Suppliers	28 (80.0)	6 (17.1)	_	1 (2.9)	12 (70.6)	3 (17.6)	2 (11.7)	_
Form Tighter Relationships with Government Agencies	10 (28.6)	14 (40.0)	6 (17.1)	5 (14.3)	3 (17.6)	4 (23.5)	2 (11.8)	8 (47.1)
Form Tighter Relationships with Trade Associations and Chambers of Commerce	8 (22.9)	12 (34.3)	9 (25.7)	6 (17.1)	5 (31.3)	3 (18.7)	3 (18.7)	5 (31.3)
Use Overseas Ethnic Connections	2 (5.7)	19 (54.3)	6 (17.1)	8 (22.9)	4 (23.5)	3 (17.6)	2 (11.8)	8 (47.1)
Enter into Domestic Cooperative Agreements and Alliances	6 (17.1)	11 (31.4)	4 (11.4)	14 (40.0)	3 (17.6)	3 (17.6)	3 (17.6)	8 (47.1)
Enter into International Cooperative Agreements and Alliances	5 (14.3)	11 (31.4)	10 (28.6)	9 (25.7)	2 (11.8)	6 (35.3)	4 (23.5)	5 (29.4)

Table 10 continued

STRATEGIES	SUCCESSFUL				LESS SUCCESSFUL			
	A	B	C	D	A	B	C	D
Implement Management Development Programs	14 (40.0)	15 (42.9)	5 (14.3)	1 (2.9)	11 (64.7)	5 (29.4)	1 (5.9)	_
Use Total Quality Management (TQM) Techniques	13 (37.1)	16 (45.7)	4 (11.4)	2 (5.7)	12 (70.6)	1 (5.9)	3 (17.6)	1 (5.9)
Monitor International Business Environment	9 (25.7)	20 (57.1)	5 (14.3)	1 (2.9)	10 (58.8)	6 (35.3)	1 (5.9)	_
Reengineering	9 (25.7)	15 (42.9)	9 (25.7)	2 (5.7)	9 (52.9)	4 (23.5)	3 (17.6)	1 (5.9)

Notes:

A= Implemented
B= Planned to be Implemented
C= Could not be implemented due to resource and skill constraints
D= Not Needed

We do not have answers from all of the 53 firms for all categories. Figures in parenthesis are the percentage of firms which answered either A, B, C or D for the relevant question in each category (successful and less successful firms). Where these do not add to 100, it is because of rounding.

REFERENCES

Abdel-Latif, A and J. Nugent (1996) "Transaction Cost Impairments to International Trade: Lessons From Egypt", *Contemporary Economic Policy*, 14, April, pp. 1-14

Abdullah, M-A. (1999) *Small and Medium Enterprises in Malaysia: Policy Issues and Challenges* (Aldershot: Ashgate)

Abdullah, M-A. (2000) "Globalised Economy and the Strategic Importance of SMEs in Malaysia's Industrial Structure" in Charles Harvie and Boon-Chye Lee (eds) *SMEs in East Asia in the Aftermath of the Asian Financial Crisis*, SMEs in a Global Economy Conference, Wollongong, June 2000 pp. 3-12

Bagchi-Sen, S. (1999) "The Small and Medium-Sized Exporters' Problems: An Empirical Analysis of Canadian Manufacturers" *Regional Studies* 33(3), 231-245

Bagchi-Sen, S. and A. MacPherson (1999) "Competitive Characteristics of Small and Medium-Sized Manufacturing Firms in the US and Canada" *Growth and Change* 30, 315-336

Baird, I.S, M.A. Lyles & J. B. Orris (1994) "The Choice of International Strategies by Small Business" *Journal of Small Business Management* 32(1): 48-59

Bijmott, T.H.A & P.S. Zwart (1994) "The Impact of Internal Factors on the Export Success of Dutch Small and Medium-Sized Firms" *Journal of Small Business Management* 32(2): 69-83

Bonaccorsi, A. (1992) "On the Relationship Between Firm Size and Export Intensity", *Journal of International Business Studies* 4(4), 605-635

Cavusgil, S. T (1984) "Organisational Characteristics Associated with Export Activity" *Journal of Management Studies* 21, 3-22

Champy, J. (1995) *Reengineering Management: The Mandate for New Leadership* (New York: Harper Business)

Chee, P.L. (1986) *Small and Medium Industries in Malaysia* (Kuala Lumpur: Forum Press)

Chetty, Blankenburg & Holm (2000) "Internationalization of Small to Medium-Sized Manufacturing Firms", *International Business Review* 9(1), 77-93

Culpan, R. (1989) "Export Behaviour of Firms: Relevance of Size" *Journal of Business Research* 18, 207-218

Dalli, D (1995) "The Organization of Exporting Activities: Relationships Between Internal and Exporting Arrangement" *Journal of Business Research* 34, 107-115

Denis, J and D. Depelteau (1985) "Market Knowledge, Diversification and Export Expansion" *Journal of International Business Studies* 16, 77-89

Dixon, J.R., P. Arnold, J. Heike, J.S. Kim and P. Mulligan (1994) "Business Process Engineering: Improving in New Strategic Directions", *California Management Review* 36, 93-108.

Dogan, E., R. Smyth and I. Wills (2001) "Transaction Costs of Cross Cultural Exchange: Evidence From Australia-Malaysia Case Studies" in Chris Nyland, Wendy Smith, Russell Smyth and Marika Vicziany (eds) *Malaysian Business in the New Era* (Cheltenham, UK and Lyme, US Edward Elgar), 51-66

Douglas, M. (1996) "The Strategies and Characteristics of Exporting SMEs: A Study of Peruvian Firms" *Journal of Global Marketing* 9(4): 35-56

Edwards, R., A. Ahmad and S. Moss (2001) "Sustaining the Growth Effects of Foreign Investment: The Case of Multinational Subsidiaries in Malaysia" in Chris Nyland, Wendy Smith, Russell Smyth and Marika Vicziany (eds) *Malaysian Business in the New Era* (Cheltenham, UK and Lyme, US Edward Elgar), 99-111

Foong, S-Y. (1999) "Effect of End-User Personal and System Attributes on Computer Based Information System Success in Malaysian SMEs" *Journal of Small Business Management* 37(3), 81-87

Forrest, E.J. (1990) "Strategic Alliances and the Small Technology-based Firm", *Journal of Small Business Management* 28, 37-45

Hall, C. (1995) "APEC and SME Policy – Suggestions for an Action Agenda" Australian APEC Studies Centre Issues Paper No. 1

Hammer, M. and J. Champy (1993) *Reengineering the Corporation: A Manifesto for Business Revolution* (London: Nicholas Brearly)

Hill, S. and A. Wilkinson (1995) "In Search of TQM", *Employee Relations* 17(3): 8-25.

Karagozoglu, N and M. Lindell (1998) "Internationalization of Small and Medium-Sized Technology-Based Firms: An Exploratory Study" *Journal of Small Business Management* 36(1), 1-12

Katisikeas, C.S, N.F. Piercy & C. Ionnides (1996) "Determinants of Export Performance in a European Context" *European Journal of Marketing* 30(6), 6-35

Kaynak, E., P.N. Ghauri & T. Olofsson-Bredenlow (1987) "Export Behaviour of Small Swedish Firms" *Journal of Small Business Management* 25(2), 26-32

Kim, L, J. Nugent and S-J. Yhee (1997) "Transaction Costs and Export Channels of Small and Medium-Sized Enterprises: The Case of Korea", *Contemporary Economic Policy*, 15, January, pp. 104-120

Litvak, I.A. (1990) "Instant International: Strategic Reality for Small High-Technology Firms in Canada" *Multinational Business* 2, 1-12

Mohd. Rosli (2000) "Small and Medium Industries" in Mohd. Rosli and Mohamed Aslam (eds) *Malaysian Economic Development in the Globalisation Era* (Kuala Lumpur: University of Malaya Press)

Mohd. Rosli *et al* (2001) "The Recent East Asian Economic Crisis and its Impact on Malaysian Small and Medium-sized Firms" *Asian Profile* 29(2), 119-131

Naidu, M. & Prasad, V.K. (1994) "Predictors of Export Strategy and Performance of Small and Medium-Sized Firms" *Journal of Business Research* 31, 107-115

Pfeffer, J and P.. Nowak (1976) "Joint Ventures and Interorganizational Independence", *Administrative Science Quarterly* 21, 398-418

Rasiah, R (2001) "The Importance of Size in the Growth and Performance of the Electrical Industrial Machinery and Apparatus Industry in Malaysia" in Chris Nyland, Wendy Smith, Russell Smyth and Marika Vicziany, (eds) *Malaysian Business in the New Era* (Cheltenham, UK and Lyme, US: Edward Elgar), 81-97

Richardson, S and K.K. Wei (2001) "A Comparison of Business Process Reengineering with Other Managerial Techniques in Malaysia" in Chris Nyland, Wendy Smith, Russell Smyth and Marika Vicziany (eds) *Malaysian Business in the New Era* (Cheltenham, UK and Lyme, US Edward Elgar), 129-147

Samiee, S and P. Walters (1990) "Influence of Firm Size on Export Planning and Performance" *Journal of Business Research* 20, 235-248

Smyth, R. and I. Wills (2000), "The Transaction Costs of Doing Business in Malaysia" in Ron Edwards, Chris Nyland and Max Coulthard (eds) *Readings in International Business: An Asia Pacific Perspective* (Sydney: Prentice Hall) 33-47

Williamson, O (1985) *Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (New York: Free Press)

[1] The questionnaire also contained questions on items that are not explored in this paper, but which will be the subject of future papers.

IN SEARCH OF THE ACTUAL OBSTACLES TO GROWTH OF VIETNAMESE SMALL AND MEDIUM ENTERPRISES

Adam Fforde[*]
Le Cong Luyen Viet[**]

INTRODUCTION

There are many "puzzles" when one first looks at the picture of Vietnam's economy.[1] One such conundrum is the difficult growth of the non-state sector,[2] in which a majority would be Small and Medium Enterprises (SMEs), since the start of *Doi Moi* (Renovation).[3] The environment for the growth of the non-state sector has been improved since *Doi Moi*. Nevertheless, the road to development of this sector is not as smooth as it should be and the principal victims are the newly emerged SMEs.

The importance of the private SMEs in Vietnam's economic transformation has received growing attention.[4] In the literature, one sees a common agreement that SMEs in Vietnam are facing various obstacles. Although difficulties are not only restricted to Vietnamese SMEs,[5] the extent and level of barriers may be distinctive.

Views towards the obstacles facing Vietnam's SMEs are, however, quite divergent. Authors maintain different positions about the difficulties making people confused to see what the real obstacles are, or whether they are really the obstructions. In other words, the actual hindrances remain somewhat uncertain.

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[1] For an overview of these "puzzles", see Adam Fforde, A Short Assessment of the Impact of Vietnam's "Open up to the West" since 1986", Paper prepared for the Policy Implementation Assistance Project (funded by CIDA), (Hanoi: June 1999), available at http://www.aduki.com.au/june_99.htm. For a discussion of some specific issues, see Hal Hill, "Export Success Against the Odds: A Vietnamese Case Study", World Development, 28, 2, Feb 2000, pp.283-300

[2] "Non-state" (*ngoµi quèc doanh*) sector is preferred as it is used to broadly indicate the enterprises not under the ownership of the state. This is because "private" refers to a specific ownership type (*t-nh©n*). However, throughout this study, "private sector" (*bé phËn d©n doanh*) is used to indicate domestic non-state sector, excluding foreign invested enterprises

[3] *Doi Moi* essentially refers to economic reforms. See more in Section 2.1.2 below

[4] Major studies include Per Ronnås (1992), Per Ronnås and Bhargavi Ramamurthy (2001), James Riedel and Chuong Tran (1997), Leila Webster and Markus Taussig (1999), Leila Webster (1999), Do Dinh Cung et. al. (1999) and Do Dinh Cung et. al. (2000). Other Vietnamese and international institutions such as Central Institute of Economic Management (CIEM) and Institute of Labour Studies and Social Affairs (MOLISA), GTZ/VICOOPSME and Vietcochamber also carried out a number of studies.

[5] For a summary of the difficulties encountered by SMEs in the Asia Pacific region, see APEC Secretariat, The APEC Survey on Small and Medium Enterprises, (Singapore: APEC Secretariat, 1994)

This paper will attempt to identify the actual obstacles that private Vietnamese SMEs are facing in order to have a realistic picture of the problems. That can be helpful for the identification of strategy to promote this important sector in the years to come

Discussions in this paper are based on studies about the barriers confronted by Vietnamese SMEs. For that purpose the paper is structured as follows. In the next section a brief account of Vietnamese *Doi Moi* will be presented. It is followed by the discussions about economic sectors including State Owned Enterprises (SOEs) and SMEs. Section III establishes the main part of this paper, discussing about the major obstacles that Vietnamese SMEs are facing. Comparison is made between different views, and a brief summary will close this section. In the last section, we arrive at the conclusion that the difficulties encountered by SMEs in Vietnam have been studied from different perspectives and grounds. As such, we categorise the authors into "empiricists" and "theorists" groups. Issues that may require further studies are also included in this last section.

VIETNAM'S ECONOMIC TRANSFORMATION AND TYPES OF ENTERPRISES

This section sets out the background in which Vietnamese SMEs develop. It provides a discussion about Vietnam's recent economic transformation and looks at the two major economic sectors: state and non-state with focus on SOEs and SMEs.

An Overview of Vietnam's Economic Transformation

Central Planning Period

Vietnam applied a central planning development model with the precepts of Marxism-Leninism. Rural collectivisation took place in 1959-1960. In the late 1950s "socialist transformation" attacked the free market and private capital. By the beginning of the 1960s, the orthodox institutions of central planning were essentially in place.[6] The traditional planning model relies on compulsion and a certain set of institutions to create forced economic development. Direct allocation of resources through the state distribution systems permits these resources to be focussed on priority sectors.[7]

That economic model was found to be able to mobilise the Vietnamese people during the period of the war. However, it also made the country chronically dependent upon imports and faced continual difficulties in finding adequate economic resources from the domestic economy (above all from agriculture) for its needs.[8]
When the war was over in 1975, central planning was expanded to the South to cover the whole country. However, the collectivisation of agriculture in the late 1970s and other

[6] Adam Fforde, "The Institutions of Transition from Central Planning: The Case of Vietnam" in Colin Barlow ed. Institutions and Economic Changes in Southeast Asia: The Context of Development from the 1960s to the 1990s (MA: Edward Elgar, 1999), pp.120-121
[7] Adam Fforde, "The Political Economy of "Reform" in Vietnam-Some Reflections' in Börje Ljunggren ed. The Challenge of Reform in Indochina (Cambridge: HIID, 1993), p.297
[8] Adam Fforde and Stefan de Vylder, From Plan to Market: The Economic Transition in Vietnam (Boulder: Westview, 1996), p.67

measures to create a centrally planed economy in the South came unstuck. Output and state grain procurement faltered and met resistance from farmers.[9] Fforde and de Vylder observe that the attempt lasted only until around 1980 when important changes took place.[10]

Doi Moi: Economic Transformation[11]

The economic transformation of Vietnam, or *Doi Moi*, is often traced to 1986. In fact, Vietnamese leaders agreed upon a number of reforms in August 1979 and therefore the process is suggested to have started earlier. The policy carried out after that was characterised by a "step-by-step approach" with a more liberal attitude towards economic activities.

In 1986, at the Sixth Party Congress, *Doi Moi* with accelerated economic reform was approved. This officially heralded the move towards market economy. Features that characterised this period are the acceptance of the weaknesses in the previous models and the readiness to change policies in recognition of the multi-sector and market economy. In March 1988 the Politburo issued Resolution 10, which effectively led to de-collectivisation in agriculture. The response to this reform was positive and in 1989 Vietnam changed from being a net importer to the third largest exporter of rice in the world.

The transition process was once again speeded up in 1989. Vietnam's reform took a new step of development by entering a market economy with the removal of price controls and significant development of factor markets. A series of reform measures, especially in macroeconomic stability, were pushed ahead.[12] With all such important changes, Vietnam essentially transformed to a market economy after 1989.

Economic Sectors and Types of Enterprises

After *Doi Moi* was initiated, a multi-sector economy was officially endorsed. Tables 1 and 2 (see Appendix) provide some statistics about the economic sectors by showing shares of GDP and industrial production by ownership. Some issues regarding the state and non-state sectors are presented below.

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[9] Melanie Beresford, "The Political Economy of Dismantling the 'Bureaucratic Centralism and Subsidy System in Vietnam" in K. Hewison et. al. eds. Southeast Asia in the 1990s (Sydney: Allen and Unwin, 1993), p.216

[10] Fforde and de Vylder, From Plan to Market, p.4

[11] This section is taken mainly from Beresford (1988 and 1997), and Dollar and Ljunggren (1997), Fforde (1997 and 1999), Fforde and de Vylder (1996)

[12] For more details of the sectoral reforms, see Dollar and Ljunggren "Vietnam" in Padma Desai ed. Going Global: Transition From Plan to Market in the World Economy (MA: The MIT Press, 1997), pp.145-147

State Sector

Vietnam's state sector is mainly comprised of SOEs. Discussions in the mainstream argue that SOEs, in general, should be privatised. For example, this view is well articulated in the publications by the World Bank (WB).[13] Taking a similar position, the WB early advised Vietnam that reform that only puts SOEs into a "level playing field", without the ultimate aim of privatisation, would not be a good strategy.[14] Several other authors also supported this view as regards to Vietnamese SOEs.[15]

The call for quickly privatising SOEs has been criticised. The Nobel laureate for 2001 Joseph Stiglitz maintains that advocates of privatisation may have overestimated the benefits of privatisation and underestimate the costs.[16]

In the transformation to a market economy, the state sector in Vietnam continues to have "a leading role". This has been a subject of discussion on how it should continue to hold the "commanding heights".[17] In addition, questions about actual ownership of Vietnamese SOEs are often raised.[18] State's supports to SOEs are criticised because there is a belief that this lack of level playing field is a serious problem not only for the private sector but also for the efficient use of resources in the state enterprises.[19]

However, Vietnam's SOEs did experience some reforms since *Doi Moi*. There was a continuous and significant contraction in number of SOEs and their employment in the last decade.[20] Despite this, the state sector's contribution to GDP increased in the early 1990s and remained constant at around 40 percent in the late 1990s (see Table 1). According to one author the effect of reforms was considerable, "harder budget constraints for most state enterprises have also contributed to substantive increases in labour productivity in the state enterprise sector, with total employment declining about one-third as output growth has accelerated."[21]

The situation as outlined shows that further reforms are needed such that the private sector may benefit from the "level playing field". The WB recently remarks, "there is no real conflict between the emphasis on the state-sector being the "leading sector" and effective

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[13] See WB (1995 and 1996) as cited in OECF Research Paper No. 24, State Owned Enterprise Reform in East Asian Transitional Economies (China and Vietnam), (Tokyo: RIDA, Oct 1998), pp.12-15

[14] WB, Vietnam: Transition to a Market Economy, (Washington DC, Sept. 1993)

[15] See, for example, David Dollar (1996), and Riedel and Turley (1998).

[16] Joseph Stiglitz, More Instruments and Broader Goals: Moving Toward the Post-Washington Consensus, (Helsinki: UNU/WIDER Annual Lectures 2, 1998), p.27

[17] See §ç §øc §Þnh (1991), and Dollar and Ljunggren (1997): Vietnam

[18] See, for example, Adam Fforde, Vietnam Economic Commentary and Analysis, No. 5 (Canberra: ADUKI Pty., 1994), pp. 57 and 96; and Gerard Greenfield, "The Emergence of Capitalism in Vietnam", in Milisand et. al. eds. The Socialist Register, (London: Merlin Press, 1994); and Beresford (1997)

[19] Ari Kokko and Fredrik Sjöholm, 'Some Alternative Scenarios for the Role of the State in Vietnam', The Pacific Review Vol.13, No.2 (2000), p.261

[20] In 2000, SOEs were estimated at 5,300, falling from 12,000 in 1989. Employment in SOEs fell from 2.5 million in 1990 to 1.6 million in 2000.[20]

[21] Raymond Mallon, "Experiences in the Region and Private Sector Incentives in Vietnam" in Suiwah Leung ed., Vietnam and the East Asian Crisis (Cheltenham: Edward Elgar, 1999), p.186

reform, if such reform is viewed as a pre-requisite to [the state sector] being competitive and thus a "leader" in key sectors."[22]

Therefore, a reasonable strategy would, perhaps, be a combination of large SOEs with SMEs. As such, "Vietnam's economy will develop in two directions: micro form and conglomerate form. These two directions will not be separated from each other but intertwined and will form a system in which small and medium sized enterprises will be the foundation of the social production structure. The mobility and flexibility, characteristics of small and medium-sized enterprises, will possibly be a therapy for either economic stagnation or "too-hot" economic growth."[23]

Non-State Sector

The non-state sector has always been in existence in the Vietnamese economy. Yet, private enterprises, apart from the household economy, operated under severe restrictions in this period. Reforms in *Doi Moi* have led, apparently, to a considerable increase in the size of the private sector outside agriculture. There was no restriction and control over the capital and labour force as it had been before. In principle, the private components were now equal to the state and collective sectors before the law.[24] A wider variety of enterprises are in existence.[25] All these came partly as the results of the regulations announced in 1988[26] which brought the private sector out of the grey zone.[27]

According to statistics in 1996,[28] there were a total of 1,439,683 enterprises in the private sector, excluding FIEs. Of these, there are 1,412,166 household and partnership enterprises, 17,535 private enterprises, 6,883 limited liability companies, 153 joint stock companies and 2,946 co-operatives.[29]

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[22] WB, Vietnam 2010: Entering the 21st Century-Vietnam Development Report 2001, (Hanoi: WB, 2000), Chapter 2, p.11

[23] Nguyen Sinh Cóc, "Role and Development Trend of Vietnam's Small and Medium Sized Enterprises", Vietnam Economic Review, No. 4 (58), 1999, p.43

[24] Lª §¨ng Doanh, "Economic Renovation in Vietnam: Achievements and Prospects" in Dean Forbes et. al. eds. *Sæi Míi*: Vietnam's Renovation Policy and Performance (Canberra: ANU, 1991), p.84

[25] It should be noted that the classification of economic sectors varies from one author to another. For example, Nguyễn Thanh Bình and Trần Đức Nguyên (1991): three basic ownership types (p.190) and five types of economic organisation and kinds of ownership (pp.194-97); Trần Hoàng Kim and Lê Thổ (1992): three sectors; Beresford (1993): six types of ownerships (p.221); David H. D. Truong and Carolyn Gates (1992 and 1996): five economic sectors; and §Æng §øc §µm (1997): five main economic sectors (pp.121-122)

[26] These are Decrees Nos. 27 and 28/HDBT on ownership and Resolution No.16/NQTW on renovation and policies to non-state sector

[27] Maud Helmlin et. al., The Anatomy and Dynamics of Small Scale Private Manufacturing in Vietnam, Working Paper Series in Economics and Finance No. 236, (Stockholm: Stockholm School of Economics, May 1998), p.1

[28] No survey statistics are available for recent years. The 1996 (as at 31 Dec 1996) survey figures are used on the assumption that the structure (in regions and industries) has not changed significantly.

[29] Nguyễn §×nh Cung et. al., (in Vietnamese) Small and Medium Enterprises-Current Situation and Solution Recommendations, (Monograph, Hanoi: May 2000), pp.1-2

Table 3 (see Appendix) shows the growth trend of private registered companies in recent years.[30] It is clear that the growth rates jumped considerably in 1994 and were subsequently maintained at a healthy level. Only in 1998 did the growth rate plummet, but to the far from disastrous 4 percent. In 1999 the registered enterprises were estimated at 45,005[31] and the figure for 2000 was nearly 60,000.[32]

Small and Medium Enterprises

In recent decades, the importance of small scale in economic development has always been noticed. The idea of utilising intermediate technology and small size production was much reinforced by the influential book *Small is Beautiful* by Schumacher in 1973.[33] In this book, he argues in support of intermediate technology and small-scale production. In another book, *Introduction to Development Economics* first published in 1973, Walter Elkan explains this development strategy as being in opposition to development based on capital-intensive technologies. Moreover, labour abundance is considered a comparative advantage of the developing economies. He argues that managing a small enterprise is less difficult than doing the job with a large undertaking. Many small enterprises may be more effective than a few larger ones in terms of disseminating managerial ability and familiarity with machinery.[34]

More recent works see the proliferation and endogenous growth of small and medium scale industries are of fundamental importance for sustainable economic development as well as for translating growth into enhanced employment opportunities and income. Therefore, they are helpful to alleviate poverty.[35]

Development based on an export-oriented strategy with significant involvement of private SMEs has been the success story in East Asian countries. This confirms the promotion of SMEs in Vietnam is a viable policy.

During the central planning period, medium and small enterprises were neglected and priority was on heavy industry. Over the last decade after *Doi Moi*, however, SMEs in Vietnam have seen a significant development. Their major characteristics are briefly described below.[36]

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[30] The reader may note that the figure for private registered companies is different from the figure given for the private sector in general. These companies are those registered under the specific legal form, excluding household enterprises. "Private enterprises" are similar to sole proprietorship companies.

[31] *Sµi Gßn Gi¶i Phãng* (Libe ration Saigon), 14 April 2001

[32] *Lao §éng* (Labour), 14 April 2001

[33] E. F Schumacher, Small is Beautiful: A Study of Economics as if People Mattered (London: Blond & Briggs, 1973)

[34] Walter Elkan, An Introduction to Development Economics , Revised Second Edition (New York: Prentice Hall/Harvester Wheatsheaf, 1995), pp.71-74

[35] Per Ronnås, 'Introduction', in Per Ronnås et. al. eds., Institutional Adjustment for Economic Growth, (Aldershot: Ashgate, 1998), p.2

[36] The description is largely taken from Leila Webster (1999), SMEs in Vietnam: On the Road to Prosperity (Hanoi: MPDF, 1999), NguyÔn §×nh Cung et. al, Research Report: Improving Macro Economic Policy and Reforming Administrative Procedures to Promote Development of Small and Medium Enterprises in

Definition

The definition of SMEs varies from time to time and is usually based on labour and capital criteria. The latest is provided in Document 681/CP-KTN issued in 1998. This document stipulates that SMEs should have a maximum registered capital of five billion Vietnamese *Dong* and employ less than 200 persons.

Importance of SMEs

It is frequently said that SMEs in Vietnam should play an important role in promoting socio-economic development, as a *sine qua non* for the modernisation and development of the economy.[37] The development of private SMEs is also an important indicator in the transformation to a centrally planned to a market economy.

SMEs in Vietnam have many roles including: (i) production of goods for domestic consumption and export; (ii) creating jobs for a large number of labourers; (iii) harnessing resources for endogenous growth; (iv) contributing to the effort to spread industries to different geographical areas; (v) complementing large scale industries; (vi) sustaining and developing the traditional handicraft occupations; and (vii) acting as the training ground for entrepreneurs.

So how are SMEs actually doing? The employment base among domestic private companies is small and the number of employees was just over 500,000 in 1998.[38] The overall contributions of the SME business sector to total national economic investment and GDP remains small at about two percent of GDP.[39] These suggest that the economic potential of this sector has not been fully realised.

Distribution

Geographically, the enterprises are concentrated in the South, which is home to about three quarters of private companies. It takes up 48% of the enterprises, excluding Ho Chi Minh City which accounts for a further 25% of total companies. The North has 18%, and the Central region houses the remaining 9%.

As regards to sectoral distribution, trading accounted for almost half of the private companies with roughly 12,735 companies in 1998, followed by manufacturers with about 5,260 companies nationwide. Among manufacturers, 55% are engaged in food and beverage production. Other firms were in wood processing, ceramics, garments and textiles.

Vietnam (Hanoi: Publication of the Project US/VIE/95/004, Jan 1999) and Nguyôn §×nh Cung et. al., Small and Medium Enterprises

[37] Per Ronnås, The Transformation of Private Manufacturing Sector in Vietnam in the 1990s , Working Paper Series in Economic and Finance No. 241, (Stockholm: Stockholm School of Economics, May 1998), p.1

[38] Webster (1999), SMEs in Vietnam, p.4

[39] Vietnam News, 13 May 1998

Other Issues

SMEs in Vietnam have faced considerable obstacles. Beside the "inherent weaknesses", like the difficulties in being financed, technology level, information access, and dependence on the larger firms,[40] Vietnamese SMEs encounter specific problems. Unlike their counterparts in East Asia who received support from governments, they were disadvantaged when compared to SOEs and are inexperienced in the international market. These and other major constraints to the growth of Vietnamese SMEs will be discussed in the next section.

BUSINESS PAINS – CONSTRAINTS TO THE GROWTH OF SMEs

As noted above, Vietnamese SMEs are operating in a distinctive environment, i.e. in the context of a transitional economy. Perhaps the only comparable country in East Asia is China, to some extent.[41] The typical features of Vietnam's transformation certainly leave imprints on the growth of these enterprises. This section, via the literature, looks at the major constraints that Vietnamese SMEs encounter.

Pull and push factors were present after *Doi Moi* for the establishment of new enterprises. There was perceived gain and the reforms presumably generated a demand for small scale units since the reduced power of state enterprises created a gap in supply. In addition, there was the need to create employment for investors themselves and their family members.[42] This only changed in the late 1990s, when the private sector, especially in manufacturing, had become a source of wage employment.[43]

Nevertheless, it is often argued that such motivations and expansion potential were subject to various constraints. Table 4 (see Appendix) presents the difficulties from the results of a large survey of nearly 1,000 enterprises in 1997 conducted with the assistance of SIDA. This table shows a general agreement on the importance of the three factors: capital, demand and competition. There is little variation, either between forms of ownership or between rural and urban. The main odd one out is the "other forms" category in rural areas.

"Institutional Weaknesses": Economic Logic

Vietnam's economic system is in the process of transformation, and therefore, "continues to include elements of both a centrally planned and a market economy regime."[44]

[40] Eul Yong Park, "Introduction" in Eul Yong Park ed., Small and Medium-Sized Enterprises, pp.8-9
[41] For a comparison of Vietnam and China, see Chan, Kerkvliet, and Unger eds. Transforming Asian Socialism: China and Vietnam Compared (Canberra: Dept. of International Relations, RSPAS, ANU, 1999)
[42] Ramamurthy, "The Asian Experience II: India and Vietnam" in Ronnås *et. al.* eds. Institutional Adjustment, p.116
[43] Ronnås and Ramamurthy, "Summary and Conclusion", in Ronnås *et. al.* eds. Institutional Adjustment, p.332
[44] Mallon, "Private Sector", p.171

Raymond Mallon notices two characteristics. First, many of the formal institutions required to support investment in a market economy either do not exist or are still at an early stage of development. Second, institutional weaknesses do not affect all enterprises equally, and the most vulnerable group is the privately owned small and medium enterprises.[45] Thus, he argues, "a move toward a more uniform business law addressing the core provisions of business enterprises, regardless of sources of investment, would better serve the interests of consistency and transparency."[46] Leila Webster also supports this argument. She sees the need for institution building and equal treatment in legal and regulatory matters.[47] "Institutions", therefore, are a common issue for these authors.

Of the "institutional weaknesses", entry procedures for new enterprises are frequently mentioned. Mallon remarks, "Current procedures for establishing a business are complex, confusing and overlapping."[48] James Riedel agrees, "in the case of private small and medium-sized companies this process is especially burdensome."[49] Similarly, Ramamurthy notes, "entry regulations pose as obstacles by being complicated, time consuming and expensive."[50]

The strong consensus amongst these writers is clear. Yet, there are grounds for caution in judging the seriousness of this problem. The SIDA's 1997 survey noticed almost all types of enterprise see no difficulty to get a license, except a small 1.3% of shareholding companies (see Table 4).[51] Therefore, it was concluded, "cumbersome government regulations, licensing procedures and unfavourable attitude of officials do not seem to have been a severe problem for most of the enterprises."[52] This finding is supported by a survey undertaken in 1999 by the Mekong Project Development Facility (MPDF), "counter to expectations, most sampled managers had not had difficulties registering their firms and obtaining licenses needed to be fully legal."[53] And this was mentioned by Webster whose opinions were quoted above.

Further to the streamlining of procedures came under a circular in 1998, the difficulties were again reduced when a new Enterprise Law became effective in 1 January 2000. Much simpler rules for registration were set out in the Law. A concerted effort to reduce the number of permits and licenses required to do business has helped improving the environment.[54] Registration costs and time were reduced greatly.[55] More enterprises were

[45] Ibid. pp.176-177
[46] Ibid., p.177
[47] Webster, SMEs in Vietnam, p.55
[48] Mallon, "Private Sector", pp.177-179
[49] James Riedel, "Needed: A Strategic Vision for Setting Reforms Priorities in Vietnam" in Suiwah Leung ed. Vietnam, p.19
[50] Ramamurthy, "The Asian Experience II", p.115
[51] It should be noted that the survey had been undertaken even before the streamlining took place in 1998
[52] Ramamurthy, "Origin and Development History" in Ronnås et.al. eds., Entrepreneurship in Vietnam Entrepreneurship in Vietnam: Transformation and Dynamics, (Singapore: Institute of Southeast Asian Studies, 2001), p.67
[53] Webster, "SMEs in Vietnam", p.21(ft)
[54] Economist Intelligence Unit (EIU), Country Report: Vietnam, June 2000
[55] The costs plummeted from more than eight million to just 550,000 ®å*ng*, the 98 days average before 2000 was reduced to seven day.

established; in 2000 there were 14,400 new enterprises[56] and a further 12,000 in the first eight months of 2001.[57]

How important is this, though? Many of the newly registered firms probably already existed, yet there is a sense that the simplified procedures have encouraged some entrepreneurs to take the plunge.[58] Therefore, the impacts of the changed legislation are not clear. If we believe the comment just quoted above and the survey results presented in Table 4, then the effects would not have been great.

Exit regulations are also considered an issue. "It is very time consuming and expensive to take a bankruptcy case to the Economic Court. This is partly because the Economic Courts were established at the same time as the Bankruptcy Law was approved and need time to develop, but it is also due to complexities in initiating bankruptcy proceedings and problems in enforcing action."[59] Again, though, we lack evidence to assess the importance of this issue. The comment above does acknowledge that time is needed before changes can take place.

The discussion above makes clear that institutional weaknesses have inhibited the growth of Vietnamese SMEs. Yet, it is unclear how important a factor this was. The next section puts the issues into a wider context.

Limited Market Demand and Competition

In the large 1997 survey, it was realised that one of the greatest constraints to growth of enterprises is the limited demand for their current output. In addition, too much competition is the other main reason why entrepreneurs were cautious in expanding their business. To what extent can these be blamed on policies and institutions, which are discussed in Section 4.1 above?

Among the top three constraints in Table 4, finding a market for products and facing competition are interrelated because "lack of demand for any one enterprise is often a result of too many competitors and, vice versa, too many competitors is the results of insufficient aggregate demand for the number of producers."[60] Therefore, market saturation is an important factor.

In another smaller survey, the market is also found to be a major problem, "when asked to comment on the problem of doing business, 54 percent of our respondents volunteered that they faced difficulties in the marketplace – generating sufficient numbers of customers in the face of tough competition."[61] Cung *et. al.* also note that access to both

[56] L§¨ng Doanh, "Thö ph¸c häa g-¬ng mÆt doanh nh©n míi (A Sketch of New Entrepreneurs)", *Tia S¸ng* (The Beam) Magazine 2001, reprinted in *Nh©n D©n* (The People), 13 May 2001
[57] Vietnam News , 30 August 2001
[58] EIU, Country Report: Vietnam, Jan 2001
[59] Mallon, "Private Sector", p.189
[60] Webster, SMEs in Vietnam, pp.22 -23
[61] Stephen Appold *et. al.*, "Entrepreneurship in a Restructuring Economy: Small Private Manufacturers in Hanoi", Journal of Asian Business, 12, 4 (1996), p.22

domestic and international markets is difficult for SMEs because their competitiveness remains at a very low level, and products must compete with a large inflow of smuggled imported goods with cheaper prices.[62]

SMEs are facing many issues, including their disadvantage to large enterprises in establishing marketing systems, the lack of information about product demand in non-local areas, that has created fragmented markets,[63] the concentration in certain sectors and regions.

Though, it is noted that over time these constraints can be overcome by the market itself, not by policy. By gaining experience, enterprises are able to expand beyond their local market and even penetrate foreign markets.[64] Again, there is the time factor here. Through the 1990s, Vietnamese SMEs were inexperienced, both domestically and internationally, but they were less so at the end of the decade. Market factors may help explain the explosion of enterprises to capture the new opportunities right after *Doi Moi*. The drop in the number of registered companies in 1998 could be the impact of the fall in demand as a result of the Asian crisis, to which is added tougher competition due to the resulting decline in costs of production in neighbouring countries.

The Issue of Capital Shortage

It is important to note from the beginning that shortage of capital is a common constraint to SMEs anywhere.[65] It is, therefore, a common theme in the discussions about the obstacles facing Vietnamese SMEs.

Riedel concludes from his study in 1997 that the main obstacle to the growth of private SMEs is "credit, credit and credit". "Other problems are secondary to credit – or more precisely, the lack of it."[66] From a survey of 95 larger companies in 1999, MPDF noted that most managers listed the inability to access investment capital as a major constraint (see Table 5 in Appendix).

Indeed, the SIDA study in 1997 found that shortage of capital is one of the main problems (see Table 4). However, it is not always the top problem as Riedel concludes. The seriousness is different with types of ownership. Private and partnership enterprises are more concerned about tough competition, not capital.[67] In fact, capital is less of a problem for urban households, ranking below the issue of limited demand. Yet, the cooperatives, shareholding and limited enterprises in cities do perceive the lack of capital as the thorniest issue. Only in rural areas is shortage of capital still the most common hindrance to growth among all forms of establishments.[68]

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[62] Nguyôn §×nh Cung et. al, Research Report, pp.28-29
[63] Rama murthy, "The Asian Experience II," p.116
[64] See Vietnam Business Journal, April 1998 edition
[65] See, APEC Secretariat, The APEC Survey, p.3
[66] Riedel, "Needed: A Strategic Vision", p.16
[67] Maud Hemlin, "General Characteristics", p.53
[68] Ibid., p.55

This problem is seen to be the result of difficult access to bank loans. Managers agreed that collateral requirements represent the largest obstacle to their accessing loans of significant size and maturity.[69] To be fair, it is partly the responsibility of SMEs themselves. Both local and foreign banks are concerned with the reliability of the enterprises' records and bookkeeping.[70] Poor performance of credits by private enterprises results in large overdue loans. Table 6 (see Appendix) indicates that these were relatively high and rising, particularly with joint stock companies and limited liability enterprises.

Distribution of credit for state and non-state sectors in Vietnam is described in Table 7 (see Appendix). Somewhat contrasting to what has often been argued, this table shows that the share of credit going to the non-state sector increased substantially in the 10-year period, from only 6.2% in 1990 to more than a half in 1999. Mallon confirms, "Despite continuing difficulties, there have been major increases in the share of bank financing directed to the private sector."[71] The changes, however, might not help much in easing the shortage of capital to SMEs because most of the loans are short term.[72]

All authors seem to agree that shortage of capital is a problem in the growth of SMEs as the result of difficult access to bank loans and long-term credit. Few discuss the cost of capital. SMEs may not have been so interested in borrowing from banks, as they would need to satisfy the strict banking requirements. Many entrepreneurs do not want to reveal the details of their business.[73] They are reported to say, "It would be better to be a millionaire than a billionaire."[74]

However, as most state owned bank loans are subsidised with lower interest rates than commercial banks, the answer about the constraints is always capital. This is despite the fact that many entrepreneurs have never borrowed from banks and have no plan to do so.[75] The SIDA's survey confirmed this, "even though capital is a bottleneck, very few want *the government* [sic] to step in as rescuer, but would probably be interested in dealing with private loan facilitator."[76]

Frequently, there are calls for more readily available credits to SMEs. However, this should be treated with caution. A conclusion from the 1997 SIDA's survey sees, "As a policy instrument, increased availability of credit has its limits and is only effective as part of a more comprehensive policy package. Accumulated own capital is likely to remain the main source of funding both for the start-up and expansion of businesses."[77]

This might be taken to suggest that the stress upon capital as a key issue in Table 5 reflects a deeper issue, that of inadequate profits and equity.

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[69] Webster, SMEs in Vietnam, pp.20-21
[70] Sai Gon Times, 22 June 2000
[71] Mallon, "Private Sector", p.171
[72] These loans account for 80% of the approved loans (Vietnam Economic Times, 26 February 2001)
[73] VnExpress, 3 September 2001
[74] Vietnam Economic Journal, April 1998
[75] Ibid.
[76] Maud Helmlin *et. al.*, The Anatomy and Dynamics , p.42
[77] Ronnås and Ramamurthy, "Summary and Conclusion", p.343

Technical and Management Limitations

Most Vietnamese SMEs operate with obsolete equipment.[78] The limited information does not permit SMEs to be frequently updated on new technology and equipment as well. Moreover, Vietnamese SMEs also lack access to consulting services, which could assist them in assessing and identifying appropriate and affordable technologies. Another hurdle is technology transfer. Through much of the 1990s, it is both complicated and costly for technology transfer.[79]

However, SMEs also have size advantage. Being small it is easier for these enterprises to change technology and production process. The 1997 SIDA's survey notes encouraging improvements in infrastructural development. Better power supply to SMEs enabled them to bring in more power driven machinery.[80] Therefore, it is clear that time itself seems to address various issues.

Moreover, any low level of technology can be compensated for by an SME's ability to create more jobs with the same investment compared to capital-intensive enterprises. It was far more expensive to create a working place in the state enterprises and the shareholding companies than in the private enterprises and limited companies.

Despite the weakness in technology, the efficient use of machinery and flexibility have made it possible for SMEs to compete with SOEs.[81] Thus, over time, SMEs have appeared more socially useful and economically efficient, both to policy makers and the wider population.

Management and labour skills are another issue that certainly affects the growth of SMEs. Again, though, it is not clear how great the effect actually is. Vietnam educational infrastructure was not, until late in the 1990s, geared to the needs of commercial business. MPDF's survey found that managers with university degrees were actually less successful in business than those without such credentials![82] One view is that "the overall educational level is rather good, but the professional and the management skills in SMEs are very low relative to the required demand."[83] The good level of education of managers apparently facilitates them to further training.

Limited management ability is inevitable as Vietnamese entrepreneurship was emerging. Entrepreneurs were generally found to be weak in international marketing, exporting,

[78] Nguyễn Đình Cung et. al, Research Report, p.26
[79] Ibid, p.27
[80] Maud Hemlin, "General Characteristics", p.43
[81] M. M. Pool, Industrialisation and Modernisation of the Private Sector in Vietnam 1991-1998, (Unpublished study, 1999) available at http://www.smenet.com.vn/sme/snv_ind.htm, p.1
[82] Webster, "SMEs in Vietnam", p.28
[83] Nguyễn Đình Cung et. al, Research Report, p.32

business management, and foreign language skills.[84] Obviously, one cannot expect these problems to go away very soon. However, there appear signs of improvement.[85]

SMEs' employees are generally weak in professional skills. It is estimated that unskilled labours account for 60% to 70% of the employees in SMEs. In rural areas, those with training in professional skills stand at 10%.[86]

Certainly, technology and management limits are stumbling blocks in the development of SMEs. The transformation in the past years has improved these conditions. This process may take some time, and – but not always – seems to require assistance from the concerned government agencies.

Public Attitudes

Apart from the above barriers, social/political culture is an issue mentioned by several authors. Similar to other barriers, this changes over time.

Webster considers this issue of paramount importance as "social and political attitudes toward private enterprise determine behaviour toward those engaged in private enterprises."[87] The results of a survey by MPDF confirmed that public opinion toward private enterprise is remarkably negative. The main findings indicate this view is common among different groups, and private enterprises are not highly regarded.[88]

Cung *et al.* also admit that there are problems with official attitudes and policy as well as public attitudes towards SMEs. They observe, "until recently, SMEs were not recognised as important by Party and Government policy makers, and this was perhaps the most fundamental and major problem."[89] The hostility could be because of the legacy of the past. One author notes, "the word "private enterprises" still has a negative undertone in the socialistic Vietnamese society."[90]

Yet, not all authors agree with the above observations, Ramamurthy notes, "the attitude towards private sector in general has been quite accommodative and this has served to reduce policy uncertainty for the small firm."[91]

A consensus is perhaps that changes in the growth environment are occurring in favour of SME and the relevance of this sector is receiving more attention. As time passes by,

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[84] Lª §¨ng Doanh, A Sketch of New Entrepreneurs
[85] Ibid.
[86] D-¬ng B¸ Ph-îng, *Doanh nghiÖp võa vµ nhá trong qu¸ tr×nh c«ng nghiÖp ho¸ ë ViÖt Nam* (SMEs in the Industrialisation of Vietnam), Nghiªn cøu Kinh tÕ (Economic Research), Jan 1999
[87] Webster, "SMEs in Vietnam", p.17
[88] Ibid., pp.17-19
[89] NguyÔn §×nh Cung et. al, Research Report, p.24
[90] Pool, Industrialisation and Modernisation
[91] Ramamurthy, "The Asian Experience II", p.121

improvements have happened, with generally better views of the private sector. Entrepreneurs are thus now mentioned as "characters of the age".[92]

What is important, what is not?

It is obvious from the discussions above that Vietnamese SMEs are facing certain difficulties. Many constraints, however, have eased over time as resources and knowledge are accumulated.

The views towards specific issue are not always in agreement. Table 8 (see Appendix) gives a comparison of positions from selected authors. This table shows that institutional weaknesses received attention from most authors. They suggest that the problem is a considerable barrier, and thus they are pessimistic, both about policy and SMEs' own capacity to overcome the difficulty. Relative success and the dynamics of SMEs towards the end of the decade suggest the pessimism was too great and policy was less important than assumed.

The second and the third constraints are limited demand and competition. It is important to note that these difficulties are emerging as major concerns to enterprises. These were not the problems in the early years of *Doi Moi* as demands were greater with raising purchasing power. Therefore, in the mid-1990s some authors may not have perceived it as a constraint to SMEs. The difficulty in finding markets likely made entrepreneurs hesitant in expanding production and discouraged investors from establishing new enterprises.[93] Thus, it seems relatively important in the decision making process of entrepreneurs.

Meanwhile, capital shortage is among the problem most frequently brought up. Perhaps the problem of Vietnamese SMEs is not the shortage of capital *per se* as bank credits are not the preference of SMEs in many cases. This difficulty, therefore, is less of a problem than it appears. A recent survey also finds evidence contradicting the conventional wisdom that lack of access to credit constitutes a crippling impediment for entrepreneurial initiatives.[94]

As regards to technology and management, the common view is that SMEs operate with low technology and limited management skills. This, however, is countered by the ability of SMEs in creating more jobs with less capital. Their flexibility and efficiency also enable them to compete against the larger SOEs.

Public attitude as a hurdle to the development of SMEs faces contrasting observations. Clearly, the environment has improved over time.

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[92] Sµi GßN Gi¶i Phãng (Liberation Saigon), 14 Apr 2001

[93] Moreover, the emergence of opportunities in real estate market in mid-1990s also diverted entrepreneurial energies and resources, for a time

[94] Vo Xuan Han and Roger Baumgarte, "Economic Reform, Private Sector Development, and the Business Environment in Vietnam", Comparative Economic Studies, 42, 3 (Fall 2000), p. 1

The time factor, as variously mentioned in the discussions of the constraints above, is useful to explain the growth of SMEs. It is easy to recognise that policies are often recommended to address the problems. Nevertheless, the growth of SMEs is considerable even though not many policy changes were carried out during the 1990s. Therefore, it appears that the obstacles frequently mentioned were not insurmountable.

With time, it seems possible to build up the capacity to either invest in new businesses or expand existing facilities. This is important to as it is noted that most Vietnamese SMEs managers did not have entrepreneurial ability. In the early 1990s business as a "popular movement" was common, especially with households. Instead of producing the products that the market needed, they just sold what they had and produced. Hence, when asked about the obstacles it is not strange to hear answers about the difficulties in capital, information and market.[95]

CONCLUSION

Vietnam's *Doi Moi* has been going on for 15 years. During this period, the transformation of Vietnam's economy been accompanied by a robust emergence of private SMEs, particularly towards the end of the last decade. At the same time, SOEs have undergone reforms and are becoming more efficient. Yet, developments in the two sectors are often viewed as slow with SMEs being at disadvantage to SOEs.

From operating under strict regulations and restrictions, the private sector has been recognised as an important sector in the transformation process.[96] It is worth mentioning that private SMEs are now the major source of employment creation.

This paper discusses the obstacles to SMEs in Vietnam and finds that authors do not always agree about the various impediments. We roughly categorise the authors in two groups. A "*theorist*" group consists of Riedel, Mallon and Cung *et. al*., and an "*empiricist*" group includes Ronnås *et. al.* and Webster.

Riedel, Mallon and Cung *et. al*. stress the problem with institutions. However, survey results lead Ronnås *et. al.* and Webster to see that this was not a big problem, especially in the entry procedures.

It could be that Mallon, by examining only the institutional weaknesses, and Riedel, looking at the difficulty from a theoretical perspective and in the earlier period, both fail to see the issue of limited demand and competition as a major constraint to the development of SMEs. However, these issues have become noticeable constraints and were observed by Ronnås *et. al*. and Webster from their surveys.

[95] Nguyôn §×nh Cung et. al., Small and Medium Enterprises, p.13

[96] It is now seen to have a significant "investment onus".The private sector is now expected to contribute 11-13 percent of GDP to nation's development investment for doubling of the country's GDP in the period 2001-2010, an objective set by the recent 9th Party Congress (Asia Pulse, 5 June 2001)

The issue of capital shortage has proved difficult to understand. It does not always seem to be "main problem" as Riedel asserted. Ronnås *et. al.* report that certain types of enterprises, especially those in urban areas, do not see it as such. Moreover, it has been reported that easy access to credits to some enterprises resulted in major bankruptcies to private companies in recent years.[97] Hence, Ronnås *et. al.* were perhaps right to sound a note of caution on the issue of credit policy.

Management and technical limitations and public attitudes to private sector are less of the concerns and receive fewer reflections from these authors.

Some conclusions can be reached at this stage. First, obstacles to the growth of Vietnamese SMEs are various. The major constraints are in Section III and include the "inherent weaknesses" of SMEs and those that are "inherent" in Vietnam's transformation.

Second, it would not be possible to assess how much each of them affected growth in the 1990s. Indeed, a constraint that looks great may not be a problem at all, such as the issue of capital shortage. Therefore, one can only say, "the causes are multiple and the relative weights of each are unknown".[98]

Third, the problems are less serious than they appeared to be. This suggests an optimistic view on the ability to develop of Vietnamese SMEs. The infant SMEs certainly need time to acquire efficiency and entrepreneurial skills. Also, time seems to have helped ease the many difficulties.

Fourth, the constraints are inter-related. Problems with institutions may lead to difficult access to markets and credits. Similarly, capital shortage limits the efforts to improve technical and management skills, which in turn affect the ability to penetrate markets. Thus, there is a need to address many problems at the same time. Addressing one or two of them at a time amounts to only half-hearted efforts. Webster, for example, sees that identifying the priorities is difficult and close to impossible.[99]

However, the issue of how policy affected the growth of SMEs has not been addressed in many studies about SMEs.[100] Thus, it may be interesting to see how much the policy options, as frequently suggested, have helped to reduce the barriers because policy un-implementability is frequently reported.[101] This paper has not covered this important area. Moreover, the authors of the previous studies have not focussed on regional differences.

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[97] The cases include the collapses of Tamexco, Minh Phông, Epco and Huy Hoµng companies, all from Ho Chi Minh City, with large unrecoverable debts

[98] To borrow the words in Webster, SMEs in Vietnam, p.32

[99] Webster, SMEs in Vietnam, p.32

[100] CIEM recently had a study on the incentives growth in Bac Giang Province. See CIEM, Evaluating Incentives for the Development of Non-State Owned Small and Medium-Sized Enterprises in Bac Giang Township. Hanoi: CIEM and FES, 2001

[101] Examples are with the implementation the new Enterprise Law. See, for example, Vietnam Economic News (Nos. 3-4, 2001, p. 32); Thanh Niªn (Youth), (21 Feb 2001) and VnExpress (www.vnexpress.net), (9 May 2001)

Policy itself could not explain why growth was much stronger in the South, especially in Ho Chi Minh City, and less so in the North with the same national policy set. These are the questions that will require further studies.

At this point of time, it not very clear whether SMEs, the mainstay of private economic sector, will be the driving force of economic growth and investment in the coming decade as they are expected. It is, however, reasonably certain that SMEs have developed significantly both in quality and quantity in the last decade, despite the constraints they encountered. Having been able to overcome the barriers in the 1990s, they will certainly experience fewer difficulties in the coming decade. As such, SMEs appear poised to realise the expectations and roles in the transformation to eventually greatly improving the lives of Vietnamese people. Challenges and opportunities are ahead as the country will transform and integrate further. Will Vietnamese SMEs be able to make it? Again, time will tell.

REFERENCES CITED

Books and monographs

APEC Secretariat, The APEC Survey on Small and Medium Enterprises. Singapore: APEC Secretariat, 1994

Barlow, Colin ed. Institutions and Economic Changes in Southeast Asia: The Context of Development from the 1960s to the 1990s. MA: Edward Elgar, 1999

Beresford, Melanie, Vietnam: Politics, Economics and Society, London: Pinter Publishers, 1988

Beresford, Melanie, "The Political Economy of Dismantling the 'Bureaucratic Centralism and Subsidy System' in Vietnam", in Hewison, K. Robison, R. and Rodan, G. eds., Southeast Asia in the 1990s. Sydney: Allen and Unwin, 1993

Beresford, Melanie, "Viet Nam: The Transition From Central Planning" in Rodan, G., Hewison, K. Robison, R. eds. The Political Economy of Southeast Asia. Melbourne: Oxford University Press, 1997

Chan, Anita, Kerkvliet, Benedict J. Tria and Unger, Jonathan, Transforming Asian Socialism : China and Vietnam Compared. St Leonards, N.S.W.: Allen & Unwin; and Canberra: Dept. of International Relations, Research School of Pacific and Asian Studies, Australian National University, 1999

Central Institute of Economic Management, Evaluating Incentives for the Development of Non-State Owned Small and Medium-Sized Enterprises in Bac Giang Township. Hanoi: CIEM and FES, 2001

§Æng §øc §µm, Vietnam's Macro-Economy and Types of Enterprises: The Current Position and Future Prospects. Hanoi: The Gioi Publishers, 1997

Desai, Padma ed. Going Global: Transition From Plan to Market in the World Economy. MA: The MIT Press, 1997

Dollar, David and Ljunggren, Börje, "Vietnam" in Desai, Padma ed. Going Global: Transition From Plan to Market in the World Economy. Cambridge, Mass: The MIT Press, 1997

§ç §øc §Þnh, "The Public Sector of Vietnam" in Forbes, Dean et. al. eds. *Doi Moi:* Vietnam's Renovation Policy and Performance. Canberra: Australian National University, 1991

Elkan, Walter, An Introduction to Development Economics (Revised second edition). New York: Prentice Hall/Harvester Wheatsheaf, 1995

Fernández, E. Alex and Mommen, André eds., Libera1ization in the Developing World: Institutional and Economic Changes in Latin America, Africa and Asia. London: Routledge, 1996

Fforde, Adam, "The Political Economy of "Reform" in Vietnam - Some Reflections" in Ljunggren, Börje ed., The Challenge of Reform in Indochina. Cambridge: Harvard Institute for International Development, 1993

Fforde, Adam, Vietnam Economic Commentary and Analysis (VECA), No. 5 Canberra: ADUKI Pty., 1994

Fforde, Adam, and de Vylder, Stefan, From Plan to Market: The Economic Transition in Viet Nam. Boulder: Westview, 1996

Fforde, Adam, ed., *Doi Moi*: Ten Years after the 1986 Party Congress. Canberra: Department of Political and Social Change, Research School of Pacific and Asian Studies, Australian National University, 1997

Fforde, Adam, "The Vietnamese Economy in 1996-Events and Trends-The Limits of *Doi Moi*?" in Fforde, Adam, ed., *Doi Moi*: Ten Years after the 1986 Party Congress. Canberra: Department of Political and Social Change, Research School of Pacific and Asian Studies, Australian National University, 1997

Fforde, Adam, "A Short Assessment of the Impact of Vietnam's "Open up to the West" since 1986", Paper prepared for the Policy Implementation Assistance Project (funded by CIDA), Hanoi: June 1999, available at http://www.aduki.com.au/june_99.htm

Fforde, Adam, "The Institution of Transition from Central Planning: The Case of Vietnam" in Barlow, Colin ed. Institutions and Economic Changes in Southeast Asia: The Context of Development from the 1960s to the 1990s. MA: Edward Elgar, 1999

Forbes, Dean, Hull, H. Terence, Marr, G. David and Brogan, Brian eds. *Sæi Míi*: Vietnam's Renovation Policy and Performance. Canberra: Australian National University, 1991

General Statistic Offices (GSO), Statistical Yearbook 1996. Hanoi: GSO, 1997

General Statistic Offices, Statistical Yearbook 1999. Hanoi: GSO, 2000

General Statistic Offices, Statistical Yearbook 2000. Hanoi: GSO, 2001

Greenfield, Gerard, "The Emergence of Capitalism in Vietnam", in Milisand et al. (eds.), Between Globalism and Nationalism: The Socialist Register. London: Merlin Press, 1994

Helmlin, Maud, Ramamurthy, Bhargavi, and Ronnås, Per., The Anatomy and Dynamics of Small Scale Private Manufacturing in Vietnam, Working Paper Series in Economics and Finance No. 236. Stockholm: Stockholm School of Economics, May 1998

Hewison, Kevin, Robison, Richard and Rodan, Garry eds., Southeast Asia in the 1990s. Sydney: Allen and Unwin, 1993

International Monetary Fund, Vietnam: Statistical Appendix and Background Notes, IMF Staff Country Report No. 00/116. Washington D.C.: Publication Services, IMF, August 2000

Leung, Suiwah, ed., Viet Nam and the East Asian Crisis. Cheltenham: Edward Elgar, 1999

Lª §¨ng Doanh, "Economic Renovation in Vietnam: Achievements and Prospects", in Forbes, Dean et. al. eds. *Doi Moi:* Vietnam's Renovation Policy and Performance. Canberra: Australian National University, 1991

Ljunggren, Börje ed., The Challenge of Reform in Indochina. Cambridge: Harvard Institute for International Development. 1993

Mallon, Raymond, "*Doi Moi* and Economic Development in Vietnam: A rapid overview of A Decade of Reform" in Fforde, Adam, ed., *Doi Moi*: Ten Years after the 1986 Party Congress. Canberra: Department of Political and Social Change, Research School of Pacific and Asian Studies, Australian National University, 1997

Mallon, Raymond, “Experiences in the Region and Private Sector Incentives in Vietnam” in Leung, Suiwah ed., Viet Nam and the East Asian Crisis. Cheltenham: Edward Elgar, 1999

NguyÔn §×nh Cung *et al.*, Research Report on Improving Macroeconomic Policy and Reforming Administrative Procedures to Promote Development of Small and Medium Enterprises in Vietnam. Hanoi: Publication of the Project US/VIE/95/004, November 1999

NguyÔn §×nh Cung *et. al*. 2000. (in Vietnamese), Small and Medium Enterprises-Current Situation and Solution Recommendations, Research Report. Hanoi, May 2000

NguyÔn H¶i H÷u et al.. (in Vietnamese) Reforming Small and Medium Enterprise Management Mechanism in the Market Economy of Vietnam. Hanoi: Institute of Labour Studies and Social Affairs-National Politics Publishing House, 1995

NguyÔn Thanh B»ng and TrÇn §øc Nguyªn, “The ownership system and various forms of business organisations in the multi-sector commodity market” in Ronnås, Per and Sjoberg, Orjan, eds. *Doi Moi*: Economic Reforms and Development Policies in Vietnam, Stockholm: Swedish International Development Authority , 1990

Overseas Economic Cooperation Fund (OECF), State Owned Enterprise Reform in East Asian Transitional Economies (China and Vietnam), Research Paper No. 24. Tokyo: Research Institute of Development Assistance, October 1998

Park, Eul Yong, ed., Small and Medium-Sized Enterprises and Economic Development. Seoul: Korea Development Institute, 1995

Park, Eul Yong, “Introduction” in Park, Eul Yong ed., Small and Medium-Sized Enterprises and Economic Development., Seoul: Korea Development Institute, 1995

Pool, M.M., Industrialisation and Modernisation of the Private Sector in Vietnam 1991-1998, Unpublished study, 1999, available at http://www.smenet.com.vn/sme/snv_ind.htm

Ramamurthy, Bhargavi. “The Asian experience II: India and Viet Nam” in Ronnås, Per, Sjoberg, Orjan and Hemlin, Maud eds., Institutional Adjustment for Economic Growth: Small Scale Industries and Economic Transition in Asia and Africa. Aldershot: Ashgate Publishing Ltd, 1998

Ramamurthy, Bhargavi, “Origin and Development History” in Ronnås, Per and Ramamurthy, Bhargavi, eds., Entrepreneurship in Vietnam: Transformation and Dynamics, Singapore: Institute of Southeast Asian Studies, 2001

Riedel, James, and Comer, Bruce, “Transition to a Market Economy in Viet Nam” in Woo, W. T., Parker, S. and Sachs, J. D., eds., Economies in Transitions: Comparing Asia and Eastern Europe, Cambridge: The MIT Press,1996

Riedel, James and Chuong Tran, The Emerging Private Sector and the Industrialisation of Vietnam, Mekong Project Development Facility (MPDF) Private Sector Discussion Paper No.1, Hanoi: Mekong Project Development Facility, 1997

Riedel, James and Turley, William, Vietnam: Ordeal of Transition, Paris: OECD, 1998

Riedel, James “Needed: A Strategic Vision for Setting Reform Priorities in Viet Nam” in Leung, Suiwah ed., Viet Nam and the East Asian Crisis, Cheltenham: Edward Elgar, 1999

Rodan, Garry, Hewison, Kevin, Robison, Rodan, eds. The Political Economy of Southeast Asia. Melbourne: Oxford University Press, 1997

Ronnås, Per and Sjoberg, Orjan, eds. *Doi Moi*: Economic Reforms and Development Policies in Vietnam, Stockholm: Swedish International Development Authority , 1990

Ronnås, Per and Sjoberg, Orjan, eds. Socio-Economic Development in Vietnam : the Agenda for the 1990's. Stockholm: Swedish International Development Authority, 1991

Ronnås, Per, Employment Generation through Private Entrepreneurship in Vietnam Geneva: International Labour Organisation, 1992

Ronnås, Per "Private Entrepreneurship in the Nascent Market Economy of Vietnam: Markets and Linkages" in McMillan, John and Naughton, Barry eds. Reforming Asian Socialism: The Growth of Market Institutions. Ann Arbor: University of Michigan Press, 1996

Ronnås, Per, Sjoberg, Orjan and Hemlin, Maud, eds. Institutional Adjustment for Economic Growth: Small Scale Industries and Economic Transition in Asia and Africa. Aldershort: Ashgate Publishing Ltd, 1998

Ronnås, Per, "Introduction", in Ronnås, Per, Sjoberg, Orjan and Hemlin, Maud, eds. Institutional Adjustment for Economic Growth: Small Scale Industries and Economic Transition in Asia and Africa. Aldershort: Ashgate Publishing Ltd, 1998

Ronnås, Per and Ramamurthy, Bhargavi, "Summary and Conclusion" in Ronnås, Per, Sjoberg, Orjan and Hemlin, Maud, eds. Institutional Adjustment for Economic Growth: Small Scale Industries and Economic Transition in Asia and Africa. Aldershort: Ashgate Publishing Ltd, 1998

Ronnås, Per, The Transformation of Private Manufacturing Sector in Vietnam in the 1990s, Working Paper Series in Economic and Finance No. 241, Stockholm: Stockholm School of Economics. May 1998

Ronnås, Per and Ramamurthy, Bhargavi, eds., Entrepreneurship in Vietnam: Transformation and Dynamics, Singapore: Institute of Southeast Asian Studies, 2001

Per Ronnås, "Introduction" in Ronnås, Per and Ramamurthy, Bhargavi, eds., Entrepreneurship in Vietnam: Transformation and Dynamics, Singapore: Institute of Southeast Asian Studies, 2001

Per Ronnås and Ramamurthy, Bhargavi, "Summary and Conclusions" in Ronnås, Per and Ramamurthy, Bhargavi, eds., Entrepreneurship in Vietnam: Transformation and Dynamics, Singapore: Institute of Southeast Asian Studies, 2001

Schumacher, E. F., Small is Beautiful: A Study of Economics as if People Mattered. London: Blond & Briggs, 1973

Stiglitz, Joseph, More Instruments and Broader Goals: Moving Toward the Post-Washington Consensus, Annual Lectures 2, Helsinki: United Nations University-WIDER, 1998

TrÇn Hoµng Kim and L¹ Th¬, Economic sectors in Vietnam: Situation, Tendency and Solution. Hanoi: Statistical Publishing House, 1992

Truong, H. D. David and Gates, Carolyn, Effects of Government Policies on the Incentive to Invest, Enterprise Behaviour and Employment: The Case Study of Vietnam, World Employment Programme Research Working Paper. Geneva: International Labour Office, March 1992

Truong, H. D. David and Gates, Carolyn, "Vietnam's Gradualist Economic Reform", in Fernández, E. Alex and Mommen, André eds., Libera1ization in the Developing World: Institutional and Economic Changes in Latin America, Africa and Asia. London: Routledge, 1996

Vietnam Government, Memorandum on Economic and Financial Policies of the Government of Vietnam for 2001 (Report to IMF). Hanoi, 14 March 2001

Webster, Leila and Taussig, Markus, Vietnam Undersized Engine: A Survey of 95 Larger Private Manufacturers, MPDF Private Sector Discussion Paper No. 8, Hanoi: Mekong Project Development Facility, 1999

Webster, Leila, SMEs in Vietnam: On the Road to Prosperity, MPDF Private Sector Discussion Paper No. 10, Hanoi: Mekong Project Development Facility, 1999

World Bank, Vietnam: Transition to a Market Economy, Washington D.C.: World Bank, September, 1993

World Bank, The East Asian Miracle: Economic Growth and Public Policy, New York: Oxford University Press, September 1993

World Bank, Vietnam Economic Report on Industrialisation and Industrial Policy, Washington D.C.: World Bank, October 1995

World Bank, Bureaucrats in Business, The Economics and Politics of Government Ownerships. London: Oxford University Press, 1995

World Bank, World Development Report 1996: From Plan to Market, New York: Oxford University Press, 1996

World Bank, Attacking Poverty - Vietnam Development Report 2000. Hanoi: World Bank, 1999

World Bank, Vietnam 2010: Entering the 21st Century-Vietnam Development Report 2001. Hanoi: World Bank, 2000

Journal articles and newspapers

Appold, Stephen, Nguyen, Quy Thanh, Kasadra, John, D., and Le, Ngoc Hung, "Entrepreneurship in a Restructuring Economy: Small Private Manufacturers in Hanoi", Journal of Asian Business, 12, 4 (1996), pp.1-31

Asia Pulse, 5 June 2001

Dollar, David "Economic Reform, Openness and Vietnam's Entry into ASEAN", ASEAN Economic Bulletin, 13, 2, (November 1996), pp. 169-184

D-¬ng B¸ Ph-îng, *Doanh nghiÖp võa vµ nhá trong qu¸ tr×nh c«ng nghiÖp ho¸ ë ViÖt Nam* (Small and Medium Enterprises in the Industrialisation of Vietnam), *Nghi³n cøu Kinh tÕ* (Economic Research Journal), January 1999, available at http://www.varenet.ac.vn/ie/tcnckt/

Economist Intelligence Unit (EIU), Country Report: Vietnam, June 2000

Economist Intelligence Unit (EIU), Country Report: Vietnam, January 2001

Fforde, Adam, "What works, what doesn't" in Vietnam Economic Times, December 1999

Freeman, Donald, "Doi Moi Policy and the Small-Enterprise Boom in Ho Chi Minh City, Viet Nam". The Geographical Review, 86, 2, (1996), pp. 178-197

Hill, Hal, "Export Success Against the Odds: A Vietnamese Case Study", World Development, 28, 2, (February 2000), pp. 283-300

Kokko, Ari and Sjöholm, Fredrik "Some Alternative Scenarios for the Role of the State in Vietnam", The Pacific Review, 13, 2, (2000), pp. 257-277

Lao §éng (Labour), 06 April 2001

Lao §éng (Labour), 14 April 2001

Lª §¨ng Doanh, "A Sketch of New Entrepreneurs", (in Vietnamese), *Tia S¸ng* (The Beam) Magazine 2001, reprinted in *Nh©n D©n* (The People), 13 May 2001

NguyÔn Sinh Cóc, "Role and Development Trend of Vietnam's Small and Medium-Sized Enterprises". Vietnam Economic Review. No. 4 (58), (1999), pp. 41-43,

Nh©n D©n (The People). 2 February 2001

Nh©n D©n (The People), 13 May 2001

Phan ThÕ H¶i "*LuËt doanh nghiÖp sau mét n¨m thùc hiÖn* (Enterprise Law after One Year of Implementation)", *T¹p chÝ Céng s¶n* (Communist Studies Journal), 4, (Feb 2001), available at www.mofa.gov.vn

Riedel, James, "Vietnam: On the Trails of the Tigers". World Economy, 16, 4, (July 1993), pp. 401-422

Sai Gon Times, 22 June 2000

Sµi Gßn Gi¶i Phãng (Liberation Saigon), 14 April 2001

Sµi Gßn Gi¶i Phãng (Liberation Saigon), 16 May 2001

Thanh Niªn (Youth), 21 February 2001

Vietnam Business Journal, April 1998 edition

Vietnam Economic News, No. 3-4, 2001

Vietnam Economic News, No. 13, 2001

Vietnam Economic News, No. 18, 2001

Vietnam Economic Times, 26 February 2001

Vietnam News, 13 May 1998

Vietnam News, 15 December 2000

Vietnam News, 30 August 2001

VnExpress, 9 May 2001 (http://vnexpress.net/Vietnam/Home/)

VnExpress, 3 September 2001

Vo Xuan Han and Baumgarte, Roger "Economic Reform, Private Sector Development, and the Business Environment in Vietnam", Comparative Economic Studies, 42, 3 (Fall 2000), pp. 1-30

APPENDIX

Table 1: Share of GDP by Ownership

	1991	1992	1993	1994	1995	1996	1997	1998	1999[a]	2000[a]
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
State sector	29.25	30.6	39.19	40.12	40.18	39.93	40.48	40.00	39.48	38,98
Non-state sector	70.75	69.4	60.81	53.47	53.52	52.68	50.45	49.97	48.77	47.77
FIS[b]	--	--	--	6.41	6.30	7.39	9.07	10.03	11.75	13,25

Source: CIEM, (1999), and Statistical Yearbook 1999 and 2000 (Hanoi: General Statistical Office (GSO), 2000 and 2001)
Notes: [a] Preliminary
[b] Foreign Invested Sector

Table 2: Industrial Sectoral Shares by Ownership

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
State sector	67.6	68.5	70.6	71.7	72.4	50.3	49.6	47.3	45.4	39.5
Non-state sector	32.4	31.5	29.4	28.3	27.6	24.6	23.9	23.7	21.4	21.9
FIS[a]	--	--	--	--	--	25.1	26.5	29.0	33.2	38.6

Source: GSO (1996, 2000, 2001)
Note: [a] Foreign Invested Sector

Table 3: Number of Private Registered Companies by Legal Status

	1993	1994	1995	1996	1997	1998[*]
Private Companies	**6,808**	**10,881**	**15,276**	**18,894**	**25,002**	**26,021**
Year-on-Year Growth	--	***60%***	***41%***	***24%***	***32%***	***4%***
"Private Enterprise"	5,182	7,794	10,961	12,464	17,500	18,750
Year-on-Year Growth	--	*50%*	*40%*	*14%*	*40%*	*7%*
Limited liability Companies	1,607	2,968	4,242	6,303	7,350	7,100
Year-on-Year Growth	--	*85%*	*43%*	*49%*	*17%*	*-3%*
Joint Stock Company	19	119	118	127	152	171
Year-on-Year Growth	--	*526%*	*-1%*	*8%*	*20%*	*13%*

Sources: GSO (1999);
Note: [*] Estimates

Table 4: Main Constraints to Growth by Ownership (percentage)

	Urban					Rural		
	House-hold	Private	Partner-ship	Co-operative	Ltd. & share	House-hold	Private	Other forms
Shortage of capital	25.5	31.8	22.5	32.1	32.5	35.4	41.7	63.6
Lack of skilled labour	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Lack of technical know-how	1.0	0.0	7.5	1.8	0.0	0.0	0.0	4.5
Limited demand current output	30.6	13.6	22.5	19.6	13.0	28.1	14.6	18.2
Too much competition	24.5	34.8	25.0	26.8	31.2	20.8	18.8	9.1
Lack of marketing/transport	0.0	3.0	0.0	5.4	1.3	1.0	0.0	0.0
Lack of modern machinery	0.0	0.0	0.0	3.6	3.9	4.2	4.2	0.0
Lack of raw material	1.0	0.0	0.0	0.0	2.6	0.0	6.3	0.0
Lack of energy (power, fuel)	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Interference by local officials	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0
Uncertain government policies	1.0	1.5	7.5	1.8	5.2	1.0	2.1	4.5
Inadequate premises/space	5.1	6.1	7.5	1.8	1.3	3.1	2.1	0.0
Difficult to get licences	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0
Other factors	2.0	3.0	5.0	1.8	1.3	3.1	4.2	0.0
None	9.2	3.0	2.5	5.4	5.2	3.1	6.3	0.0

Source: Ronnås et. al. eds., Entrepreneurship in Vietnam, p.54
Note: The entrepreneurs were to rank a maximum of three constraints

Table 5: Major Constraints Identified by Managers

Unable to get investment capital	Lack of information	Insufficient working capital	East Asian economic crisis	Unclear government policies
53%	41%	39%	19%	16%

Source: Webster, SME in Vietnam, p. 20

Note: Chart shows the percentage of 95 larger enterprises' managers who mentioned the problem among the top three problems

Table 6: Sectoral Overdue Loans

	1995	1996	1997	1998	1999
State Owned Enterprises	**49.7**	**44.2**	**34.8**	**34.7**	**35.2**
Non-State Sector	**50.3**	**55.8**	**65.2**	**65.3**	**64.8**
Of which:					
Cooperatives	2.1	1.7	1.3	1.0	0.9
Joint stock and Limited Liability	5.3	11.8	45.7	46.7	46.4
Foreign Invested Enterprises	0.2	0.6	0.7	1.1	0.7
Private Enterprises and Households	42.7	41.7	17.5	16.5	16.8

Source: IMF, 2000

Table 7: Distribution of Credit 1990-1999

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Non-state	6.2	7.2	16.2	28.4	32.5	43.0	47.2	49.8	47.6	51.8
SOEs	93.8	92.8	83.8	71.6	67.5	57.0	52.8	50.2	52.4	48.2
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Sources: *World Bank, 1995 and 1996; IMF, 2000*

Table 8: Comparison of Views about the Major Constraints

	Cung *et. al.* (1999 and 2000)	Mallon (1999)	Riedel (1997 and 1999)	Ronnås *et. al.* (1998 and 2001)	Webster (1999) and Webster et. al. (1999)
Institutional Weaknesses	- Unequal treatment to SMEs -Complicated procedures for establishment and registration. Improvements observed - High tax rates, esp. profit and income tax - High and many import tariffs.	- Institutions are at early stage or not in existence - Enterprises are treated unequally - Difficult entry procedures	- Establish and registration is burdensome - Multiplicity of taxes and tax rates. Tax rate not high - Trade inhibiting measures. Low tariff for materials and capital goods.	- No difficulty in getting a license - Enterprise uninterested in receiving assistance from authorities	- Institution building is needed - Calls for equal treatment for SMEs - Unclear and frequently changing policies - No difficulty in getting a license
Limited Demand and Competition	- Access to domestic and int'l market is difficult - Competitive-ness of SMEs remains low - SMEs must compete with large inflows of smuggled goods	(--)	(--)	- One of the most difficult issues, especially to urban enterprises - Too much competition is a major concern	- Competition due to falling demand, market saturation, and no product diversification

Table 9: (continued)

	Cung *et. al.* (1999 and 2000)	Mallon (1999)	Riedel (1997 and 1999)	Ronnås *et. al.* (1998 and 2001)	Webster (1999) and Webster et. al. (1999)
Capital Shortage	- Difficult access to credits from banks and formal institution - Sources of credit are informal with high interest rates	- SMEs are discriminated against SOEs in accessing credit - A continuing difficulty despite considerable increases in the share of bank credits	- Main obstacle to all SMEs. Other problems are secondary	- Not a problem to urban households, private and partnership - Common hindrance to rural establishments - Major problem to urban cooperative, share holding and Ltd. companies - Readily available credit may not be good for SMEs	- Among the major problems - Difficulty in accessing investment capital
Technical and Management Limitations	- SMEs have obsolete equipment - Lacking access to consulting services - Cumbersome procedures for technology transfer	(--)	(--)	- Encouraging improvements in technology and production process, including facilities and equipment	- Lack of management skills for managers - Under-developed business services - Training institutions are weak - Little outsourcing of services
Public Attitudes	- Fundamental and major problem - There are improvements recently.	(--)	(--)	- Attitudes are accommodative	- Common negative views to private sector - Of paramount importance

Note: *(--): Not available*

Korean SMEs IN THE 21st CENTURY: STRATEGIES, CONSTRAINTS, AND PERFORMANCE IN A GLOBAL ECONOMY

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ABSTRACT

South Korea was one of the most adversely affected economies from the Asian financial and economic crisis of 1997. This paper focuses upon the contribution that the SME sector in this country is making towards the recovery of the economy, and, in particular, focuses upon their contribution in a knowledge-based society.

In this paper we present an overview of the contribution and significance of SMEs to the economy. We follow this with a discussion of the impact of the Asian financial crisis on the SME sector. Next, we look at the involvement of SMEs in the global economy, focusing on the globalisation readiness of Korea's SMEs. Based on a recent study of nearly 1,800 SMEs in Korea, we look at the existing impediments in globalising operations, along with areas

government should support in assisting SMEs to become globalisation ready. Finally, we present the prospects for Korea's SMEs in the 21st century and the emphasis on venture enterprises as a way to promote the technological competitiveness of SMEs.

INTRODUCTION

Since the early 1960s the Korean government has chosen an export led growth and development strategy. From 1962 this consisted of encouraging family controlled conglomerates, known as chaebols, that were focused upon developing export markets, a strategy that was to prove to be the catalyst for the remarkable transformation of the economy. These large enterprises were the focal point for production, employment and export growth for the Korean economy. During the period of the 1970s emphasis turned to the setting up of a heavy and chemical oriented industries. By the 1980s this policy of focusing upon large enterprises (LEs) became increasingly questioned as a result of serious imbalances in the economy between firm size, economic sectors and regions. Consequently, the government began to pay increasing attention to the development of SMEs, although it was not until the 1990s that positive measures were implemented to encourage their promotion. To assist in this process the Small and Medium Business Administration (SMBA) was inaugurated in 1995.

This increasing focus on the promotion of SMEs has been predicated on the basis that they offer greater economic benefits in comparison to that of LEs in the context of: job creation; efficiency; growth; exports; development of technology; the attainment of desirable social outcomes in terms of a more equal distribution of income or wealth; facilitating regional development; and their contribution to the marketisation of transition economies. This viewpoint about the contribution of SMEs to the economy has been questioned (see for example Hallberg (1999)), but in the context of Korea available evidence suggests that SMEs have been playing a vital role in job creation, increasing income as well as contributing to economic growth through continual technological innovation and improved product quality. In 1999, for example, the total number of SMEs, that is enterprises employing 1-299 workers, amounted to 2,769,012 equivalent to 99.7 percent of all establishments, and they employed 81.9 percent of all industrial workers. In the manufacturing sector, the backbone of the economy, SMEs contributed 99.7 percent of all enterprises and 74.3 percent of total manufacturing employment.

With the onset of the financial and economic crisis of 1997-98, however, a number of bankruptcies of large companies resulted in a severe impact upon Korean SMEs. Many of these were forced into bankruptcy themselves as a consequence of a credit crunch arising from a high interest rate policy to stabilise the exchange rate and a tight monetary policy, as well as from the dramatic collapse in domestic and regional demand and sales particularly in 1998. As an indication of the nature of the problem, the number of SME bankruptcies in 1996 amounted to 11,600, increased to 17,200 in 1997 and to 22,800 in 1998 at the height of the recession[1]. Despite these difficulties the economy showed a remarkable recovery from 1999 though to mid 2000, since which time the economic growth of the economy has slowed again and compounded by the events in New York in September 2001.

[1] In January and February 1998 when Korea was implementing a very restrictive monetary and interest rate policy the monthly number of SME bankruptcies rose to 3,300 and 3,400.

The inauguration of the Kim Dae Jung government at the beginning of 1998 attributed one of the principal factors for the Korean crisis as being due to the weakness of the foundation of SMEs. The weakness was assumed to be primarily due to the fact that large Korean companies had monopolised essential production factors arising from the large firm led economy, a legacy from earlier years of the country's economic development policy. As a consequence, policy in Korea is being focused upon corporate and financial sector restructuring with more emphasis upon the further development of SMEs. This presents Korean SMEs with considerable opportunities, as the government implements policies with the objective of enhancing the business environment for SMEs. In particular, the government has placed emphasis in promoting the business start-up of knowledge and technology intensive companies. Consequently, Korean SMEs, focusing upon knowledge and technology intensive companies, are anticipated to grow rapidly.

To date progress on a number of fronts can be identified in the wake of the crisis. First, government actions are resulting in many financial institutions increasing their loans to SMEs while decreasing loans to large companies so as to reduce their overall financial risk. This is providing gradual relief to the financial difficulties of SMEs. In addition large companies are also changing their attitude towards SMEs, emphasising their cooperation with SMEs rather than their dominance over them. SMEs are also attempting to change by improving their competitiveness despite their financial stringencies. In particular, they are attempting to lessen their debts under the restructuring program, and thereby to improve their financial status and cash flow. In addition, they are also starting to increase their investment in R&D for the purpose of reinforcing their technological competitiveness. SMEs are aggressively attempting to transform their business to knowledge based ones in line with changing markets. They are also strengthening and improving their cooperation with overseas enterprises or making entry to foreign markets to prepare for increased market globalisation. Further advancement by SMEs in the new millennium will depend upon their ability to sustain improvements in their competitiveness.

The remainder of this paper proceeds as follows. First, we present an overview of the contribution and significance of SMEs to the economy. We follow this with a discussion of the impact of the Asian financial crisis on the SME sector. Next, we look at the involvement of SMEs in the global economy, focusing on the globalisation readiness of Korea's SMEs based on a recent study of nearly 1,800 SMEs in Korea. Finally, we present the prospects for Korea's SMEs in the 21st century and the emphasis on venture enterprises.

SME CONTRIBUTION TO THE KOREAN ECONOMY – AN OVERVIEW

The growth rate of manufacturing SMEs during the 1960s was only about half that recorded for large manufacturing enterprises in a number of areas including: number of establishments; number of employees; gross output; value of shipments and value added (see Table 1). Even in the 1970s manufacturing SMEs continued to grow less than the large manufacturing enterprises due to the Korean government's heavy and chemical industry promotion policies that were advantageous to large enterprises. However, from the end of the 1970s, the manufacturing SMEs started exceeding the large manufacturing enterprises a little in terms of their growth rate following the increasing participation of SMEs in parts and basic materials industries, which

induced manufacturing SMEs to obtain rapid growth in gross output, value of shipments and value added.

From the 1980s manufacturing SMEs exceeded large manufacturing enterprises in all growth indicators as a result of the government's active SME promotion policy to remedy structural imbalance stemming from the government's previous LE preference policy. During the 1990s manufacturing SMEs continuously showed higher growth rates than the large manufacturing enterprises while the large manufacturing enterprises showed negative growth rates in the number of establishments and employees.

In the 1990s, as in the 1980s, the contribution ratios of the manufacturing SMEs to the growth of gross output, value of shipments and value added continued to grow. But, due to the concentration of economic power in large enterprises, the contribution ratio during this period remained at under 50 percent. The period of the 1990s saw declining growth in employment in the manufacturing sector. Significantly, large manufacturing enterprises recorded negative 96.6 percent to this decline in employment growth. Regarding the average annual growth rate of both SMEs and LEs during the 1990 to 1997 period, the former recorded positive 5.1 percent growth while the latter showed negative 6 percent. As a result, the number of large firms decreased during this period.

Table 1. Growth rates by firm size 1963-1997 (%) *

Items		1960s (1963-1969)	1970s (1970-1979)	1980s (1980-1989)	1990s (1990-97)
No. of establishments	SMEs**	3.4	3.1	9.0	4.4
	Large firms	11.8	5.1	1.9	-5.3
No. of employees	SMEs	5.4	10.2	7.3	0.0
	Large firms	12.8	10.8	2.0	-4.7
Gross output	SMEs	14.5	40.4	20.7	15.0
	Large firms	29.7	39.1	14.8	12.6
Value of shipments	SMEs	14.7	40.1	20.8	15.1
	Large firms	29.7	38.9	15.0	12.6
Value added	SMEs	16.3	40.0	21.9	15.1
	Large firms	29.6	35.3	16.4	13.7

*Notes : * Annual average rate.*
*** 5-299 employees.*
Source : Korea Federation of Small Business(KFSB), Economic Development and Contribution of SMEs, 1998.

In terms of the contribution by size of manufacturing SMEs, Table 2 shows a breakdown of this in terms of number of establishments, number of employees, production and value added. What this table shows is that most Korean enterprises are small scale, defined here as those employing less than 100 workers. In 1999 some 96.3 percent of all manufacturing establishments were small

scale. Indeed almost half of all manufacturing establishments employed between 5 ~ 9 employees. Medium size enterprises (defined here as 100-299 workers employed) contributed only 2.8 percent of the total number of manufacturing enterprises and LEs only 0.8 percent of manufacturing enterprises. Small-scale enterprises contributed 56.5 percent of total manufacturing employment, medium enterprises 16.4 percent and LEs 27 percent. In terms of production small-scale enterprises contributed only 30.5 percent of total manufacturing production, medium sized enterprises 17.1 percent, while LEs contributed 52.5 percent. A similar story can be gleaned from the data for value added in the manufacturing sector.

Table 2. Manufacturing SMEs by size (1999)

	No of firms		No of employees		Production		Value added	
		%		%	Million won	%	Million won	%
Whole manufacturing industry	91,156	100.0	2,507,726	100.0	479,732,889	100.0	200,935,037	100.0
SMEs	90,449	99.2	1,829,593	73.0	227,891,235	47.5	97,108,395	48.3
5 ~ 9	42,796	46.9	274,528	10.9	19,705,314	4.1	8,655,759	4.3
10 ~ 19	23,970	26.3	321,936	12.8	28,602,798	6.0	12,267,076	6.1
20 ~ 49	16,335	17.9	495,216	19.7	52,075,398	10.9	21,664,692	10.8
50 ~ 99	4,774	5.2	327,540	13.1	45,534,237	9.5	19,196,049	9.6
100 ~ 199	2,011	2.2	275,008	11.0	50,456,088	10.5	20,995,159	10.4
200 ~ 299	563	0.6	135,365	5.4	31,517,400	6.6	14,329,660	7.1
Large firms	707	0.8	678,133	27.0	251,841,654	52.5	103,826,642	51.7
300 ~ 499	356	0.4	134,911	5.4	34,632,421	7.2	14,779,782	7.4
Over 500	351	0.4	543,222	21.7	217,209,233	45.3	89,046,860	44.3

Source: National Statistical Office, *Report on mining and manufacturing survey.*

This would suggest, perhaps not surprisingly, that SMEs, small-scale enterprises in particular, are more labour intensive and their labour productivity performance, and hence wages, is poorer that that of large enterprises. In comparing the value added per employee by size, that of SMEs in 1997 was 45 million won, only 38.4 percent of the figure recorded by large enterprises. This suggests a wide gap between LEs and SMEs. In comparing the average annual wages per employee by size, that of SMEs was 13 million won during the same period, 63.6 percent of 21 million won in large companies. The disparity between LEs and SMEs continued to grow after 1980, except in early 1990 when the gap temporarily got smaller. However, it again started growing wider from 1993.

During the period of the 1990s Korean exports showed a continual growth, see Table 3, but in 1998 Korea recorded a minus 2.8 percent growth in exports. This shrinkage was more significant in LEs which showed a minus 4.2 percent decline in exports while SMEs recorded a minus 1 percent decline during the same period.

Table 3. SME exports (US$billion)

	1994	1995	1996	1997	1998
Total exports	96.013 (16.8)	125.058 (30.3)	129.715 (3.7)	136.164 (5.0)	132.313 (-2.8)
Total SME exports	40.701 (15.7)	49.474 (21.6)	54.205 (9.6)	56.910 (5.0)	56.349 (-1.0)
SME share of total exports (%)	42.4	39.6	41.8	41.8	31.0

Notes (1) Figures in brackets show the percentage change.
(2) Share is the percentage of exports by SMEs in manufactures in terms of total exports.

Source: Small and Medium Business Association and Korea International Trade Association.

With the onset of the economic crisis in 1998 total overseas investment by Korean enterprises numbered only 550 cases, far smaller than the 1,282 cases in 1997 (see Table 4). However, as a result of the aggressive overseas investment by LEs the overall amount of overseas investment in 1998 was higher than in 1997. Overseas investment by SMEs in 1998 consisted of 294 cases worth US$256 million, which was 53.5 percent of the total cases but only 6.9 percent of the total amount and was much lower than for the previous year. On the other hand LEs reduced overseas investment to 256 cases, far less than the previous year, but their total amount of overseas investment in 1998 increased to US$3.428 billion from US$2.703 billion in 1997. SME overseas investment has focused more on Asian countries due to their adjacency to Korea and because of their cheap labour (see Table 5).

Table 4. SME overseas investment 1996-98 (US$ million, %)

		1996	1997	1998
Total (A)	No. of cases	1,436	1,282	550
	Amount	4,233	3,216	3,722
SMEs (B)	No. of cases	831	769	294
	Amount	734	513	256
Ratio of SMEs (B/A)	No. of cases	57.9	60.0	53.5
	Amount	17.3	16.0	6.9

Source : Korea Federation of Banks.

Table 5. Manufacturing SME overseas investment by region (US$million dollar, %)

		1996		1997		1998	
			ratio		ratio		ratio
Total	No. of cases	831	100.0	769	100.0	294	100.0
	Amount	734	100.0	513	100.0	256	100.0
Asia	No. of cases	662	79.7	585	76.1	200	68.0
	Amount	464	63.2	245	47.8	159	62.3
Middle East	No. of cases	1	0.1	1	0.1	1	0.3
	Amount	170	0.0	133	0.0	0.7	0.3
North America	No. of cases	102	12.3	111	14.4	54	18.4
	Amount	152	20.8	137	26.7	48	18.7
Latin America	No. of cases	16	1.9	14	1.8	10	3.4
	Amount	43	5.9	70	13.6	20	8.0
Europe	No. of cases	35	4.2	38	4.9	18	6.1
	Amount	64	8.7	41	8.0	19	7.4
Africa	No. of cases	4	0.5	5	0.7	4	1.4
	Amount	2	0.2	3	0.5	4	1.6
Oceania	No. of cases	11	1.3	15	2.0	7	2.4
	Amount	9	1.2	17	3.3	5	1.8

Source : Korea Federation of Banks.

THE IMPACT OF THE FINANCIAL CRISIS ON THE SME SECTOR

The Korean economy suffered immensely from the Asian Financial Crisis, with total industrial production going from a growth rate of 8.7 percent in 1996 to a 7.3 percent decrease in 1998. Second, the SME manufacturing sector appears to have been hurt most, going from an industrial production growth rate of 3.3 percent in 1996 to a record low 29 percent decrease in production by 1998, then recovering rapidly in 1999-2000 (see Table 6). Third, SME light industries, traditionally one of the stronger and dominant SME sectors, seem to have been more adversely affected than heavy industries. In 1996 light industries experienced an increase in production by 2.8 percent, yet by 1998 they had realised a 29.2 percent decrease in production. The SME heavy industries were also significantly affected, going from a 3.7 percent increase in production growth in 1996 to a 28.7 percent decrease in overall production in 1998.

Table 6. Production index of SMEs in Manufacturing (1995 = 100)

	1994	1995	1996	1997	1998	1999	2000
Production index	91.2	100.0	103.3	101.9	72.4	75.5	93.7
Change (%)	12.2	9.6	3.3	-1.3	-29.0	4.3	24.2

Source : Industrial Bank of Korea

In addition to a poor production performance the SME sector has also been plagued by increased bankruptcy as a direct result of the financial crisis. Table 7 illustrates the significant increase in number of bankruptcies of SMEs during the 1996-1999 period. From a bankruptcy rate of 14 percent in 1996, SME failure (bankruptcy) increased to approximately 40 percent in 1997 and 1998. In terms of SME failures this translates into an almost 100 percent increase in bankruptcies over a three year period (1996-1998), from 11,589 in 1996 to 22,828 SME bankruptcies in 1998. In comparison to SMEs big firms (including chaebols) also had a significant increase in bankruptcies during the same period. From a low of only 7 bankruptcies in 1996 the number of big firm bankruptcies increased to 58 and 39, in 1997 and 1998, respectively.

Since 1990 the rate of bankruptcies has increased rapidly. Although there was a temporary decrease in bankruptcies in 1996 SMEs were driven into a series of bankruptcies after 1997, hit by the credit crunch and by declining sales as well as the ongoing bankruptcies of LEs. In 1990, the number of bankrupt companies was 4,107. In 1995, it soared to 13,992, three times the figure recorded in 1990. In 1997 it increased to 17,168 and in 1998 as many as 22,828 companies went bankrupt.

Table 7. Production, performance and bankruptcy of Korean SMEs (1996-1999)

	1996	1997	1998	1999
Bankruptcy rate (%)	14	39.9	38	10
Number of bankrupt SMEs	11,589	17,168	22,828	6,718
Monthly average	966	1,431	1,902	560
Number of bankrupt LEs	7	58	39	na

Source: Small and Medium Business Administration, Monthly Bulletin of Small and Medium Business, Government of the Republic of Korea.

By industry, the number of bankrupt companies in the manufacturing industry was recorded at 8,353 cases (38 percent of the total) in 1998, followed by wholesale and retail and hotels and restaurants at 6,686 cases (30.4 percent of the total), services and others at 3,644 cases (16.6 percent of the total) and construction at 3,283 cases (14.9 percent of the total). The successive bankruptcies of manufacturing LEs after the implementation of the IMF program accelerated the surge in bankruptcies of manufacturing SMEs. Thus, the number of bankrupt SMEs in manufacturing industry rapidly rose to 39.9 percent in 1997 and 38 percent in 1998. However, the number of bankrupt SMEs involved in services and other non-manufacturing sectors shrank. The number of start ups was 5 times the number of bankruptcies in 1996, 3.4 times in 1997, and the lowest 2.6 times in 1998. A turnaround occurred in early 1999 with a record high of 11.7 times.

By the beginning of 1998 the Korean Government realised that SME policies were needed to eliminate the threats to the stabilised management of SMEs, including major funding shortages and lack of credit opportunities necessary to operate within the Korean economy. Additionally, the financial crisis forced policy makers to focus on the creation of new jobs and the easing of unemployment (8.6 percent of the labour force in February, 1999), together considered one of the most urgent challenges for the nation's economy during the crisis. Along with the stabilisation of the economy the Government prioritised the need to build up infrastructure such as technology, human resources development and operation of start-up assistance centres to help SMEs grow steadily. At the same time policies were being considered to assist SMEs locally and to enhance their international competitiveness.

By mid 1998 the Korean Government began to appreciate the role of SMEs as a major driving force for sustaining economic growth. A number of key issues affecting SME success were identified, such as: technology transfer; human resource development; access to finance; access to markets; access to information; identification of suitable network partners and joint venturers; barriers to entry into foreign markets; and an overall ability to remain internationally competitive. To help SMEs overcome some of these barriers it was necessary for the Korean Government to first focus SME policies on the elimination of the threats to their stabilised management, and access to financial resources. As a start, a general management stabilisation fund of US$567.3 million was provided for attaining policy goals such as export promotion, commercialisation of new technologies, quality and management innovation, etc., with an additional US$50 million being used as emergency funds to respond to rapid changes in management conditions. Next, the Korean Government needed to continue to promote long-term international competitiveness by supporting structural reforms and technology development. Programs that foster technology-based development, such as venture enterprises, are aimed specifically at SME development and are intended to promote the restructuring of the nation's industry as a whole. To complement this program an additional US$26.6 million was used to establish the Technology Innovation and Development Fund in 1998 to facilitate SME research and development efforts. Together these policies, along with numerous others, represented a proactive approach to dealing with the financial crisis that occurred in 1997.

In sum, since the financial crisis in 1997, Korea's big enterprises and financial institutions have undergone extensive restructuring. As a result the nation's economy has experienced drastic changes in the industrial and financial sectors, which traditionally were dominated by big businesses. No longer able to depend on big business groups (e.g., chaebols) to lead the nation's

economic growth, the Korean Government is placing greater emphasis on SMEs for future growth. Accordingly, SMEs that embrace technological knowledge and skills are expected to replace big business groups in leading the nation out of the financial crisis. SMEs not only have the flexibility to adopt knowledge and information, but also to adapt themselves to the rapidly changing technological environment while proceeding with continuous innovation. Thus, the Korean Government has placed the highest priority on SMEs, not big conglomerates, as the key driving force for the industrial development during the 21st century.

GLOBALISATION READINESS OF KOREA'S SMES

As a means of gauging the export readiness of Korea's SMEs, this section draws upon a recent survey of some 1,760 selected SMEs covering the period 19-29 November 2001 conducted by the Korea Federation of Small and Medium Business and the Korea Small Business Institute. The data was collected from face to face interviews, through the Web, by fax and by email and used stratified simple random sampling. The major questions focused upon were: business performance in 2001, and prospects for 2002; business plan for 2002; and the prospects for major business indicators for 2002. A summary of the survey results are presented in Table 8.

In terms of business plans for 2002 it can be observed from Table 8 that there is a noticeable degree of optimism amongst entrepreneurs, with almost half the firms surveyed indicating either an increase in the size of their current business, or the maintenance of the current business but expanding into a new business. The remainder of the sample firms overwhelmingly anticipated the maintenance of the current size of their business. There is noticeable disparity between ordinary SMEs and venture business SMEs, with almost two-thirds of the latter anticipating an increase in the size of their business, or the maintenance of the current business but expansion into a new business.

Table 8. Business plan 2002 (unit : %)

	Switch to a different business	Reduce the size of the current business	Maintain the size of the current business	Increase the size of the current business	Maintain the size of the current business, and start a new business
Total SMEs	0.7	5.4	44.8	21.3	27.7
Ordinary SMEs	0.5	7.0	56.8	16.3	19.4
Venture business	1.2	2.5	22.2	30.6	43.5

As indicated in Table 9 in terms of the surveyed SME management plans, over half identified priority areas as being the need to strengthen marketing activities and technology innovation. About a quarter of the sample saw the need to improve the structure of the business as well as the recruitment of human resources as being priority areas. The need to strengthen business

collaboration with other enterprises and to improve company liquidity were not seen as being priority areas. The latter point is interesting, suggesting that measures taken to date to improve the financial position of SMEs have proven to be successful.

There also appears to be relatively little discrepancy between ordinary SMEs and venture SMEs in terms of management priorities and the ranking of these.

Table 9. Management plan for 2002 (unit : %)

	Strengthening of Marketing activities	Strengthening of technology innovation	Improvement of business structure	Recruitment of human resources	Strengthening of business collaboration with other firms	Informatisation	Improvement of cost structure	Improvement of liquidity
Total SMEs	24.9	27.6	13.5	10.5	4.4	5.7	8.3	5.2
Venture	22.3	25.5	14.7	9.9	5.0	7.1	10.3	5.4
Ordinary	29.9	31.7	11.2	11.5	3.3	3.1	4.5	4.9

Major areas that the government should support

Table 10 captures the views of the surveyed SMEs over the support of government, in terms of SME development, and where more focus needs to be placed. The three areas given most emphasis are those focusing upon: strengthening of technology competitiveness; improving business stability and survival; and improving the efficiency of government support. Over 60 percent of sampled SMEs emphasised these three factors.

Major Export Regions (Prospects for 2002)

Table 11 identifies perceived prospects in overseas markets for the surveyed SMEs. Overall, SMEs see the Japanese and US markets as being crucial, followed by China and the ASEAN economies. By type of SME, ordinary SMEs see Japan and the US as the key markets while venture firms see the US and China as being equally important overseas markets.

Table 10. Major areas that the government should support (unit : %)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
Total SMEs	25.3	6.1	4.4	20.4	8.2	10.0	0.8	6.7	18.3

1. Strengthening of technology competitiveness, 2. Facilitation of New business, 3. Maximization of IT and e-Biz utilization, 4. Improvement of business stability and self-survival, 5. Establishment of fair trading environment, 6. Support of small-sized business, 7. Support of SMEs with women executives, 8. Strengthening of global competitiveness, 9. Improvement of efficiency of government support

Table 11. Major Export Regions (Prospects for 2002) (unit : %)

	Japan	US	EU	ASEAN	China	Hong Kong	Other
Total SMEs	23.6	25.7	7.8	12.5	17.0	2.7	10.7
Ordinary SMEs	28.0	28.6	6.4	11.9	12.3	3.1	9.7
Venture firms	18.5	22.3	9.4	13.2	22.3	2.3	11.9

Difficulties in export sales

In another survey conducted by the Korean Federation of Small and Medium Business over the period 4-23 October 2001, some 1,308 SMEs, focus was placed upon difficulties relating to export sales, from which further interesting results can be identified. The results of this are contained in Table 12, which shows that the single most important concern to SMEs relating to their export sales was that of stagnation in major export markets. Over a quarter of respondents identified this as the most important factor. Following in ascending order by increased costs of production (16.7 percent), demand by buyers for reduced prices (16.2 percent); and then difficulties in developing new foreign markets.

Table 12. Difficulties in export sales (unit : %)

	1.	2.	3.	4.	5.	6.	7.	8.
Total SMEs	16.7	10.3	11.2	3.4	2.4	16.2	26.2	13.7

1. increase in production costs; 2. increase of export related costs; 3. excessive competition with domestic firms; 4. weakening of technology and product quality competitiveness; 5. too many import restrictions in importing countries; 6. buyers' demand for price reductions; 7. stagnating business cycle of the major export markets; 8. difficulties in developing new foreign markets.

Source: Korean Federation of Small and medium Business, November, 2001.

PROSPECTS FOR KOREA'S SMES IN THE 21ST CENTURY

As a result of the financial crisis in 1997, the Korean Government focused restructuring efforts on the two areas of the economy most in need: financial institutions and big enterprises (i.e., chaebols). During this time the nation's economy experienced drastic changes in the industrial structure, which in the past was centred around big businesses. It was at this time that the government began to realise that they could no longer depend on large multinational firms to fuel the economy, leading them to shift emphasis from big business to small and medium enterprises. It was anticipated that SMEs, especially those equipped with technological capabilities, will replace big business conglomerates as the main thrust in economic growth.

Expansion of SME business activities

The emergence of new industries, customisation and specialisation of commodities and services are expected to expand the scope of activities of SMEs. Thus the business environment will become advantageous to SMEs which can flexibly adjust to changes arising from: technological innovation; the transformation to the aged society; changes of life style;, the emergence of new industry relevant to housing, medical welfare, environment and life culture; and the diversification of consumers' wants.

The expansion of business activities and the economic importance of SMEs implies that they will play a more important role in creating jobs. The development of information technology is expected to induce a constant creation of new businesses more appropriate to SMEs than to large companies, which in turn will cause SMEs to expand their employment.

In most industrial sectors, SMEs are expected to make great progress. In particular, many technology and knowledge intensive SMEs are expected to be established and to grow rapidly in areas accelerating technological innovation and amalgamation such as information communications, new materials and life science.

It is expected that the importance of SMEs in the service industry will become more emphasised due to the changes in industry structure such as through de-industrialisation and the expansion of

the service industries. In general, service businesses are likely to be set up with small capital. In particular, as the advancement of information technology and informationalisation causes the average size of companies to get smaller, the proportion and importance of SMEs in the service industry is expected to grow very rapidly.

It is predicted that the roles and significance of provincial SMEs will become greater as the central government pursues policies that promote provincial SMEs to remedy the imbalance between regions that occurred amid the rapid economic growth of previous years. Regional governments will also aggressively push ahead promotion policies for special SME industries that fit regional characteristics along with the advent of the era of localisation.

The relaxation of trading obstacles resulting from the WTO and the extension of international trade brought about by the development of electronic trading has made it easier for SMEs to advance into the world market. Hence the status of export oriented SMEs is anticipated to become much higher, resulting in the proportion of total exports produced by SMEs to rise constantly.

Hence SMEs are regarded as a major source of job creation as well as having a crucial role to play in the reshaping of Korean industry, enabling the Korean economy to recover its competitiveness. Moreover, SMEs that can easily adapt themselves to the rapidly changing technological environment, while proceeding with continuous innovation, are those expected to experience continued growth well into the 21st century. It is these particular SMEs, or "venture enterprises," that the Korean Government is putting a top policy priority on to help them regain their competitive advantage.

Venture Enterprises

Venture enterprises are defined as a "technology-intensive enterprise" or an "enterprise based on a highly advanced technology." To be classified as a venture enterprise, an SME must satisfy any of the following four conditions:

(1) Have at least 10 percent of the total capital generated from venture capital.
(2) Invest at least 5 percent or more of total sales into R&D.
(3) Have at least 50 percent or more of its total sales generated from sales of patent and new technology products.
(4) Be recognised by the government as having excellent technology

Since 1997 when the government began measures to foster venture enterprises, 4,200 small and medium companies have been designated as venture firms. It is estimated that between 200 and 300 companies are newly designated as venture firms each month. Venture enterprises demonstrate higher technological capabilities and managerial performance, and realise greater growth rates than other SMEs and big conglomerates. They also create more jobs than big companies or traditional small firms, and make greater contributions to the development of regional and national economies. Realising the importance and growth potential of venture enterprises, the Korean Government in 1997 passed the Law on Special Measures for Fostering Venture Enterprises. This law focuses on three main areas to foster the development of venture

enterprises. These areas include *improving the atmosphere to form venture enterprises*, *improvement of funding opportunities*, and *encouraging globalisation of venture enterprises*.

To *create an atmosphere to form venture enterprises*, the government has focused its start-up campaign around universities and research institutes. They are hoping to tap into the young and ambitious university student and research personnel market with various supports to make start-up of venture firms easier. By providing students with initial expenses for starting businesses, they are also hoping that they will quickly advance into promising venture firms. The government will exempt university students from obligatory military service, allow professors and research fellows to temporarily retire, and even provide initial expenses for starting businesses all in the hope of encouraging the formation of venture enterprises. Once a venture enterprise has been formed, measures to *improve funding opportunities* are necessary. To encourage investment in venture enterprises, tax benefits have been expanded to include venture capital invested in venture enterprises. Furthermore, the Korean Government is creating a source of public capital aimed at supporting preliminary business starters and newly inaugurated businesses in which private venture investors are reluctant to make investments. With the formation of the Korea Venture Fund in 1999, an additional US$83 million has been set aside for direct investments in venture firms. Finally, to ensure long term success of venture enterprises, it is necessary that these firms compete effectively with their counterparts in the world market. In an effort to *encourage globalisation of venture enterprises*, the Korean Government provides assistance in exporting, foreign direct investment in overseas firms, formation of collaborative partnerships with foreign companies, and funding to establish overseas factories and offices.
Although the government has focused on lifting various administrative restrictions and on encouraging the growth of venture enterprises immediately following the financial crisis, more work is needed to improve the infrastructure for fostering such venture businesses. Specifically, many venture businesses are still undergoing financial difficulties owing to the lack of venture capital and angel funds available. Recently, in response to these difficulties, more than 40 business incubators across the country have been established to assist the start up of new venture enterprises. By the year 2002, it is expected that more than 100 incubators will be in existence to help nearly 2000 new venture enterprises get started. Additional infrastructure development includes the establishment of six 'techno-parks' in the major cities in Korea, along a 'venture town' in the city of Taejon and a 'high-tech complex' in Seoul. As previously mentioned, the launch of the Venture Net has greatly facilitated the sharing of information on business, technology and investment opportunities with government agencies, private organisations and other venture businesses. Finally, the government has created the KOSDAQ, a Korean version of NASDAQ, as a virtually exclusive stock exchange for small business and venture enterprises. As a vital source of venture capital, currently there are hundreds of venture companies trading on the KOSDAQ. By the end of 1999, over US$2 billion changed hands per day on KOSDAQ. With a market valuation reaching US$100 billion, trading on KOSDAQ represented nearly one-third of the Korea Stock Exchange in 1999.

Despite the challenges that lie ahead the new generation of small and medium-sized venture enterprise entrepreneurs are better educated, have developed a business plan based on technological innovation and niche market specialisation, and have anticipated the need to raise capital through venture capital and/or through the stock market. By the beginning of 2000, venture companies numbered over 5,000, many of which are considered competitive and capable

of flexibly responding to changing markets and customer needs and demands. By June 2000, Korea had 8,768 certified technology ventures, placing it as the third largest market worldwide for venture business. The government plans on continuing to expand its investment into venture companies, and, by the end of 2000, raised venture funds in cooperation with the private sector in excess of US$1 billion. These funds will be used to nurture approximately 10,000 venture companies, creating an additional 100,000 new jobs. Additionally, the government has provided a special guarantee through the Technology Trust Guarantee Fund of over US$2 billion to be provided through 23 financial institutions throughout Korea. The Information-oriented Enterprises Promotion Fund has been established to provide nearly US$100 million for software venture enterprises.

Towards a Knowledge-based society

Over the past few years, Korea has been developing a foundation for its knowledge-based or 'new' economy, focusing on developing an information infrastructure that promotes information and communications-related technologies, e-commerce activities, and the formation of venture enterprises. From 1991 to 1999, Korea's knowledge-based industries realised an average annual real growth rate of 13.7 percent. In 1999, knowledge-based industries accounted for 45.6 percent of the nation's annual GDP growth rate of 10.7 percent. Korean SMEs and venture enterprises are an important part of Korea's new economy. The government needs to continue to support venture enterprises by streamlining laws and expanding the support of both management stabilisation and structural improvement funds, especially for those firms involved in knowledge-intensive industries. However, to meet the competitive demands of the 21st century, SMEs will also need to make efforts to respond to the changes in economic conditions at home and abroad. This includes securing core technologies and competencies necessary to adapt to changing competitive conditions. Employment in the industry, agriculture, and services sectors has remained weak with much of the recent increase in jobs coming from self-employment and the public sector. While considerable restructuring has occurred among smaller chaebol and SME sectors, the question for Korea is whether the slow restructuring of larger chaebols will impede on SME growth.

Globalising operations, developing and sustaining up-to-date information systems, and transforming themselves into highly competitive technology-based firms, equipped to deal with flexibility and mobility are necessary first steps for SMEs in the 21st century. Fortunately, for Korean SMEs and venture enterprises, the Kim Dae-jung government has proclaimed the 21st century to be the 'Age of SMEs'. This is evident through the outstanding support provided to SMEs in a number of key areas, including access to finance, human resources management, scientific and technological achievements, promotion of e-commerce, and promotion of collaborative relationships through networking. Although the Korean Government still has room to improve upon SME policies, since the financial crisis they have provided a solid foundation for economic stabilisation by reforming financial institutions and big businesses, transforming its economic system into a knowledge-based economy, liberalising its markets to foreign investment, strengthening its efforts to cooperate with foreign countries, and focusing on SMEs and venture enterprises as a 'key' driving force in establishing Korea as a global economy, ready to embrace the challenges that the 21st century has to offer.

SUMMARY AND CONCLUSIONS

This paper has conducted an extensive overview of the contribution of SMEs, more specifically manufacturing SMEs, to the contemporary Korean economy. This contribution is not inconsiderable in terms of number of establishments, employment, production, value added, exports, investment and innovation. While the industry sector's share of overall national income has been declining in Korea for a number of years, a traditional phenomenon in the context of a developing economy, it will still remain at the core of the economy for a prolonged period of time. While the financial and economic crisis of 1997-98 undoubtedly impinged upon the further development of SMEs, they have shown remarkable resilience with the recovery of the economy. There are encouraging signs that SMEs, with the assistance of government policies, are gearing themselves up to take advantage of the business opportunities that will arise with further trade liberalisation within the region. The key is to ensure that such SMEs remain globally competitive and sufficiently flexible to take advantage of rapid changes in the market. The overall conclusion is that with the further integration of the region many business opportunities will arise for SMEs particularly with regard to knowledge and technology intensive industries.

BIBLIOGRAPHY

APEC Project on Business Matching and Facilitation Services and Electronic Databases Available to SMEs to Facilitate Trade and Investment 1996. Department of Industry, Science and Tourism, Australian Government Publishing, Canberra, Australia.

Choi, J. and Chung, S.C. (1997). *The Role of Government in S&T Co-operation: The Case of Korea.* OECD Working paper DSTI/STP/TIP(97)14/FINAL.

Choi, Young B. (1999). On the causes of financial crisis in Korea. *Nultinational Business Review (Fall)*, 45-53.

Hong, S.Y., Park, J.H. and Park, J.Y. (1999), Status and prospects of small and medium enterprises (SMEs) in Korea, Policy research paper No. 14-99-02, Korea Small Business Institute.

Investment Environment and Prospects for Venture Business in Korea, Small and Medium-sized Business Administration, Government of the Republic of Korea. http://www.smba.go.kr.

Korea Economic Update (Jan 24, 2000), Special Edition: Economic Policy Directives for 2000, Ministry of Finance and Economy, Government of the Republic of Korea. http://www.mofe.go.kr.

Korea Economic Update (Apr. 20, 2000), Ministry of Finance and Economy, Government of the Republic of Korea. http://www.mofe.go.kr.

Korea Economic Update (Sep. 19, 2000), Special Issue: First-Half Economic Achievements of "the Kim Dae-jung Administration." Ministry of Finance and Economy, Government of the Republic of Korea. http://www.mofe.go.kr.

Korea's SMEs Preparing for the 21st Century, Small and Medium-sized Business Administration, Government of the Republic of Korea. http://www.smba.go.kr.

Korea's Venture Enterprises and Policy Directions for Fostering Them, Small and Medium-sized Business Administration, Government of the Republic of Korea. http://www.smba.go.kr.

Korea Federation of Small and Medium Business (2001), Current status of SMEs 2001, available at http://stat.kfsb.pr.kr/menu2-1.html (in Korean).

Korea Federation of Small and Medium Business (2001), Current status of SMEs 2001, available at http://stat.kfsb.pr.kr/menu2-1.html (in Korean), November.

Korea Federation of Small and Medium Business and Korea Small Business Institute (2001), Business prospects of SMEs for 2002, December (in Korean).

Kwack, Sung Y. (1999). Korea's financial crisis: Causes and restructuring tasks. *Multinational Business Review (Fall)*, 55-59.

Lee, M. J. and Chung, S. C. (1997). *Globalisation of Industrial Research and Development: The Korean Experience.* OECD Working paper DSTI/STP/TIP(97)14/FINAL.

Maximizing the Benefits of Electronic Commerce: Korea's Initiatives, Government of the Republic of Korea, OECD Working paper DSTI/ICCP(98)15/PAR2/REV1.

Moody's Report on the Korean Economy, Korea Investment Service Center, Government of the Republic of Korea. http://www.kisc.org.kr.

Park, Hun J. (2000). Modernization, competitiveness, and the politics of small business in Korea, *Unpublished Manuscript.*

Park, Sung-Hoon. (1999). The impact of the Korean financial crisis on SMEs: A case study of Korea. Working Paper.

Policy Direction for Small and Medium Enterprises, Small and Medium-sized Business Administration, Government of the Republic of Korea. http://www.smba.go.kr.

SMEs and Electronic Commerce, Government of the Republic of Korea, OECD Working paper DSTI/IND/PME(98)18/REV1.

Status of Small and Medium Enterprises, Small and Medium-sized Business Administration, Government of the Republic of Korea. http://www.smba.go.kr.

The New Foreign Direct Investment Regime, Small and Medium-sized Business Administration, Government of the Republic of Korea. http://www.smba.go.kr.

What Is KOTRA?, Korea Trade Promotion Corporation, Government of the Republic of Korea. http://www.kotra.or.kr.

MOBILE COMMERCE: A MODEL ARCHITECTURE TO SUPPORT NEW FINANCIAL TRANSACTION SECURITY CONCERNS

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ABSTRACT

Security of transactions in Mobile Commerce is moving away from an IT concern to a Business concern because of potential loss of revenue to businesses due to lack of privacy, integrity or confidentiality, system slowdown or downtime. While most of the various security procedures are limited to corporate IT infrastructure, in mobile commerce, issues concerned with transaction security appear to have extended beyond the corporate network to embrace the complete business process. Any lapse in procedures that maintain confidentiality of data, or violation of privacy could affect corporate image and hence would impact customer relationships. Any adverse effect on customer relationship would negatively impact business revenue. In addition to existing security problems in a wired commerce environment, the emergence of mobile devices have renewed calls for addressing security threats to financial transactions. These problems are discussed in this paper as key issues in terms of organisation's architectural and procedural approaches to security, reliability and availability of business transactions.

INTRODUCTION

In the past, majority of the computer security officers had difficulty in convincing management to allocate financial resources for IT security. However, with the emergence of electronic commerce and various legislations, organisations appear to have understood the necessity for computer security, especially data security (Dang, 2000a). The current trend in most organisations appears to be security officers focussing on IT security – namely – focussing on hardware security, software security and access security (Dang, 2000a). The access security involves both physical access and logical access. What appears to be missing from these security procedures is proper integration of business transactions. Ghosh (2001) states that while various security measures have dealt independently from business transactions, electronic commerce and the emerging mobile commerce have changed the perception that independent IT infrastructure security alone can protect an organisation in terms of its business needs. To support Ghosh's statement, Deise (2000) has identified the a shift in the focus of IT security in organisations, resulting in new security policies to focus on reliable, available and trusted business transactions of organisations.

In this paper, new security threats arising from mobile commerce is initially highlighted. These threats are then linked to financial transactions in order to

highlight the potential loss or damage to organisations' revenue. Then the organisations' IT requirements are assessed with a view to provide support to financial transactions in a mobile commerce environment. Organisational support is then formed into an 'architecture' and the architecture is discussed in terms of IT in an organisation, how does IT support an organisation and what does IT do to support the business processes of financial transactions. This architecture is then elaborated in terms of action items so that transaction security in an organisation can be guaranteed. It is hoped that these action items would then enable organisations to tighten their security measures.

SECURITY THREATS ARISING FROM MOBILE COMMERCE

Security threats in mobile commerce can range from passively eavesdropping into others' message to actively stealing user's data (Loney, 2000). In a radio frequency operated mobile commerce, with minimum difficulty it is possible to listen to one's conversation. This has an impact for consumers because they are concerned about their data and voice messages from unauthorised access. On the other end of the problem is the inherent security risk involved in transferring information over the networks. This problem consists of two components: *identification integrity*, and *message integrity*. The identification integrity refers to the signature elements found in the messages in order to establish where the message is originating. The message integrity refers to details to establish that the message is received as sent and no third party has attempted to open, modify or alter the contents. According to (Zhang & Lee, 2000), these two items appear to cause a lot of concern to both sender and receiver. While the sender risks theft or misuse of their personnel information such as account and bank details, the receiver (usually a merchant) risks repudiation of the transaction and resultant non-payment.

In addition to the above two, additional security concerns in mobile commerce arise due to the new development in technology itself (Zhang & Lee, 2000). The mobile technology is envisaged in such a way that the services offered will eventually warrant payment for the type of services offered. This is already emerging in the domain of mobile telephones. For instance, when mobile telephone users access other network carriers, a special charge is levied on the users. Therefore, it is safe to assume that there will not be any "free services" in the future. The technology is developing in such a way that the payment for such services will be through some form of "smart cards". The details stored in the smart cards need to be transmitted via the networks for validation and verification in order to determine service levels. If these networks are not fully secure, there are possibilities for security breaches to happen.

One major security breach that can happen in mobile commerce is when the user details are transformed from one mobile network to another (Hulme, 2000). When this transformation occurs, any encrypted data needs to be decrypted for transparency. In mobile commerce, when mobile devices make requests to web pages of a network server, a four-stage process is followed. First, the requests arise from the originating Wireless Transport Security Layer (WTSL) protocol. Second, the requests are translated at the originating Wireless Application Protocol (WAP) gateway. Third, they are sent to the standard Session Security Layer (SSL) protocol of the destination network. Fourth, the translated information reaches the Hyper Text Transfer Protocol

(HTTP) modules in the new network in order for the requests to be processed. In the process of translating one protocol to another, the data is decrypted and then re-encrypted. This process is commonly known as the "WAP Gap". If an attacker is able to have access to the mobile network at this point, then simply capturing the data when it is decrypted can compromise the security of the session.

Data in the Mobile Commerce environment is secured using encryption technology. According to (Ghosh, 2001), it has already been proven that the technology is vulnerable to attacks. Hackers have broken some of the existing algorithms for encryption. So, there is nothing like a complete security. Further, there is no international regulatory framework available to enforce certain security related problems. For example, in the current climate, no individual organisation or government can guarantee security to consumers. When the security breach appears in an international transaction, no one country will be able to assume responsibility to prosecute the vandals. While these problems have been recognised and solutions are being proposed, organisations tend to loose consumer confidence. This will potentially impact organisation's revenue.

Trust is central to any commercial transaction and more so in the case of mobile commerce (Fink, 2000). Trust is normally generated through relationships between transacting parties, familiarity with procedures, or redress mechanisms. In the case of mobile commerce, the need for creating the trust in the consumer assumes extreme importance because of its virtual nature. It hinges on assuring consumers and businesses that their use of network services is secure and reliable, that their transactions are safe, that they will be able to verify important information about transactions and transacting parties such as origin, receipt and integrity of information, and identification of parties dealt with. Therefore the challenge is not to make mobile Commerce fool proof but to make the system reliable enough so that the value greatly exceeds the risk.

Any new development in technology in today's consumer minds creates both curiosity as well as reluctance. The informality and lack of overall control creates the perception that the Internet is inherently insecure (Schiller, 2000). This inherent perception can trigger business risks and technological risks (Shroeder, 1999). Business risks involve products and services, inadequate legal provisions, reliability of trading partners, behaviour of staff and demise of Internet service provider. Technological risks involve hacker attacks, computer viruses, data interception and misrepresentation call all arise. To achieve satisfactory levels of trust, organisations have to think about managing both business and technological risks. Currently Mobile Commerce relies mostly on knowledge-based trust that is useful for Business-to-Business commerce (Fink, 2000). However, there is a big surge in the identification-based trust to satisfy consumer concerns about their transaction details. In addition, current architectures for mobile communications do not provide full security measures in terms of transaction integrity. Some of the models envisaged for mobile commerce are based on smart cards oriented approach and hence the issue of financial transaction security needs greater examination in mobile commerce.

SECURITY THREATS THAT CAN IMPACT FINANCIAL TRANSACTIONS

Security risks in a mobile commerce environment associated with financial transactions can be categorised into traditional risks and non-traditional risks (Judge, 1998). Traditional risks usually involve loss or damage to tangible physical assets and resulting economic loss. For example, loss of computer hardware may have an impact on incomplete transaction. Alternatively, a data disk, which is not fully protected from theft can place an organisation into some form of risk. Treatment of traditional risks is usually addressed in risk management policies. Protecting tangible assets from traditional perils, even when those assets are devoted to mobile commerce, does not involve new and different techniques. These security treats are beyond the scope of this paper.

Non-traditional risks involve the sustaining damage to organisations' computer systems and electronic data (Young, 2000). These risks can fall under the category of stolen information, damages to web sites by hackers, hijack of web sites and viruses. An attack may be perpetrated for any of a number of reasons including financial gain involving credit card fraud, curiosity with no specific intent of harm, espionage by domestic or foreign competitors, or by foreign governments, revenge by a terminated employee intent on wiping out files, disclosure of personal data to unauthorised institutions as in health related cases, thrill seeking, disruption to stop critical activities, and extortion for financial or political reasons. Any attack, internal or external, on a computer system is at minimum disruptive and forces the administrator to shut down the system realising in revenue loss.

Non-traditional security breaches also include any unauthorized access or use of a company's computer system and data by an outsider or insider (Deise et al., 2000). For example, a hacker could break into a company's computer system and steal or destroy data. Widespread use of mobile commerce enhances the possibility of an outsider invading an organisation's computer system. Due to businesses reliance on computers for their daily operations, breaches of a company's computer or information security system are a risk to almost all functional components of businesses. Use of software to encrypt and, thus, safeguard communications provides some protection, but also adds a risk that a virus or other bug could damage equipment or data. Further, according to Dang (2000b), theft of information such as critical electronic files include financial data, customer information, marketing and new product data, trade secrets, and personnel data may provide competitors with a strategic advantage, criminals with the means to commit fraud, and others the opportunity to disparage the company. Dornan (2001) states that the use of misappropriated information may harm third parties such as customers, employees, and business partners. The theft of information may undermine an acquisition or cause a public relations problem and hence potential loss to revenue.

Security breaches may be very costly to an organisation (Gerrard, 2000). When unauthorized access to the computer is gained for the purposes of committing a crime or fraud, reputation is also at stake. Other security issues include the prohibition against the use of high-level encryption technology by domestic or foreign governments so that agencies can break the codes if necessary for defence or law enforcement, changes in international standards, and loss of encryption key recovery.

A CLOSER LOOK AT FRAUD AND CRIME RISKS IN MOBILE COMMERCE

The scope of computer fraud and crime is immense in mobile commerce. Among the most common crimes are malicious mischief, such as the insertion of viruses or Trojan horses into one or more computer systems; the fraudulent transfer of money to personal accounts; the use of forged electronic signatures; the theft of credit card information and credit card fraud; Medicare and Medicaid fraud; the theft of intellectual property; illegal use of software; stock and commodity market manipulations; and similar illegal activities. Most losses are insurable, but premiums will be relatively exorbitant if security measures are not appropriately enacted (Hulme, 2000).

A hacker may use a number of methods such as the insertion of viruses, spamming and web snatching to access computer systems and data and cause resulting damage. Damage may occur at data centers or to transmission networks, routers, and power sources. Virus attacks may also come from innocent parties who pass on an infection without knowledge that the system is contaminated, usually by e-mail.

Using another technique called a *distributed denial of service*, hackers attacked some of the most well-known and highly secured web sites in the world, including Yahoo.com, eBay.com, and amazon.com. This technique hijacks numerous computers on the Internet and instructs each one to flood a target site with phony data. The target site trying to accommodate the phony data becomes overworked and soon begins to lose memory. The result is effectively slowing or shutting down the entire site to real customers.

Web snatching is a practice in which one party plants a virus in another party's Web site that automatically moves the viewer from the selected site to a site run by the web snatcher. This is done without the permission of the selected Web site owner or the site visitor. In many instances, the viewer is unable to get out of the unwanted site, short of turning off the computer, and is held hostage to the new site. The diverted-from and diverted-to sites usually have nothing in common with each other.

Financial institutions and companies that have inadequate electronic security protection are more likely than not to suffer losses of money, information, or other corporate assets. Surveys have shown that most companies and institutions have incurred losses, and a substantial number have no idea whether they have come under electronic attack or not. Insiders or former insiders have committed most of the electronic crime and fraud, but there are many examples of third-party fraud and theft. Mobile commerce can only be conducted if all parties believe there is adequate security. The majority of those who use the Internet, on which current mobile commerce technologies are built, are very concerned about security (Ghosh, 2001). Some 40 percent of Internet consumers give false information when they use the Web because they do not trust the Internet's security (Craig & Julta, 2001). Other users refuse to register at sites that require what the consumer believes to be personal information (Anonymous, 2000a). Many persons want the government to legislate security on the Internet, as they are not confident businesses will do the job on their own (Stowe, 2000). Therefore, it is critical that businesses enhance both their security

and their security image to combat fraud and crime on the Internet as well as to increase customer confidence and participation to realise secured transactions.

SECURITY RISKS IN MOBILE COMMERCE EMERGING FROM RELIANCE ON THIRD PARTIES

Today, most organisations rely on computers for their daily operations. Traditional risks and non-traditional security risks can interrupt a business or literally shut it down. For example, a security breach by a hacker can severely disrupt a business and those that depend on it. Most businesses in mobile commerce are dependent in several ways on the continued reliability and operation of computer controlled systems not within their control such as the telephone network managed and controlled by computers. Businesses are dependent on their financial institutions that are also managed and controlled by computers. In mobile commerce, to accommodate home users, organisations are dependent on their Internet service providers. Suppliers and customers depend on each other's electronic data systems and on mutual systems, such as a third-party commodity exchange. When one system fails, it may cause the other systems to fail as well. Failure may be a slowdown in the dependent system, also called the 'brownout' or a total denial of service, also called the 'blackout' (Ghosh, 2001).

The above said risks can result in many different types of losses (Anonymous, 2000b; Dornan, 2001; Smith & Andrews, 2001). The losses that arise from reliance on third party can generally be grouped into: (1) loss or damage to property, both tangible and intangible, (2) business interruption, and (3) extra expense. Property losses occur when loss or damage is suffered to a firm's own tangible property or to property for which the firm is responsible. Traditionally, this meant damage to a building or other business property, including computer equipment. In the mobile commerce world, the focus is on damage to computer networks and, more importantly, data. An important issue is whether data is considered tangible property under a typical property insurance policy. It appears that insurers will begin to address the issue of what is defined as covered property under these policies. More likely, courts will have to decide this issue.

Property losses can also occur when an organisation's intangible or intellectual property is infringed or violated. Copyrighted materials can be copied without permission, trademarks can be infringed upon or diluted, and patented property or ideas can be stolen. Today, a firm's intellectual property may be its most valuable asset (Deise et al., 2000). Organisations need to protect their intellectual property from hackers, crackers, competitors, and others, as well as make sure they do not infringe on the intellectual property rights of third parties. This could potentially expose a firm to third-party liability.

Time element losses typically include business interruption (BI) losses and service interruption losses. BI loss is the economic loss resulting from the interruption of business activities. Business interruption losses may result from the inability to access data, the theft of data, or a threat to the integrity of the database. For example, a security breach of a credit card database may cause the database owner to curtail activity on the system until a damage assessment is completed and the system integrity is re-established. Not only is there a disruption of the database operations, there is also a consequential effect on all third-party users of the system.

Service interruption losses include economic losses associated with the interruption of utilities. A service interruption incident can occur from an "off-site" exposure or event. There have been many incidents of communication cables inadvertently being cut. Long-distance telecommunication companies have experienced software problems in data routing that effectively crippled their networks for several days.

In addition to the business losses and service losses, mobile commerce gives rise to new implications about doing business and being protected from interruptions in doing business (Arena, 2000). Businesses suffering losses related to server outages face the risk of losing customers for extended periods of time. In mobile commerce, the increased reliance on suppliers is also exposing businesses to new risks for financial losses. These range from suppliers of goods (such as raw materials) to suppliers of services (such as server usage, delivery services, electricity, and telephones).

Business interruption may have several consequences - e.g., loss of income; extra expenses to recover; loss of customer, partner, and shareholder confidence; and, ultimately, reduced market capitalization. Third parties harmed by the denial of service may sue, adding liability losses to first-party damages. In some cases, business interruption may constitute a breach of contract.

According to Lee (2000), service denial may cause a customer business interruption, network suspension, or a disruption in or delay of services. Service denials may result in damage claims or lawsuits for breach of contract.

EXPENSE INCURRED BY ORGANISATIONS DUE TO BUSINESS INTERRUPTIONS

In the event of an interruption, a business may incur extraordinary expenses to resume operations as quickly as possible. Extra expense coverage is for those costs incurred by the policyholder in excess of the normal costs that would have been incurred to conduct business during the same period had no loss or damage occurred. An example of extra expense might be increased freight charges incurred to meet a customer's demand for an order due to delays in the production process associated with a loss event.

In the mobile commerce area, there are new types of costs that may need to be considered in the context of risk and insurance, including additional costs of operating Web sites from alternative servers, costs of operating Web sites through alternative providers, costs to repair Web sites damaged by hackers or equipment failures, and costs of rebuilding other lost information (Lewis, 1999). Thus, various security risks arising from a combination of issues warrants a closer scrutiny for assessment of an organisation's IT requirements in order to facilitate a secured financial transaction.

ASSESSMENT OF ORGANISATION'S IT REQUIREMENTS

In order to guarantee security of transactions in mobile commerce, initial assessment of an organisation's IT requirement is essential for a number of reasons (Langley, 2000). These include the ever-changing customer requirements, changing hardware

and software platforms, dynamically changing user needs and user experiences gained from the innovative IT products. Therefore, such an assessment involves four key components of mobile commerce. They are (1) Embedded computers in many everyday objects (Hayward et al., 2000); (2) Next generation wireless networks (Gerrard, 2000); (3) Interfacing technologies for bi-directional communications (Dang, 2000a); and (4) design of application that satisfy user needs (Dang, 2000b).

The first key component arises from the need that there are going to be more wireless devices by 2005 and the prediction is that by 2005, mobile devices will outnumber wired devices (Koller, 2000). These mobile devices would consist of some form of embedded systems in them and hence the allocation of priority. The next component follows from the first one which highlights the need for networks to go wireless in order to support the concept of mobility and hence mobile devices. Users communicate via a number of different mobile devices and hence the bi-directional communication aspect is essential for an organisation to ensure transactions are reliable and secure. Finally, to accommodate diversity of user needs, applications assume a key component role in mobile commerce.

With these four key components in mind, when organisations' IT requirements are assessed, importance should also be given to 'user experience'. In mobile commerce environment, these user experiences typically involve cameras, music and other emerging innovative technologies such as positioning systems and hence organisations should find a way to accommodate these ever changing user experiences. Organisations would then be tempted to add additional hardware and software resources to their existing infrastructure but this will increase the financial burden of an organisation. One emerging suggestion appears to be the consideration of 'interface' facilities to enable sharing other third-party resources. This requires address and connectivity mechanisms that do not exist today. While recent newspaper articles forecast such capabilities are emerging, the bigger challenge for organisations is to create applications that truly have this multi-modal, multi-channel character because it is believed that the immediacy of wireless technology is great.

With this scope in mind, if we analyse an organisations' IT infrastructure, then we would be able to bundle business needs to support secure transactions into four main groups. They are:

1. Technical infrastructure that can identify what is IT made up of in an organisation;
2. Physical components of IT that can identify how these components support various workflow requirements in an organisation;
3. Logical components that can identify how IT components support various business processes; and
4. Real time measurement and control of security and service levels in real time.

While the first three points provide essential components of an application architecture in an organisation, the fourth point provides the control and maintenance components of the application architecture. This real time control is essential in mobile commerce because of the difficulty in describing complete security architecture to ensure security of transactions.

THE ARCHITECTURE

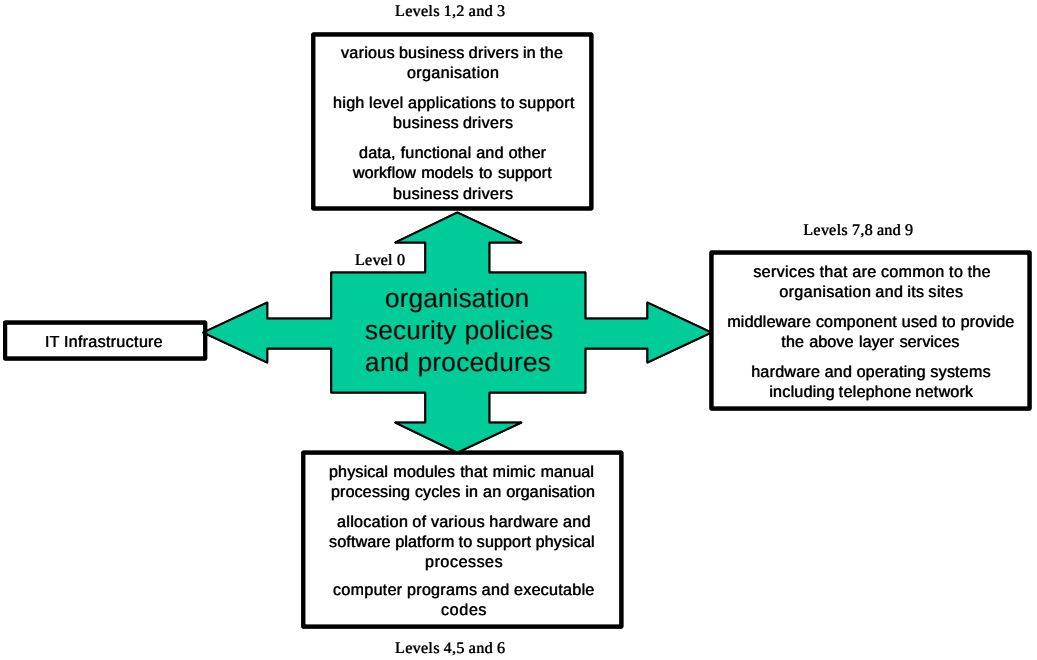

Diagram 1: The Architecture

DESCRIPTION OF THE ARCHITECTURE

The architecture consists of 10 levels, starting from level 0. The level 0 is where all security policies to ensure transaction security is dealt with. This is a management component and independent of organisation's IT infrastructure. This is because in the mobile commerce environment, due to changing user needs, it is difficult for the security officer alone to ensure reliability of transaction. It is essential that the business managers assume the overall responsibility with security officers providing necessary infrastructure because business managers know the various process involved in conducting financial transactions. This view is quite different from the current electronic commerce environment where security officers are responsible for data and information security. While this may be possible in a wired environment, due to importance given to the information and the origin of it in a mobile commerce environment, the view is totally different. This new view will also enable organisations to align their business processes with proper security policies as it will be difficult to track users in a mobile commerce environment due to the possibility of 'roaming'.

Further, in mobile commerce environment, users, systems and transactions change rapidly and unpredictably. This requires organisations to accommodate these needs and yet provide reliable and secured transactions. The current static authentication and authorisation is becoming out of use in mobile commerce and the new dynamic

privilege management is becoming an essential component. Therefore, risk management associated with organisations' IT security also need to be dynamic and in real time to react to incidents and also to address potential threats more pro-actively. In essence, level 0 of the architecture will ensure that customers, business partners, and other stakeholders of a transaction such as banks and governments interact directly with these business applications and their IT environments, especially mobile environments. This level 0 architecture will ensure that the transaction environment is up and running, reliable and secure.

The levels 1-3 puts the customer first and specific to business needs. At this level, several independent business activities are integrated through IT applications to ensure data, functions and workflow modules of various business needs in an organisation is synchronised. Due to increasing demands from customers, the visibility and interaction across the supply chain to the customer is essential in mobile commerce. Therefore, manual sub-transactions usually found in a traditional transaction (including weaker electronic commerce models) need to disappear and levels 1-3 will ensure this happens in an organisation.

Levels 4-6 consist of the various physical modules to support the workflow. These levels also consist of 'code' needed to support workflow and integration of workflow. These levels are of extreme importance to business because this is where the integration of multiple segments of a business such as CRM and SCM takes place. Further, due to the physical nature of IT components, this is where the existing resources are integrated with new resources. To establish financial security, the levels 4-6 need to be maintained properly because the transaction is split into multiple components at these levels before the transaction is processed. Further, when the transaction is split into component sub-transactions, each of the sub-transactions may run on varied systems with different infrastructures. Organisations should focus their 'security' at this level for successful mobile-commerce at these levels.

The last three levels comprise of IT components in order to realise various combinations of business needs. At this level, IT components such as a computer are added to the existing infrastructure. While the previous levels (4-6) facilitate business needs, levels (7-9) actually implement them. Issues such as network speed, transaction completion time are essential characteristics at these levels. While the business performance is measured at the previous levels, response time measurement is conducted at the last three levels (7-9). These three levels are vulnerable to attack and implementation of security procedures starts at these levels.

DISCUSSION

When a financial transaction is facilitated in a mobile commerce environment, usually the consumer accesses the organisation's computer to search for appropriate details. Once the consumer is satisfied with his/her order, an order is placed. The consumer places an order using the infrastructure provided by the Internet storefront and using his or her payment method of choice. Once the order reaches the organisation, the transaction is processed. A number of security issues such as verifying the credentials of the consumer arise at this point. Provision for real-time security and connectivity from to authorise payment via the Internet or wireless medium forms an integral component of the transaction. The organisation involved in the transaction channels

the transaction through various financial networks such as banks, ensuring that customers are authorized to make their purchase.

While security issues are applied onto a transaction, usually client/server architecture for performing transaction processing is used. The client is installed on the organisation's merchant site by the third-party providing user authentication for financial details and this client is integrated with mobile commerce application. The client is usually pre-integrated with store management systems including for management reporting purposes.

For the purposes of transaction authorization, the client software establishes a secure link with the processing server over the Internet using an SSL connection, and transmits the encrypted transaction request. The server, which is a multi-threaded processing environment, receives the request and transmits it over a private network to the appropriate financial processing network.

Depending upon the consumer's financial status, the transaction is approved or denied. When the authorization response is received from the financial network, the response is returned via the same session to the client on your site. The client completes the transaction session by transparently sending a transaction receipt acknowledgment to the server before disconnecting the session.

The whole transaction is accomplished in few seconds, including confirmation back to the customer and the organisation. If the transaction is approved, funds will be transferred to the organisation's account. Once the transaction is confirmed, the transaction will be securely routed and processed. As proof of a securely processed transaction, both the customer and the organisation will receive a transaction confirmation number.
This can be shown using the following diagram (Diagram 2):

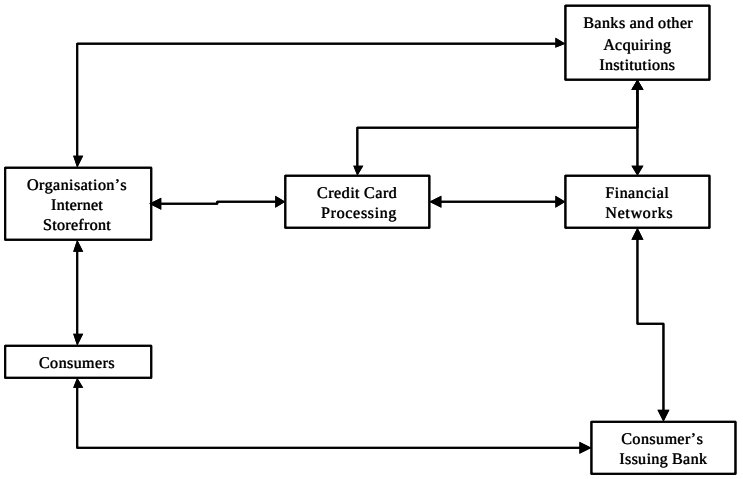

Diagram 2: Transaction Processing Cycle

The architecture described in this paper supports almost all the elements of the transaction that can be conducted in the organisation. The security aspects not only involve the organisational IT infrastructure but also third-party security levels in order

to approve a financial transaction. It should be remembered that consumers expect the organisation to facilitate a reliable and secure transaction and it is in the interest of the organisation that third parties involved in the transaction are reliable and capable of providing necessary security to consumer's transactional details.

While the above diagram portrays a complete financial transaction system, the following two diagrams portray the component that needs to be supported by an organisation. Components such as office systems etc form the levels 7-9 in the architecture outlined in this paper. Components such as databases etc would form the levels 4-6 in the architecture described above. Other components such as Business Logic Components form levels 1-3 in the architecture. The business processing for facilitation of transaction is also highlighted in the diagram below.

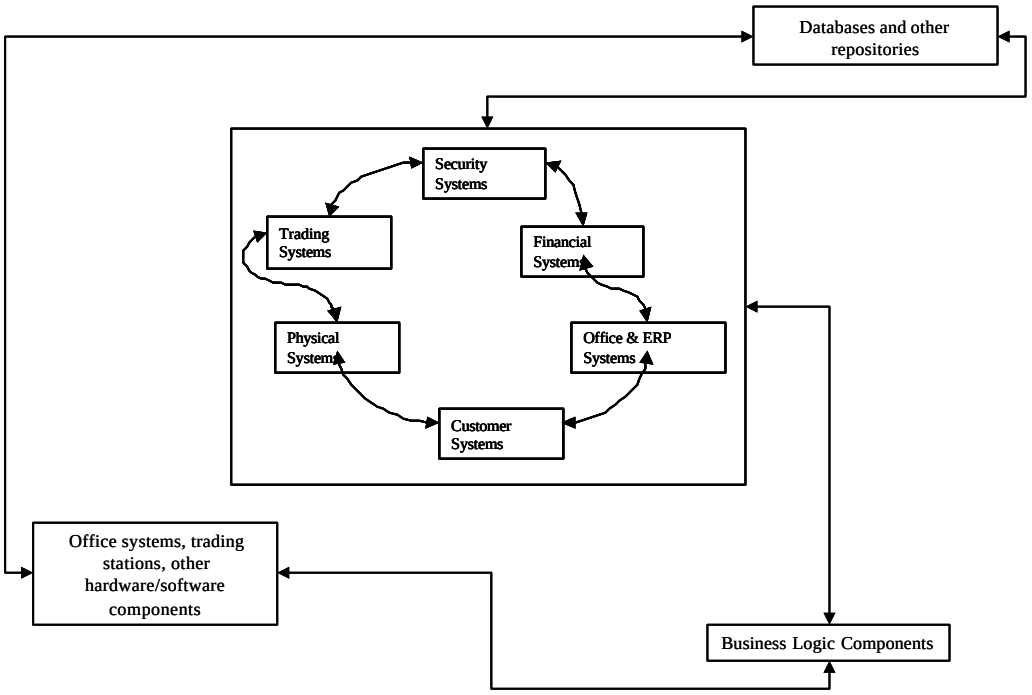

Diagram 3: Business Processing Facilitating Mobile Commerce Transaction

CONCLUSION

The architecture presented in this paper is an attempt to address various new security concerns in the emerging mobile commerce. The architecture is derived in order to accommodate various business processes as an integral component and security management encompassing these business processes. It is believed that this

architecture will assist in avoiding issues such as loss of transaction authenticity because the business process is integrated with the security procedures in the architrecture. Further, the business processes are kept in the centre of the archirtecture to enable transaction confidentiality and integrity from an organisational point of view. Further, the interdependence of various systems with in the architecture is expected to provide much needed real-time reaction to any causes of transaction unvailability in mobile commerce.

While the architecture is only a conception, the inclusion of business process along with IT security is expected to provide tight controls to management in terms of financial transactions. This is rapidly becoming essential in the competitve world of mobile commerce where the volume of transactions ensure healthy revenue to organisations. Therefore, the focus was set on transaction security and the architecture was conceived. It is hoped that this architecture helps organisations to get a head start to review their security procedures and establish a better control on financial transactions.

REFERENCES

Anonymous. (2000a, 15 August 2000). E-Commerce is growing. *The Australian*.

Anonymous. (2000b). Wireless technology reaches behind the firewall. *Informationweek.com*(June), 30.

Arena, A. (2000). Asian Internet start-ups invests heavily in dot.coms. *Australian communications*(February), 15-18.

Craig, J., & Julta, D. (2001). *e-Business Readyiness: A Customer Focused Framework*. Boston: Addison Wesley.

Dang, A. V. (2000a). *E-Business raises transaction security concerns* (Research Note): Gartner Advisory.

Dang, A. V. (2000b). *Four action items for E-Business: Transaction Security* (Research Note): Gartner Advisory.

Deise, M. V., Nowikow, C., King, P., & Wright, A. (2000). *Executive's Guide to e-Business: From Tactics to Strategy.* New York: John Wiley & Sons, Inc.

Dornan, R. (2001). *The essential guide to wireless communication applications.* Upper Saddle River, NJ: Prentice Hall PTR.

Fink, D. (2000). Developing trust for Electronic Commerce. In L. Janczewski (Ed.), *Internet and Intranet: Security and Management: Risks and Solutions* (pp. 44-86): Idea Group Publishing.

Gerrard, M. (2000). *Organising for E-Business: Getting it right* (Commentary): Gartner Advisory.

Ghosh, A. K. (2001). *Security and Privacy for E-Business.* New York: Wiley.
Hayward, S., Dulaney, K., Egan, B., Plummer, D., Deighton, N., & Reynolds, M. (2000). *Beyond the Internet: The Supranet* (Commentary): Gartner Advisory.

Hulme, G. (2000). Services Seeks to Bring e-Business to Small Businesses. *Informationweek.com, August 2000,* 21.

Judge, P. (1998). Little guys still say NO to the net. *Business Week*, 134.

Koller, L. (2000). Banks flirting with wireless billing. *Bank Technology News, 13,* 25.
Langley, N. (2000, May 11). Get moving on m-commerce. *Computer Weekly,* 68.

Lee, A. (2000). Small firms must take Internet plunge or risk being sidelined. *The Engineer, 10*(November 2000), 10.

Lewis, T. (1999). Ubinet: The ubiquitous Internet will be wireless. *IEEE Computer, 32,* 10.

Loney, M. (2000). M-Commerce safety fears. *IT Week, 3,* 6.

Schiller, J. (2000). *Mobile Communications.* New York: Addison-Wesley.

Shroeder, S. (1999). Wired for business. *Risk Management*(March), 12-22.

Smith, D., & Andrews, W. (2001). *Exploring Instant Messaging.*: Gartner Research and Advisory Services.

Stowe, B. (2000). Wireless networking looks attrative, but what about the cost of keeping it secure? *Infoworld*(May), 92.

Young, D. (2000). Handicapping M-Commerce: Getting ready for wireless e-commerce. *Wireless Review*(August), 24-30.

Zhang, Y., & Lee, W. (2000). *Intursion detection in wireless ad-hoc networks.* Paper presented at the ACM/IEEE MobiCom.

EMERGENCE FOR THE NEED OF NEW LEGAL AND REGULATORY ISSUES IN MOBILE COMMERCE

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ABSTRACT

Many CEOs and other enterprise executives are extremely interested in insights on what impact the existing and emerging legal frameworks will have on Mobile Commerce in order to develop enterprise's management strategies. One aspect that has emerged in this area in recent months is the behaviour of workforce that conducts business operations with mobile devices such as mobile telephone and wireless computers because the mobility has removed the distinction between private and professional lives and workplaces in recent months. Further, the concept of 'globalisation' in IT has triggered the workforce to switch roles between private and professional lives, locations and 'work time' according to external conditions and adapt their work styles according to the demands placed by the dynamic working conditions supported by mobile commerce. While these aspects are considered 'flexible', enterprises need to support their mobile work force with devices, tools, processes and collaborative internal and external frameworks. In real life environment, some of these frameworks may conflict with domestic and international laws, union agreements and other individual employment contracts. In mobile commerce, these issues also vary by region, depend upon varying domestic and international legal frameworks, economic conditions and cultural attitudes. This paper provides a discussion on these emerging legal and regulatory issues in the area of mobile commerce.

INTRODUCTION

In the context of fixed work environment such as physical office locations, legal and regulatory issues associated with work, health and safety are well regulated in most Western countries (Deitel & Deitel, 2001). In Australia, regulations[1] exists for long service leave payment, workplace agreements, issues concerning employee contracts, and for wages and conditions. These regulations comprehensively details workplace agreements between employees and employers, details concerning minimum employment conditions, state legislations governing labour relations and better practice for small businesses.

While these issues are regulated in the context of physical work environment, the relevance of those regulations to an extended workplace, such as a mobile work environment, is currently unresolved (Atwal, 2001). For example, some devices used

[1] www.law.gov.au provides details of these

by mobile employees have raised worries for possible health hazards in recent months. These hazards are more likely connected with their use rather than the device itself. One example that is readily coming to one's mind is the use of cell-phone while driving a car or crossing a street and this could be lethal. Therefore, there is a necessity to introduce new regulations to avoid any potential damage to public, employees and organisations. This paper provides a discussion on the necessity for the emergence of new regulations to address issues arising from the mobile workforce.

WIRELESS WORKFORCE and WIRELESS OFFICE

The current penetration of mobile devices has given raise to the definition of the emerging needs of the mobile workforce and some form of classification to identify them. A close look at the usage of mobile devices shows that workforce uses mobile devices to remotely access organisational data, devices used to gather information or knowledge needed to conduct one's work and executives using their mobile telephone and computers fitted with wireless protocols to communicate with others for decision making purposes. Therefore, it is possible to identify three distinct group of workforce, namely, (1) fixed remote worker, (2) knowledge worker, and (3) executive with access to mobile services (Atwal, 2001).

A fixed remote worker is a worker who predominantly uses a desktop in the office or the home. This worker typically accesses emails and other data using remote access using the Internet. A major concern with this type of worker is associated with data and how to integrate the data with corporate databases. In terms of legal issues, privacy and confidentiality of client data stored inside the computer hard disks of these employees is important.

A knowledge worker is primarily a corporate worker in a large, corporate complex. This worker captures client data and other data associated with the organisation to conduct his/her work. In terms of legal issues, the way in which the data is collected and used is important.

The executive with access to mobile services is a worker for whom travel by road or air is a primary requirement. In certain countries such as Australia, passengers can't use mobile telephone without proper hands-free sets while travelling. While issues such as these have legal significance, location identification devices associated with mobile devices also are important because of potential security threats based on location identification.

Common to the three types of worker is the notebook PC, a mobile telephone and a PDA (Smith & Andrews, 2001). The three groups of mobile workforce use these three dominant platforms for both content creation and content access. The content creation involves initiating a simple conversation for data gathering purpose. The content access involves accessing different data repositories to verify either client data or organisational policies. Competition for the role of primary client device has come predominantly from the mobile phone sector, but remains limited to voice and short-message service (SMS) messaging. According to Gartner Research, data access is one of the major promises of Wireless Applications. While data access is restricted to limited services in the current climate, issues arising from these data access by the

three work groups need urgent consideration. This paper provides insights into such emerging issues.

It has been difficult to justify providing workforce with some form of mobility, because the total cost of ownership is very expensive (Foong & Desai, 2001). This involves redefining the corporate network structure to include wireless networks and antennas. One main reason for the introduction of notebook PCs with mobile access is to provide location independence to employees. For example, an insurance agent with his notebook computer fitted with wireless services may be able to access corporate up-to-date information. However, mobility within the office has been restricted because of the cost of providing surplus fixed-access points to facilitate additional network connections. Organisations find it difficult to justify the investment and hence are reluctant to invest in this direction.

Recent development in the area of wireless protocols has seen the emergence of wireless capabilities in the office (Atwal, 2001). Wireless networks in the office are currently being driven by the emergence of the Institute of Electrical and Electronics Engineers' (IEEE's) 802.11b wireless LAN (WLAN) specifications as an initial standard. This technology will allow knowledge workers to access corporate data from any location within their normal work environment. The impact of this access is the capability of enterprises to have a workforce that is connected always. Further, a number of research studies in the past have singled out the email application as the most used Internet application and this vital method of communication will facilitate access to corporate users resulting in significant productivity gains. The reason for this is, there is no need to identify a telephone or network connection to establish email connections in the wireless medium and the workforce can communicate using email applications. Further, with the advent of email response management software (ERMS), it is possible to interact with the corporate databases using emails and this will provide the most needed data access.

This will ensure that enterprises will invest in a Wireless LAN (WLAN) to reap the benefits of productivity gains. Further, costs have now declined, interoperability is much better and access is faster ensuring that WLAN can easily give enterprises a competitive advantage (Goh, 2001).

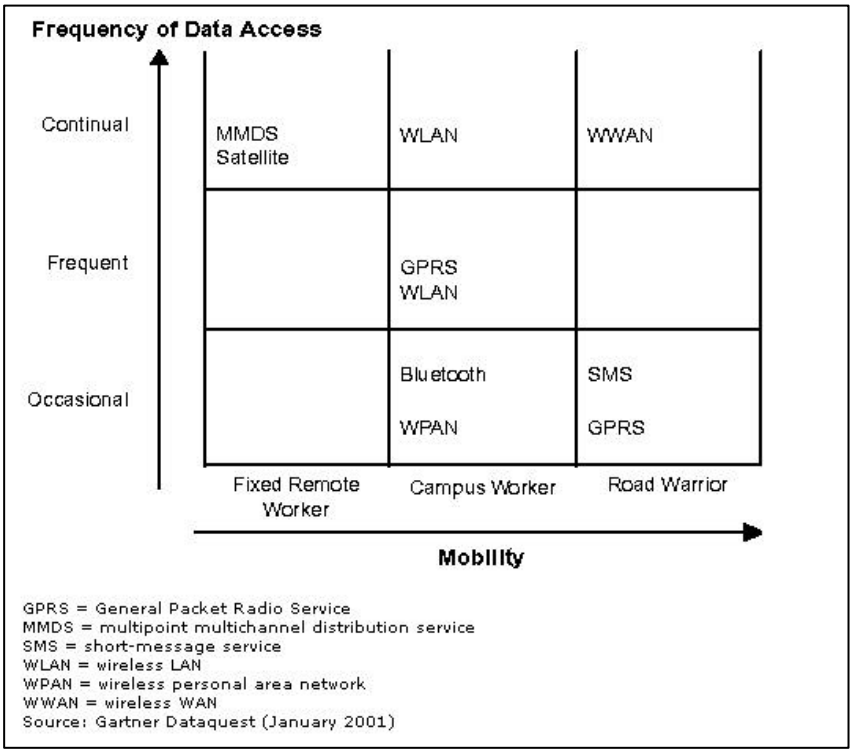
However, enterprises will have to cater for different types of wireless technology depending on workers' different levels of mobility and the frequency with which they access data. The following types of technology (grouped under the type of network required for connectivity) are currently the most important (Smith & Andrews, 2001; Weaver, 2002):

- A wireless personal area network (WPAN) for wireless transmissions such as radio or infrared instead of telephone lines or fibre optic cable to connect data devices.
- Bluetooth[2] is ad hoc, wireless interface with speeds of up to 1 Mbps and a range extending to 30 feet. Its primary functions are to normalize the data sets of multiple devices through synchronization and ad hoc device networking, including access to network peripherals.

[2] Bluetooth is a mobile communication protocol

- A WLAN is a high-speed LAN solution that supports speeds of up to 45 Mbps and a range of 300 feet.
- IEEE 802.11b: The IEEE's standard for WLAN interoperability. Fast data transmissions of up to 11 Mbps will be possible. Mobile users can get Ethernet levels of performance, throughput and availability.
- A wireless WAN (WWAN) includes multiple voice/data technologies, such as GSM. A WWAN typically has a range of about three miles.
- SMS: electronic messages on a wireless network.
- General Packet Radio Service: a "second-and-a-half-generation" technology being implemented in GSM networks that may offer wireless data access speeds of up to 144 Kbps in end-user devices.
- Multipoint multi-channel distribution service: a wireless technology used for broadcasting, personal communications and interactive media services.
- Satellite: a wireless device that uses a mobile satellite service to send voice and data.

The following diagram is adopted from Gartner Research to depict the above wireless technologies by the frequency with which different types of worker need to access data.



Mobile Workforce Legal Issues, Risks and Actions

A key element in organization is the ability to manage a mobile workforce that is geographically dispersed and with blurred borders between private and professional lives and workplaces. Further, employees need to switch roles, locations and "work

time" according to external conditions, and adapt their work styles accordingly. This requires the enterprise to provide them with devices, tools, processes and collaboration frameworks (internal and external) that may conflict with laws, union agreements and individual employment contracts.

Issues that must be faced to minimize mobile workforce risks vary by region, depending on legal frameworks, economic conditions and cultural attitudes. They include, but are not limited to multi use of mobile devices, location based mobile services, electronic appraisal, work time, and content & communication liability (Atwal, 2001). These are discussed below.

Multi Use of Mobile Devices

Employees in organisations use a multitude of devices such as cell phones, laptops, "palmtops" and a host of new portable devices as part of the normal toolset. The current practices of these devices include the use of these devices for personal use. In many organisations, this is tolerated. However, this personal use must be monitored closely for cost and liability. If these devices are not monitored properly, organisations need to pay a heavy cost for usage pattern or for liability resulting from the improper use of these devices. While most enterprises appreciate the cost reason, however, seem to miss the liability aspect, such as if a device malfunctions during private use and causes physical or financial damage to a worker. For example, a positioning device transmits the wrong location coordinates or an ineffective antivirus allows personal files to be damaged. Depending on whether the worker is acting during or outside working hours, liabilities could be very different. Orgaisations should be wary of issues associated with consumer protection and employment laws.

Location-Based Mobile Services

Location based mobile devices identify a person based on their location. Due to changes in the privacy policy, considerable privacy concerns are raised by the use of these devices. A key asset of mobile services is exploiting information about where a specific user is located when the service is requested. This asset is well exploited in the marketing segments. As far as enterprises are concerned, the data arising from the use of such location based technologies and service is less-sensitive in terms of their employees movements. However, for customers and consumers this may become very sensitive as the technology discloses the location of these people. In certain cases, these customers would like to uphold the anonymity of their locations. Therefore, legal issues associated with privacy legislation need to be understood by organisations before executing certain options for data collection using location identification technologies.

There is another concern for organisations in terms of employee locations. Organisations must consider that the ability to continuously monitor an employee's location may not be well received, especially for multi-use devices. Even when the location-finding function can be switched off, employees may feel compelled to disclose their location, which can create potentially contentious situations, especially in highly unionised enterprises and sectors. On the other hand, readily locating the workforce is very important for an organisation.

Electronic Appraisal

The advent of wireless applications facilitate employees to move away from their fixed location and provides abundant freedom. Employees' mobility and their freedom from enterprises' physical premises suggest that employers should make greater use of technology for performance assessment. This concept is emerging at the moment. In the future, it appears that, electronic appraisal will be integrated with physical measures. It appears that such appraisal methods will become accurate with wider adoption of new wireless and mobile devices and applications. However, in several European countries, electronic appraisal as the sole means to evaluate employees is illegal. Data protection laws in several countries discourage this practice. Therefore, increased reliance on electronic appraisal may expose enterprises to significant tensions with unions.

Work Time

In countries like Australia, the maximum work time is regulated by the legal system. However, it should be possible for an organisation to call upon employees who at different times from different locations, and who can work overtime with flexibility. In most cases, organisations in Australia employ external contractors rather than with full-time employees to achieve flexibility. In Australia this is done to keep a close watch on salaries etc. On the other hand, trust and training concerns suggest that enterprises will use their own employees to react to emergencies. When it comes to mobile workforce, due to the undefined definition of working hours, issues such as what constitutes over-time, how it is calculated, what is normal working time etc will arise. Currently the union agreements are not addressing these issues satisfactorily.

Content and Communication Liability

One of the greatest advantages of mobile technologies is that employees can organize themselves into "virtual communities," sharing information and ideas through instant messaging or chat systems/forums. In fact, the Bluetooth protocol for wireless communication is developed primarily for these ad-hoc networks. It is possible for employees to manage these networks outside the boundaries of the enterprise and into the public domain using tools[3] such as Microsoft Network Messenger. While the technology facilitates such ad-hoc communication easily, significant personal and enterprise liability risks occur when the border between private and public use is blurred where there is possibility for misuse of sensitive information, and with potential clashes between public-system and enterprise codes of conduct. The misuse can happen either by ignorance or deliberately by certain un-trusted parties within the network. There is no regulation to prohibit these currently.

While the above paragraphs portray the potential legal problems, how to mitigate these risks is of interest to organisations. The following paragraphs provide a discussion on these.

[3] Other tools include AOL Instant Messenger, or private chat rooms hosted by public server such as Yahoo.

ACTIONS TO TAKE TO MITIGATE RISK

The first issue that is of interest to organisations is the 'remote workplace'. In addition to a number of technical and management issues highlighted in this area, an emerging issue is the non-compliance with local health and safety regulations. For instance, organisations may not have direct control on the remote user because of the remoteness of the user. Certain simple actions such as providing the employee with written advice about how to set up his/her home office may protect an organisation from any potential legal complication. Organisations can extend the insurance policy for the employee to include coverage for the home office issues. While the concept of extended insurance is not new (certain executives in countries like India are automatically covered for their home office by organisations), organisations policies need to be reviewed to cover the mobile workforce operating from a remote location.
The second risk arises from the multi-use of organisations resources such as mobile phones for personal use and other uses. The risks emerging from these types of use include illegal private use, costs, monitor and privacy implications. Organisations need to carefully review their policies and make employees to sign an agreement of compliance with these policies. It may be a good idea for organisations to review their fiscal policies and union agreements to address issues arising from the multi-use of organisational resources for private use.

In terms of location-based services, especially in the mobile commerce area, risks include privacy issues and surveillance. Organisations may benefit by classifying services and any privacy impact on those services and then disclosing the location of these services to employees in order to educate them. It may also be a good idea that organisations continuously monitor only risk areas and agreements with unions in this regard will ensure smooth operating environment. Other location-based services should be monitored only for the purpose of communication and not for policing the employees.

In the context of electronic appraisals, agreement with unions will ensure that the resistance is minimised by employees. One side effect of this method is the possibilities of issues arising from data protection laws. How do organisations plan to keep the appraisal data protected? Clear organisational policies are needed in this regard. If the policies are not clearly formulated, there will be problems from unions and the entire issue will be come sensitive.

Risks with work time issues involve possible conflict with work time laws and union agreements. Organisations may wish to employ contract employees to avoid sensitive issues here, however, this si not the correct solution. Again, organisations need to understand employees' work pattern and device proper formula to accommodate changing work practices.

Finally, with content and access issues, possible risks arise from recent changes in privacy laws in various countries. While it is difficult to dictate employees as to what can be discussed and accessed using mobile technologies, it may be a good idea to have proper education and training to highlight the sensitive issues involved with content and access of information using mobile technology. An external person may be brought in to provide training and impart necessary knowledge to highlight the risks involved. In Australia, certain corporate sector organisations use an external

person to highlight the risks involved in the improper use of emails to their employees and this process appeared to be working well in minimising the improper use and access of email communication.

IMPACT OF EMERGING MOBILE WORKFORCE REGULATIONS ON SMEs

In Australia, 'flexible work arrangements' are recognised by many state governments and organisations to reflect the diverse needs of employees. One main issue addressed by this 'flexibility' is home based work recognising the fact that certain group of employees work greater 'out of hours' with the use of computer resources such as real estate agents. In Western Australia, regulations state that employees are provided with a safe working environment (by organisations) in accordance with the Occupational Health, Safety and Welfare Act, 1984. This act states that the employer has the same obligation (as far as practicable) when the place of work is also an employee's home.

In this context, a number of issues impact SMEs. For example, a mobile workforce controlled by an SME need to comply with these regulatory issues in Western Australia. Some general issues that come to one's mind is security of computer equipment and insurance policies. How does the SME plan to control these two? To be effective, SMEs need to hire 'inspectors' to ensure that home office is properly established and according to government standards. This will cost money and on occasions, may cost more than the revenue generated from home-based activity.

Another concern for SMEs is the issues of reimbursement of expenses. For instance, mobile workforce would uses own computing equipment to conduct business from home after office hours. SMEs need to reimburse expenses incurred by this mobile workforce. These expenses include security to home office, insurance charges, access to home office and use of communication equipments such as modems. Clear policy is urgently needed to address these issues.

In addition to these trivial issues, management should consider policy making in the issues mentioned in this paper: multi use of devices, location-based services, electronic appraisal, work time and content & communication liability. Employees of mobile workforce should be educated to keep time records as some of them may claim over-time salary. Employee performance agreement should include work conducted from home. While current performance indicators are based on departmental performance system, in many organisations, work conducted from home or work done at home is not fully recognised. In case of SMEs this may become an important issue because many SMEs in Australia operate from home premises.

Another emerging issue is that of 'dependent care'. Current legal regulations have little understanding of the consequences of home-based work with dependent care. The emergence of mobile workforce may warrant a close examination of how the work and dependent care can be combined in order to provide a true flexible environment.
Finally, the question of 'job characteristics' needs a new form of definition to accommodate mobile workforce as more and more SMEs will use the emerging

mobile devices to conduct their daily businesses. The job characteristics should include the following:

- High degree of intellectual capability;
- Clear definition of areas of individual work;
- Work that has performance measurement indicators; and
- Work that does not need frequent input from other staff or central facilities.

CONCLUSION

Exploiting the flexibility of a mobile workforce to achieve organisatinal objectives requires a number of trade-offs. Some of the trade-offs include current regulatory and union-related constraints in addition to assessing the enterprise's liability for employee misuse of devices, tools and processes. Organisations should follow these tactical guidelines in conjunction with obtaining legal counsel to assess their exposure to different categories of liability, set policies and enforcement processes, and minimise risk. If this not done properly, the emergence of new technologies such as mobile communication, will not be properly managed by organisations.

REFERENCES

Atwal, R. (2001). *The wireless office: Evolution, Revolution or Bust* (PCIS-EU-DP-0101): Gartner Research.

Deitel, D., & Deitel, N. (2001). *e-Business and e-Commerce - How to program*. New Jersey: Prentice Hall.

Foong, K., & Desai, K. (2001). *Wireless Services: India* (Operational Management Reprot DPRO-90802): Gartner.

Goh, E. (2001). *Wireless Services: China* (Operational Management Report DPRO-94111): Gartner.

Smith, D., & Andrews, W. (2001). *Exploring Instant Messaging.*: Gartner Research and Advisory Services.

Weaver, H. F. (2002). Prospects for C-block settlement dim, despite senator's efforts. *RCR Wireless News, 21*, 5.

HOW MANY ENTREPRENEURS SHOULD THERE BE IN CHINA? GLOBALISATION, AND ENTREPRENEURSHIP DENSITIES IN APEC AND EUROPE[1]

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ABSTRACT

It is a characteristic of most developed economies that they have about one entrepreneur-manager for every 20 people. However less developed economies, especially China, have far fewer entrepreneur-managers with private sector entrepreneurial experience. This paper reviews evidence from the economies of two main free trade areas; APEC and the European Community. It is shown that there is a complex correlation between the density of entrepreneurs, and the level of per capita income, unemployment levels, and GDP growth. It is argued that for China to compete in an environment of freer trade (which it is now committed to) it will need to create about 50 to 60 million more entrepreneurs over the next ten to twenty years.

INTRODUCTION

Faced with globalisation pressures, most governments now have two key economic priorities; the creation of jobs, and the continual competitive renewal of the enterprise base. The creation of new jobs is necessary to deal with unemployment, where many jobs are lost to international competition and rising productivity. The competitive renewal is necessary in a world where knowledge and intangible investment is an increasing source of competitive and comparative advantage. These issues are particularly important to the governments in the European Community and APEC economies. Europe has been moving down a path of economic and monetary integration for many years. The APEC (Asia Pacific Economic Cooperation) economies have committed to the removal of trade and investment barriers by the year 2020 for all economies, and by 2010 for the more developed economies.

Entrepreneurs are recognised as a major source of innovation, and SMEs are well recognised as effective job creators. For those economies for which there are reasonably accurate statistics, about 70% or more of net job creation comes from SMEs (Hong Soon-Yeong, et al (1999), Australian Bureau of Statistics ABS 8141.0 (1997-98, 1998 - 99); Australian Bureau of Statistics (1997), Analysing the Business Growth and Performance Survey; New Zealand, Ministry of Commerce (2000)). Most of the job creation seems to come from a relatively small set of fast-growth SMEs (OECD SME Outlook (2000)). Each SME needs an entrepreneur-manager to get it started and to manage the creation of the wealth, jobs and growth. Although most of the growth comes from a small set of successful entrepreneurs, it is very hard to predict where these fast growing firms will emerge. Consequently, the policy

[1] A similar paper to the one presented here has appeared in the June 2002 issue of Small Enterprise Research.

of "picking winners" is now largely discredited. Instead, many governments seek to create an environment conducive to entrepreneurship, start up and growth. By analogy, the reasoning goes, larger and more fertile the "garden" of entrepreneurs and SMEs, the more likely it is that the economy will prosper. The question this paper addresses is just how many plants *should* be growing in the garden?

HOW MANY SMES SHOULD THERE BE IN THE GARDEN?

Europe and APEC together have a total population of more than about 60 million SMEs (Hall (2002b, Hall 2002a), ENSR (1996, 1999)). As a rule of thumb, most developed economies have about one SME, and by implication about one active entrepreneur-manager, for every twenty people in the general population. This means that in a random sample of 20 people in any developed economy, there is likely to be one entrepreneur in the group. The entrepreneur ratio is the total number of SMEs divided by the total human population in an economy. A higher entrepreneur ratio is thus the equivalent of a higher density of entrepreneurs in the population at large. Although there are variations, these entrepreneur ratios are fairly consistent across all the developed economies. Table 1 shows the ratios for those APEC economies, and table 2 for those European economies, for which there are reliable data. The overall ratio for APEC 2010 economies was 1/19.6 in 1990, and 1/18.6 in 1998. The APEC 2010 economies are those more developed economies which are committed to free and open trade in APEC by the year 2010. They are indicated by *italics* in the tables. In Europe the overall entrepreneur ratio was 1/22.6 in 1990 and 1/19.4 in 1998. This suggests some sort of benchmark entrepreneur ratio of about 1/20, (or about 5%) for developed economies which has remained fairly stable for the last decade in both APEC and Europe. More pertinently, if we look at the average ratios for those economies which can be considered as major leading economies (eg the G8), the ratio is usually between about 1/15 and 1/25. It suggests that there *should* be a density of about one SME, and thus one active entrepreneur manager, for about every 20 people in the general population in a developed economy. However, the density of entrepreneurs is much lower in some developing economies, notably China.

INSERT TABLES 1 and 2

Understandably, this entrepreneur ratio depends on how one defines and measures the two variables; the number of entrepreneurs, and the relevant population. There are four main considerations in dealing with this:

1. Measuring the number of SMEs is only a proxy measure of the number of entrepreneurs in an economy, however each SME has to have a manager, and for most SMEs that manager will be the entrepreneur. The most obvious problem is that the definition of an SME varies widely; in Europe it typically includes firms employing up to 250 people, up to 300 in Japan and 500 in USA. Firms with several hundred employees are usually run by a management team, not by a lone entrepreneur. However, the vast bulk of SMEs are quite small. In 1998 in Europe for example, over 92% of the 19.5 million enterprises employed less than 10 people. In APEC, similarly, there were about 45 million SMEs in 1999, and although there is less precision in the statistics, 75% of them employed less than 5 people, and 95% employed less than 20 people (Hall (2002b). In these smaller SMEs, the manager owner, and entrepreneur are likely to be the one person, so the measure of SMEs is a good proxy for the number of active entrepreneurs. As it turns out, recalculating the entrepreneur ratio so as to exclude larger firms (ie those employing more than about 20 people) does not have much

effect. Disaggregated data on firm size is difficult to get in any consistent form in APEC economies, because there is no statistical standard. Some economies classify the size classes as 0 - 10, some 1 - 5 and so on. For Europe, Eurostat has been progressively standardising size categories over the last decade, and so there are more reliable data. The total entrepreneur ratio for Europe in 1998 for firms employing less than 10 people was 1/21.1, as against 1/19.4 for all SMEs.

2. What is more of a problem is with the way the official statisticians deal with self employed or non employing enterprises. Official statistics on the number of SMEs often exclude these firms, because they are difficult to count, and may not have a formal legal status or incorporated entity. For example, official SBA statistics for the number of SMEs in USA usually exclude non employing enterprises. The official statistic for the number of SMEs in USA in 1999 was 5.6 million. Against a US population of 267 million people, this gives an entrepreneur ratio of about 1/47, well above the 1/20 benchmark. However, there really are about 16 million SMEs in the USA if you include non employing enterprises. The US Internal Revenue Service counts tax returns. Each business is supposed to file a separate return (or Schedule C, which is attached to the individual or joint return, in the case of nonfarm sole proprietorships). The IRS published data shows 17.4 million individual returns with nonfarm sole proprietorship income in 1998. Based on an estimate of about 16 to 17 million SMEs in USA, the entrepreneur ratio is about 1/17, which probably better represents the reality of entrepreneurship in USA relative to other economies. Wherever possible in the this paper, non employing enterprises are included in calculating the entrepreneur ratio, but this is not always possible. For example, in Singapore the entrepreneur ratio is 1/57, suggesting a much lower density of entrepreneurs than might be expected, but this is at least partially due to the statistician not counting manufacturing enterprises with less than 10 employees.

3. Measuring the number of SMEs as a proxy for the number of entrepreneurs misses the "latent" or "nascent" entrepreneurs. The Global Entrepreneurship Monitor (Reynolds et al, (1999, 2000)) has shown that at any given time about 10% of the adult population in the USA is attempting to start a new business, while the entrepreneur ratio for USA suggests about 5.8% (or about 1/17) are actually running a business as an active entrepreneur-manager. The nascent figure ranges from a maximum of about 12% (Brazil) to a minimum of about 1% (Japan). The entrepreneur ratio of 1/20 suggests that on average, about 5% of the total population succeed, and become entrepreneur managers. The benefit of the entrepreneur ratio is that it is based on data which are reasonably reliable and available from official sources in most economies. Used in combination with nascent entrepreneur estimates (which have to be gleaned from survey data and are thus more difficult to obtain) they can give a useful insight as to the overall pattern of aspirations and reality of entrepreneurship.

INSERT TABLES 3 and 4

4. Measuring the population poses some problems too. The entrepreneur ratio figure in tables 1 and 2 is based on the total population. However, if only the adult population, above age 15, is considered (which implies that those of school age are unlikely to be entrepreneurs), then the benchmark ratio is about 1/15 for developed economies in APEC (see table 3) and a little higher for Europe (table 4). This implies that about 6.6% of the adult population are entrepreneur managers in developed economies. Because many of the less developed economies in APEC have a larger proportion of young people than the developed nations, the average ratio rises sharply for them. For example, in 1998 China had an

entrepreneur ratio for the total population of 1/153 and this rises to 1/113 for the population above 15 years of age.

Hypotheses - increasing the density of entrepreneurs increases GDP per capita and decreases unemployment

If there *should* be about one active entrepreneur for every 20 people, what does this say about those economies which are very different from this standard or benchmark? It is very clear that some of the less developed economies have very low entrepreneur densities, implying that they have a distinct shortage of active entrepreneurs. Does this mean that increasing the number of entrepreneurs (ie increasing the entrepreneur ratio) in an economy is good for the economy? We have no real way of telling, but *a priori*, we might hypothesise that as the entrepreneur ratio (however it is measured) increases, then, other things equal:

- GDP per capita should increase, because there are more entrepreneurs active in the economy, and entrepreneurs are creators of wealth;
- Unemployment should decline, because more active entrepreneurs should lead to more net job creation; and
- GDP growth should tend to be higher, because entrepreneurs are contributors to innovation and growth.

Clearly there are many factors, other than the density of entrepreneurs, which affect GDP per Capita, Unemployment, and GDP Growth. Even so, table 5 gives the correlation coefficients between these variables and the entrepreneur ratio across fourteen of the twenty one economies for which there are reliable data in APEC, for the sixteen European economies, and for thirty of economies of both APEC and Europe combined. The entrepreneur ratios used are those in tables 1 and 2, for 1998. The measures of the independent variables are based on standardised data provided by World Bank (for GDP per capita in USD, and for GDP Growth), and ILO (for total unemployment, ie male and female). These values were averaged over the period 1995 to 1999 in order to smooth out fluctuations.

INSERT TABLE 5

Table 5 shows that the relationship is not quite as simple as might be expected. For the APEC economies there is quite a strong relation for GDP per capita (+0.54) and slightly weaker relations for Unemployment (-0.36) and GDP growth (+0.22). All of the signs are as might be expected, all are significant. For example as the entrepreneur ratio rises (ie there is a higher density of entrepreneurs per head of population), then GDP per capita and GDP growth both tend to increase, while unemployment declines. This is also true for the combined analysis of the 30 available economies in APEC and Europe combined, although the relationship in each case is weaker. However, the results for Europe by itself are a real puzzle; even though the correlation coefficients are quite strong, they are perverse in the sense that the signs are the opposite of what might be expected. Thus, as the number of entrepreneurs in the population increases in Europe, the GDP per capita actually declines! What might explain this?

Table 6 offers a suggestion as to what the explanation might be. Table 6 divides up the entrepreneur ratio into three categories (high, medium and low), and the GDP per Capita into three (also high, medium and low), so as to give nine cells. Each economy is then allocated to a cell. The category boundaries are artificial; the variables are a continuum, and there is no

discrete separation between categories. Keeping this in mind, Table 6 helps to see that there might be fairly distinct clusters of economies. Our basic hypothesis is that economies should cluster along the diagonal sloping down from top right to bottom left. That is, we would expect economies which have high GDP per Capita to have high entrepreneur ratios and thus to be in the top right cell, while economies with very low entrepreneur ratios (or very few entrepreneurs) might be expected to have low GDP per Capita and thus be in the bottom left cell. The rest should then fall somewhere around the middle, and these might be economies on the path from relatively low levels of development making their way from the bottom left cell toward the top right cell.

The first cluster which is most at variance from this diagonal is in the top left cell; rich economies with much lower entrepreneur ratios, and thus far fewer active entrepreneurs, than might be expected given their wealth and competitiveness. However, it is a characteristic of many of these economies (and also some economies in the adjacent top middle cell) that they are small open economies with SMEs which generally must compete on the open stage of globalised markets, and which are open to competition from abroad. This suggests that perhaps the average SME in these economies might tend to be bigger, in order that it might compete more effectively. Thus the reasoning might go, it may be harder to be an active entrepreneur in Denmark, Singapore or the Netherlands, so there are fewer active entrepreneurs in these economies. In fact, the average employment size of European SMEs in this cell is about 9 to 10 people, which is larger than the European average of about 6 people employed per SME in 1995, and more than 2.5 times the average size of the SMEs in Spain, Portugal and Greece. Statistical anomalies may account for some of the economies falling in this top right cell too. For example, Canada probably really should not be in this cell, but rather should be in the top middle or top right cell; the Canadian entrepreneur ratio does not take account of non employing and self employed because those data were not available, and it thus understates the real density of entrepreneurs. Similarly, Eurostat, in its efforts to define a standard for SMEs, has changed the way the statistics are calculated over the decade. In Ireland's case, this has produced official figures which show that Ireland had less SMEs in 1998 than it did in 1990; the number of SMEs fell from 130,000 in 1990 to just 85,000 in 1998, and thus to a rather low entrepreneur ratio for Ireland of 1/43.7 in 1998. The problem with Singapore statistics not counting manufacturing enterprises with less than 10 employees has been noted above.

The second main cluster which is contrary to expectations is in the middle right cell, and also in the bottom right cell. These are mostly economies which have quite high entrepreneur ratios, but which also have only medium GDP per Capita. These seem to be economies which have a lot of quite small SMEs; the average SME in Portugal, Greece and Spain employs only 4 people, as opposed to about 9 or 10 people employed by SMEs in the economies in the top right cell. Perhaps there are two explanations for this. One is that because unemployment is very high in all these economies, people tend to set up businesses in order to survive. Thus there are a lot of marginal micro sized firms trying to eke out survival. They may not contribute much to GDP per capita or to GDP growth, but they probably do keep the unemployment wolf from the door and stop the unemployment figure rising even higher. The second, and related reason is the "missing middle". That is in some economies, whilst there is a large pool of micro enterprises employing less than 5 people, the small and medium sized enterprises (employing between 6 and 100 people) tend to be under represented. Thus it is difficult, for a raft of reasons (historical, social, political, financial, educational etc), for a start up firm to expand beyond a micro level. Yet, we know that the bulk of job and wealth creation usually seems to come from a small proportion of fast

growing firms; they have to start somewhere, but they quickly grow from micro, to small to medium and then on to become large. In doing so, they can create a lot of jobs, wealth and growth. Microsoft is the archetype, having started with SBA start-up funds only 30 years ago. Could a new "Microsoft" start as a micro firm in Indonesia, or Greece, and succeed, and then grow quickly? Perhaps it could, but the answer is probably it would find it much harder to do so than in the USA. Having a large pool of active entrepreneurs in an economy is no automatic guarantee of economic success; there also needs to be the social and economic infrastructure there to allow them to grow. If there is not that infrastructure, there tends to be a "missing middle"; Spain, Portugal and Greece all only have about 3% of their enterprises in the "middle"; that is only 3% of these economies enterprise employ between 10 to 49 employees. This is against a European average of around 7%, and an average of the smaller globalised economies (Denmark, Netherlands etc) of around 10%. Indonesia, which also falls in this cluster, is probably lacks a missing middle too, but the statistics are somewhat unreliable, and possibly overstate the real number of SMEs.

The apparent anomaly in the European correlations can thus be explained as follows. First, almost all the European Community economies are "developed". Relative to APEC, where a significant number of the economies are still developing, and thus fall in the bottom row, all the European economies fall in the top two rows of table 6. Second, a significant number of European economies are in clusters off the main diagonal, either because they are stuck in the "missing middle" trap, or because they are small economies adapted to having fewer entrepreneurs managing larger, successful global SMEs. Third, statistical anomalies in the way the SME statistics are arrived at probably also a contributing factor. The contrast between APEC and Europe can thus be illustrated in Table 7. Most of the APEC economies cluster in the cells which fall roughly along the diagonal sloping down from right to left. By contrast most of the European economies cluster along a line sloping down from left to right.

INSERT Table 7

Does all this mean that increasing the density of entrepreneurs (ie increasing the entrepreneur ratio) in an economy is good for the economy? The answer is "yes", but it is subject to some caveats. Increasing the density of entrepreneurs in an economy *does* seem to lead to higher levels of GDP per capita, to lower unemployment levels, and probably to higher growth of GDP. The main caveat for developing economies seems to be that it is important to make sure that the infrastructure is there to permit start-ups to grow, thus avoiding the "missing middle trap". The caveat for smaller developed economies seeking to survive in a global world seems to be that their SMEs need to be larger and capable of competing globally, though the size required to successfully compete internationally appears to have been declining for some time (OECD (1997))

HOW MANY ENTREPRENEURS SHOULD THERE BE IN CHINA?

How many entrepreneurs *should* there be in China? Although it bears a resemblance to the question of the number of angels that can fit on the head of a pin, the question is actually a serious issue. China gained ascendancy to the WTO in November 2001. It is committed to APEC 2020 goals, which means that it is committed to eliminating impediments to trade and investment by 2020. It can be argued that for China to survive and prosper in a highly competitive global world it will need to increasing rely on entrepreneurial SMEs. China also

faces a serious job creation issue; the industrial restructuring over the last decade has destroyed something like 100 million jobs.

Although there has been explosive growth in China's SMEs in the last 20 years or so, since the economic liberalistion process was commenced, it is still hard to tell how many SMEs there actually are. China uses a complex classification system for enterprise statistics. This distinguishes enterprises on the basis of ownership rather than size. For example, distinctions are made between:

- Urban enterprises which are defined as State Owned, Collectively owned, Household and Private, and Others (eg joint venture).
- Rural enterprises which are defined as being TVEs (town and village enterprises), and household and private.

As an approximate guide, state owned enterprises are usually medium or large, Household and private are mostly small and medium, collectively owned are medium, and TVEs are small or medium. The basic defining characteristics used to distinguish SMEs have been changed at least four times. In the 1950s the definition was based on number of employees, in 1962 this was changed to the amount of fixed assets, it was changed again in 1978 to production capacity, and in 1998 the definitions were changed to industry specific definitions based on a combination of fixed assets (calculated on original book value) and production capacity. The net result is that for most of the 1990s China used different definitions for different industries. However, on the best information available, China had about 8.6 million non agricultural SMEs in 1990 (China Yearbook), and this had actually declined to about 7.9 million by 1998 (Chen (2000)). The entrepreneur ratio based on these figures indicates about one SME for every 132 people (1/132) in 1990, and one to every 153 in 1998. Most of these so-called SMEs were actually state owned enterprises; some of them were quite large, and by their nature more bureaucratic than entrepreneurial. The number of active private sector entrepreneurs is even smaller, especially considering China's population of 1.2 billion people.

In China, the private sector has grown very rapidly over the last two decades. Under China's statistical collection methods it is not possible to get the breakdown by size and by ownership (ie private sector versus state owned). The following table gives the growth of private sector enterprises, irrespective of size. However most of these enterprises would be relatively small. The average number of employees of these private sector enterprises was about 17 in 1992 and this had fallen to 14 in 1997. This is in comparison with the APEC average of about 8 or 9 employees per SME. It is thus *assumed* in table 8 that all of the private sector employment in China is in SMEs.

INSERT Table 8

From a low base of only 139,000 (about the same as New Zealand) in 1992, the number of private sector enterprises in China grew at a compound annual rate of about 40% to 961,000 in 1997, and the number employed by the private sector grew from about 2 million in 1992 to about 13 million people in 1997. Although the statistics are not directly comparable, in 1995 there were about 7 million SMEs (both state owned and private), employing about 119 million of a total of 143 million employed by all industrial enterprises (The 3rd National industry survey 1995 People's Republic of China, Page 4, quoted in Chen (2000)). Thus, by 1995, the private sector in China made up about 10% of enterprises and provided about 10% of the employment. Most of this employment and enterprise growth has been in SMEs.

How many SMEs *should* China have? On the basis of an entrepreneur ratio of 1/20 and a population of about 1.2 billion, then China should aim at about 60 million SMEs, and a corresponding number of active entrepreneur managers. Contrast this with its present situation of about 8 million SMEs, many of which are state owned, or about 1 million private sector SMEs. That means that China would need to create about 50 to 60 million more SMEs, and the same number or more of entrepreneurs, over the next 10 to 20 years or so. This is a formidable task; the total number of SMEs in all of APEC and Europe combined is only around 60 million. To achieve this by natural growth of private sector, there would need to be an average compound growth of 25% per annum in the number of private sector enterprises for the next twenty years. There is no shortage of nascent entrepreneurs in China, but a relative few have any real private sector experience. The training and infrastructure (financial, legal, etc) needed to achieve a growth of this sort of magnitude is not there at present. The real danger for China is that it gets locked in to a "missing middle" problem; a lack of entrepreneurial infrastructure, and a disproportionate number of very small micro firms lacking in ability to compete internationally.

CONCLUSION

All the governments in APEC and European economies have policies in place to encourage the development of SMEs. Over the last decade these policies have generally moved to facilitating a better environment for the start up and growth of SMEs. This paper suggests that a higher density of SMEs (and thus of active entrepreneur managers) is associated with higher GDP per capita, higher GDP growth, and lower unemployment rates. Subject, to some caveats it makes sense to encourage the development of SMEs, but simply having more SMEs does not of itself generate growth or "solve" unemployment problems. There needs to be an infrastructure in place which facilitates SME start up *and* growth. The Entrepreneur Ratio provides a simple but useful gauge, and a benchmark, to help determine targets, especially for less developed economies; it suggests that about 5% of the population should be active as an entrepreneur manager. For many developing economies, such as China, the challenge is to put realistic plans and programs in place to achieve these targets.

APPENDIX

Table 1 - Entrepreneur ratios for APEC economies (number of people in the general population per SME)

	1990	1997 or 1998
Australia	22.3	16.7
Brunei	66.6	61.6
Canada	32.5	32.4
Chile	31.1	29.2
China	131.9	153.4
Hong Kong, China	20.7	22.3
Indonesia	14.8	12.5
Japan	19.1	19.7
Korea	20.5	17.0
New Zealand	21.1	19.6
Philippines	781.2	245.1
Russian Federation		173.3
Singapore	86.0	57.5
Chinese Taipei	25.3	20.6
Thailand	873.4	75.8
United States	18.0	16.8
Ratio all APEC economies	48.7	44.7
Ratio - 2010 economies	***19.6***	***18.6***
Ratio - 2020 economies	78.8	68.7
Unweighted average	144.3	60.8
Unweighted Average 2010	*30.7*	*26.1*
Unweighted Average 2020	221.4	82.3
standard deviation - all	279.7	69.2

Notes:

- *The entrepreneur ratio is the total number of SMEs (including non employing and self employed enterprises where these data are available) divided by the total human population for each economy. The ratio for "all APEC economies", "2010 economies", or "2020 economies" is the sum of the SMEs divided by the sum of the population for the relevant set of economies. The above figures give the numerators of the ratio.*
- *Unweighted average is the average of the non zero statistics for relevant APEC economies (all, 2010, and 2020). Unweighted averages are the averages of the actual figures in the relevant column, not weighted by the size of the economy (which thus gives relatively less weight to large economies like China and USA and more relatively more weight to small economies like Hong Kong China and Chinese Taipei).*
- *2010 economies are those economies which are committed to APEC goals of trade liberalisation by the year 2010. These are indicated in italics, and are usually developed economies.*
- *2020 economies are those APEC economies which are committed to APEC goals of trade liberalisation by 2020. These are usually developing economies. The following 2020 economies are not included in the table because there were insufficient data: Malaysia, Mexico, PNG, Peru, and Vietnam. Data for Thailand and Indonesia are probably not reliable.*

Source - Hall C (2002b), The Profile of SMEs in APEC 1990 - 2000, APEC, forthcoming, and Hall (1998)

Table 2 - Entrepreneur ratios for European economies (number of people in the general population per SME)

	1990	1998
Austria	42.8	28.3
Belgium	20.3	19.3
Denmark	30.2	35.3
Finland	45.3	24.5
France	28.6	25.1
Germany	34.7	23.3
Greece	14.8	17.0
Ireland	26.9	43.7
Italy	14.5	14.6
Luxembourg	25.4	28.4
Netherlands	35.6	34.9
Norway	32.6	21.6
Portugal	16.4	14.4
Spain	16.0	15.7
Sweden	57.1	23.0
UK	21.8	16.2
Ratio - all Europe	**22.6**	**19.4**
unweighted average	29.0	24.1
stdev	12.2	8.4

Notes:
See table 1 for explanation of "ratio" and "unweighted average".
The definition of what constitutes an SME has changed for some economies over the period as a result of efforts by Eurostat to standardise definitions. This has led to some changes in the ratios, and these are not directly comparable over time for all economies.
Source: ENSR, The European Observatory for SMEs, Reports, various dates.

Table 3 - Entrepreneur ratios for APEC economies, adult population (>15 years of age) (number of people in the adult population per SME)

	1990	1997 or 1998
Australia	17.4	13.0
Brunei	44.1	40.8
Canada	25.7	25.7
Chile	21.6	20.4
China	97.2	113.1
Hong Kong, China	16.3	17.5
Indonesia	9.5	8.1
Japan	15.5	16.1
Korea	15.2	12.6
New Zealand	16.3	15.1
Philippines	470.2	147.5
Singapore	65.7	43.9
Thailand	587.8	51.0
United States	14.1	13.2
Ratio all APEC economies	31.8	29.2
Ratio - 2010 economies	**14.8**	**14.0**
Ratio - 2020 economies	49.4	43.2
Unweighted average	101.2	38.4
Unweighted Average 2010	24.1	20.6
Unweighted Average 2020	150.8	45.1
standard deviation - all	184.3	41.6

Notes:
See table 1 for explanations of terms and sources.

Table 4 Entrepreneur ratios for European economies, adult population (>15 years of age) (number of people in the adult population per SME)

	1990	1998
Austria	34.8	23.0
Belgium	16.4	15.6
Denmark	25.1	29.3
Finland	36.1	19.6
France	22.6	19.8
Germany	29.0	19.5
Greece	11.9	13.6
Ireland	19.5	31.7
Italy	12.0	12.1
Luxembourg	20.8	23.2
Netherlands	29.1	28.5
Norway	26.2	17.4
Portugal	12.8	11.3
Spain	12.6	12.4
Sweden	46.6	18.8
UK	17.5	13.0
Ratio - all Europe	**18.3**	**15.9**
average	23.3	19.3
stdev	10.0	6.4

See table 1 for explanation of ratio and unweighted average.
The definition of what constitutes an SME has changed for some economies over the period as a result of efforts by Eurostat to standardise definitions. This has led to some changes in the ratios, and these are not directly comparable over time for all economies.
Source: ENSR, The European Observatory for SMEs, Reports, various dates.

Table 5 - Correlation coefficients between entrepreneur ratio and selected economic indicators, APEC and Europe

	expected sign	APEC	Europe	APEC + Europe
GDP per capita	+	+0.543	-0.469	+0.286
Unemployment	-	-0.358	+0.189	-0.0838
GDP growth	+	+0.221	-0.594	+0.154

Source:
Tables 1 and 2 for entrepreneur ratio.
GDP per capita, and GDP Growth - World Bank data request.
Unemployment - ILO data request.

Table 6 Clusters of economies by entrepreneur ratio and GDP per Capita

GDP per capita in 000 USD per annum			
high above 20	Canada, Ireland, Netherlands, Singapore, Denmark	Finland, France, Hong Kong, Germany, Austria, Sweden, Norway, Luxembourg	Australia, UK, Belgium, Italy, Sweden, USA, Japan
medium 10 to 20	Brunei	Chinese Taipei, New Zealand	Portugal, Greece, Spain
low below 10	China, Philippines, Russia, Thailand	Chile, Korea	Indonesia
	low 1/31 +	medium 1/20 - 1/30	high 1/0 - 1/20
		Ratio of SMEs divided by population	

Source: Table 1 and 2.

Table 7

GDP per capita in 000 USD per annum			
high above $20	Smaller global economies with small numbers of successful global entrepreneurs	Developed, entrepreneur rich economies ***APEC relation*** ***European relation***	
medium $10 to $19		Developing economies with developing entrepreneurial infrastructure	Missing middle economies
low below $10	Underdeveloped, entrepreneur poor economies		
	low 1/31 +	medium 1/20 - 1/30	high 1/0 - 1/20
		Ratio of SMEs divided by population	

Source: Table 1 and 2

Table 8 Development of Private Enterprises in China 1992 - 1997

	no. of Units	Increased by % compared with last year	No employed in 10,000	Increased by % compared with last year
1992	139,633	29.50%	232	26.10%
1993	237,919	70.40%	373	60.80%
1994	432,240	81.70%	648	73.70%
1995	654,531	51.40%	956	47.50%
1996	819,252	25.20%	1,171	22.50%
1997	960,726	17.30%	1,349	15.20%

Source: Chen (2000) p104 table 2.1, and Report of Development of China's Private Owned Enterprise, Social Science Publisher, 1999 Jan (quoted in Chen).

REFERENCES

Australia, Australian Bureau of Statistics. (1997), Analysing the Business Growth and Performance Survey (GAPS) - employment analysis. Preliminary working paper.

Australia, (1997/8) Australian Bureau of Statistics ABS 8141.0 1997-98 Small and Medium Enterprises Business Growth and performance Survey, Canberra.

Chen, Nian Xing et al (2000) The development and trend of China's Small and Medium Enterprises - 1999. (Zhong Guo Zhong Xiao Qi Ye Fa Zhan Yu Yu Che). This book was developed as a joint effort of the following organisations: Department of SMEs of China's National Trade Commission (Guo Jia Jing Ji Mou Yi Wei Yuan Hui Zhong Xiao Qi Ye Ci) and SMEs research center of China's Social Science Institute (Zhong Guo She Hui Ke Xue Yuan Zhong Xiao Qi Ye Yian Jiou Zhong Xing), Publisher: Democracy and Construction publishing company, 2000 June, 1st edition, Beijing.

The European Network for SME Research, ENSR, (1993, 1994, 1995, 1996, and 2000) The European Observatory for SMEs, EIM, Netherlands.

Hall, C (2002a), Profile of SMEs and SME Issues in East Asia, in Charles Harvie and Boon-Chye Lee (eds) Studies of SMEs in East Asia, VOLUME 2 *The Role of SMEs in National Economies in East Asia* Edward Elgar, Cheltnam UK.

Hall, C (2002b - forthcoming) APEC SME Profile 1990 - 2000, APEC, Singapore.

Hall, C (1998), APEC SME Indicators - A feasibility study, APEC, Sydney.

Hong Soon-Yeong, Park Jang-Hyuk, Park Jong-Young (1999), Status and Prospects of Small & Medium Enterprises (SMEs) in Korea, Korea Small Business Institute, Seoul.

New Zealand, Ministry of Commerce (2000), SMEs in New Zealand, Structure and Dynamics, Ministry of Commerce.

OECD (1997), Globalisation and SMEs, Vol 1 and 2, OECD, Paris

OECD (2000), SME Outlook, OECD, Paris.

Reynolds P., Hay M., Camp S. M. (1999) Global Entrepreneurship Monitor, Executive Report 1999, Kauffmann Centre for Entrepreneurial Leadership at the Ewing Marion Foundation, Boston.

Reynolds P., Hay M., Bygrave W. D., Camp S., M. Autrio E., (2000) Global Entrepreneurship Monitor, Executive Report 2000, Kauffmann Centre for Entrepreneurial Leadership at the Ewing Marion Foundation, Boston.

REGIONAL RECOVERY AND THE ROLE OF SMEs IN THE WAKE OF THE FINANCIAL AND ECONOMIC CRISIS

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ABSTRACT

Since the financial and economic crisis of 1997-98 there has been a growing recognition of the need for the East Asian economies to engage in comprehensive restructuring of their corporate sectors, with the objective of achieving transparency, improving corporate governance and developing globally competitive enterprises. There is also an increasing recognition that the small and medium enterprise (SME) sector can play a key role in the attainment of such an objective.

This paper reviews the contribution of the SME sector to the growth and development of the regional (East Asian) economies, and their increasing importance for the attainment of a sustained recovery of the region in terms of growth, employment and globally competitive economies. In addition, the paper highlights the impact of the crisis on SMEs, how they have responded to this, and their contribution to regional economic restructuring.

1. INTRODUCTION

The Asian financial and economic crisis had widespread effects, many of which are still in the process of being resolved. While the region consists of many diverse, although closely integrated, economies, a common characteristic is the significance of a sizeable and rapidly expanding small and medium enterprise (SME) sector. However, given such diversity, it can be reasonably expected that the SMEs in these economies are at different stages of development, their contributions to the respective economies are different, and policies adopted in these economies as a means of

encouraging their development will also diverge. While they may face similar general difficulties, such as access to finance, access to technology, development of human resources, and access to market information, it is unlikely that these difficulties are inherently identical and appropriate policies to stimulate their recovery are also unlikely to be identical across these varying economies. However, what is clear is that these SMEs, in the wake of the financial and economic crisis of 1997-98 and the immense restructuring across the region that is taking place with the objective of producing transparent, efficient and globally competitive corporate sectors, are in a strong position to lead the economic recovery of the region arising from increased business opportunities.

In the wake of the crisis a re-appraisal of the Asian Growth and Development Model (AGDM) has taken place. The model traditionally placed considerable importance upon the: development of an export oriented industrial sector; maintenance of macroeconomic stability; maintenance of relatively stable exchange rates; high saving and investment; close government-business-banking relationships; directed credit; and high human capital. The model's emphasis on export orientation has been questioned by a number of regional leaders, including, in April 2001, Thailand's Prime Minister Thaksin Shinawatra. Increasing emphasis is now being placed upon balanced growth in which the domestic and external sectors are developed concurrently, and the need to encourage greater linkages between these sectors. Secondly, while exports will remain an important source of economic growth, more emphasis needs to be placed upon intra regional trade. This has triggered activity that is likely to lead to further economic integration and trade liberalisation amongst the regional economies[1]. Third, there is also an important recognition of the need for corporate sector restructuring, greater transparency, competition, and competitiveness, to ensure that corruption and cronyism is kept in check. There has been much debate about those economies that came through the crisis relatively unscathed, and those that were severely affected. Korea, a country dominated by large industrial conglomerates, was severely affected, while Taiwan, dominated by SMEs, came through the crisis relatively well. Evidence from other regional economies suggests that SMEs came through the crisis better than large enterprises. The avoidance of a future crisis could, therefore, depend upon developing a competitive SME sector that is able to compete in both domestic and external markets. This paper argues that the SME sector has a crucial role to play in the sustained recovery of the region arising from the business opportunities created by the restructuring process itself, as well as from the movement towards closer regional economic integration[2].

The paper proceeds as follows. Section 2 briefly identifies a number of broad issues of relevance to the SME sector across the region as well as the importance of SMEs to countries within the East Asian region, and the APEC region more generally. Section 3 identifies the impact of the crisis, and the response to it, by regional SMEs. Secton 4 discusses the importance of the SME sector for competition, restructuring and the

[1] The recent development of ASEAN+3 is indicative of such a development.

[2] While an extensive survey of regional SMEs has already been conducted by APEC (1994 and 1998) for individual member countries, a rigorous comparative analysis of regional SME developments both before and after the financial crisis of 1997-98 has been lacking. In Harvie and Lee (2002), however, a national case study approach is presented that analyses the impact of the crisis upon regional economies.

sustained economic recovery of the region. Finally Section 5 presents a summary of the major conclusions and important implications for policy makers.

2. BROAD ISSUES AND THE SIGNIFICANCE OF THE SME SECTOR IN EAST ASIA[3]

SMEs have been recognised as a priority area for the East Asian economies, and more generally within the context of the Asia Pacific Economic Cooperation Forum (APEC), since the 1993 APEC Leaders' meeting in Seattle. Despite being seen as a priority, and the centre of considerable discussion, a clearly enunciated APEC agenda and program of action for SMEs in the region, before the onset of the financial and economic crisis of 1997-98, remained elusive. However, the crisis resulted in many of the countries of East Asia: re-evaluating their industrial policies; placing greater emphasis on improving corporate governance; improving the efficiency and competitiveness of their enterprises; and developing business sectors more able to overcome the vicissitudes of domestic, but more importantly global, market developments. The latter is of particular importance in the context of increased economic interdependence and open regionalism. The need to develop more adaptable and flexible economies, and business sectors, has resulted in increased emphasis on the development of the SME sector, particularly given the relative resilience of the Taiwanese economy, dominated by SMEs, and the potential platform they provided for a sustained recovery, as well as employment potential and poverty alleviation, of regional economies.

2.1 What is an SME?

There is no regional, or indeed global, consensus on the definition of an SME. SMEs' definitions differ widely among the East Asian economies, and APEC more generally, depending on the phase of economic development as well as prevailing social conditions. A number of indexes are traditionally utilised to define SMEs: number of employees; invested capital; total amount of assets; sales volume; and production capability. The most commonly used index, however, is the number of employees. A summary of the alternative definitions of SMEs used in selected APEC member countries is contained in Table 1[4]. As can be observed from this table, in practice, the actual definition used in a number of countries is often quite complex. This is particularly so for Japan, Malaysia, Taiwan and Thailand. In Taiwan, for example, an enterprise may be regarded as an SME for the purpose of receiving government assistance, even though it may not presently meet the general criteria, provided it did meet the criteria in the immediately preceding years. Statistics on SMEs often exclude cottage and micro enterprises. In addition, some economies distinguish between different types of SMEs. For example, China distinguishes between township and village enterprises (TVEs) and SMEs, and Singapore distinguishes between local and overseas SMEs. Although some economies use the same measure to define SMEs, it may result in a different classification in different economies. A medium sized manufacturing enterprise in Australia may be viewed as a large enterprise in another country. Ideally, from an international comparative analysis perspective it would be desirable to have one common definition for SMEs. Although the definitions differ they have one thing in common; the vast majority of SMEs are relatively small and

[3] This section draws extensively upon Hall (1995).
[4] See APEC (1998).

over 95 percent of SMEs in the region employ less than 100 people. This still enables, therefore, broad comparisons of the role of SMEs across countries despite the differing definitions. In addition, while different definitions are adopted they do not fundamentally affect the key issues pertinent to SMEs.

2.2 Role and importance of SMEs to the region

Role of SMEs

Although SMEs are important across the region there are considerable differences in the role of SMEs in the various economies. For example, SMEs play a larger structural role in Taiwan, China, Japan, Thailand and Vietnam where they contribute over 70 percent of employment, than they do in Indonesia or Malaysia where they contribute only around 40 percent. In addition, the contribution of the SME sector to exports, and hence the extent of their global integration, also varies widely. They are relatively more export oriented in China, Korea and Taiwan than they are in Japan, Indonesia, Thailand, Malaysia and Singapore. Similarly, the dynamic role that SMEs play varies widely. For example in Singapore, even though SMEs are not as significant in terms of numbers and employment, they are important in providing a flexible skilled production base that attracts larger multi national corporations (MNCs). The dynamic role that SMEs have played has varied between the various countries. More recently in the case of China, and somewhat reluctantly in the case of Vietnam, entrepreneurial private SMEs and rural enterprises [5], during the early part of the reform process, have been pivotal in the transition process from a planned to market oriented economy.

They have contributed to more efficient resource allocation, the marketisation of these economies, and are increasingly important in creating new jobs and in expanding exports. In the case of Taiwan, SMEs have played a pivotal role in the country's economic development from the beginning. More recently, however, they have been facing increased competition from SMEs in China and Vietnam, because their traditional low cost base is rapidly being eroded. As a consequence they have had to move up the high technology ladder in order to remain globally competitive. Recognising this requirement, the government has been actively assisting in this process.

Numbers and contribution to employment

SMEs have played, and are increasingly playing, an important economic role in the individual economies of East Asia, in the broader regional economy including that of APEC and, more generally still, the global economy. This is especially so from the point of view of creating employment, as a source of innovation, generating exporting opportunities, as the source of future successful medium and large enterprises, and as a major source of both domestic and global competition. Developments in information technology and movement towards greater global trade and financial integration, implies

[5] The so-called township and village enterprises (TVEs).

Table 1: Summary of Main Definitions of SMEs in selected APEC Economies

Country	Definition of SME	Measure
Australia	*Small enterprises*: Manufacturing - less than 100 employees Services - less than 20 employees *Medium enterprises*: Manufacturing - 100-499 employees Services - 20-499 employees	Employment
Canada	*Manufacturing*: small enterprises, less than 100 and less than CDN$5 million in sales. Medium enterprises 100-500 employees and between CDN$5-20 million in sales. *Services*: small enterprises, less than 50 employees and less than CDN$5 million in sales. Medium enterprises 50-500 employees and Between CDN$5-20 million in sales.	Employment Sales
PR China	In general: small enterprises 50-100 employees; medium enterprises 101-500 employees.	Employment
Indonesia	Less than 100 employees	Employment
Japan*	*A. SMEs*: Mining, manufacturing, transportation, construction industries: less than 300 employees, or less than ¥100 million invested capital Wholesalers: less than 100 employees, or less than ¥30 million invested capital. million assets Retailers, services: less than 50 employees, or less than ¥10 million invested capital. *B. Small scale enterprises*: Manufacturing and other industries: less than 20 employees. Commerce and services: less than 5 employees	Employment Assets
Korea	*Manufacturing* - less than 300 employees, Won 20-80 billion of capital (assets) *Mining, transportation* – less than 300 employees. *Construction* – less than 200 employees *Commerce and other service business* - less than 20 employees	Employment Assets
Malaysia	Varies. Manufacturing: up to 150 full time employees, annual sales turnover not exceeding RM25 million. Definitions are for SMIs**. Different for Bumiputera enterprises.	Employment Sales Shareholders' Funds

New Zealand	Up to 50 employees	Employment
Philippines	*Small enterprises*: 10-99 employees, and between P1.5-15 million in assets. *Medium enterprises*: 100-199 employees, and P15-60 million in assets.	Employment Assets
Singapore	*Manufacturing* - less than S$15 million in fixed assets. *Services* - less than 200 employees, and fixed assets less than S$15 million.	Employment Fixed assets
Taiwan	*Mining, quarrying, manufacturing and construction industries* - less than 200 employees, less than NT$60 million of invested capital. *Service industries and others* – less than 50 employees, less than NT$80 million of sales volume.	Employment Capital Sales
Thailand***	Manufacturing: *small enterprises*, less than 50 employees, less than 20 million baht of investment capital (not including fixed assets). *Medium enterprises* 50-200 employees, 20-100 million baht of fixed assets, 20-100 million of invested capital (not including fixed assets).	Employment Capital Fixed assets
USA	*Manufacturing*: less than 500 employees *Non manufacturing*: less than US$5 million In sales	Employment Sales
Vietnam	Manufacturing and non manufacturing: *small enterprises*: less than 30 employees and less than 1 billion dong in capital. *Medium enterprises*: 30-200 employees and between 1-4 billion dong in capital.	Employment Capital

** In accordance to the Small and Medium Enterprise Basic Law*
*** Small and medium industries*
**** Manufacturing enterprises only*

Source: APEC website http://www.actetsme.org, Hall (1995).

Table 2 SME Profile by Economy

	population millions (1)	approximate number of SMEs millions (2)	% of all businesses (3)	% employed (3)	people per SME
Australia	18.3	1.00	97%	50%	18
China	1244.2	8.00	99%	78%	155
Hong Kong	6.5	0.29	98%	61%	22
Indonesia	203.4	[16.00] 2.00	98%	88%	[13] 92 (4)
Japan	126.0	5.08	99%	78%	25
Korea	45.7	2.67	99%	73%	17
Malaysia	21.0	na	84%	12%	na
New Zealand	3.8	0.30	98%	52%	13
Philippines	71.4	0.50	99%	66%	142 (5)
Singapore	3.4	.96	91%	52%	35
Chinese Taipei	21.7	1.02	98%	78%	21
Thailand	59.7	0.67	96%	18%	89
Vietnam	76.5	na	na	85%	na
Total	1,901.6	22.2			

(1) source: APEC and Economist. Figures are for 1998 - 1999
(2) estimates only except for Australia, Japan, New Zealand
(3) APEC, Profile of SMEs in Asia, 1998. Figures depend on definitions for SMEs which distorts Malaysian and Thai figures. Malaysia defines SMIs - or small medium industries, so it emphasises mostly SMEs in manufacturing industries.
(4) figures based on establishments and from the BPS Industrial Census of 1996 in [ ]. Note that estimates by Department of Commerce and Industry suggest that there were only about 2.2 million SMEs in Indonesia in 1996, which translates into 92 people per SME.
(5) figures based on establishments.

Table 3 Percent of enterprises by size class

	micro	small	medium	large	
Australia	80.0	15.8	3.3	.5	1996
China		96.1	2.8	1.1	1996 census
Hong Kong				na	
Indonesia	95.6	3.8	.5	.06	
Japan		73.5	22.2	4.3	Manufacturing
Korea		73.2	22.9	3.9	Manufacturing
	85.0	8.4	6.2	.3	Services
Malaysia				na	
New Zealand	84.0	12.0	2.0	2.0	1999
Philippines	88.4	9.8	0.8	1	1996
Singapore		40.7	42.2	17.1	Manufacturing
Chinese Taipei		70.00	28.07	2.4	1996
Thailand	79.4	18.5	2.0	.01	
Vietnam				na	

Sources:
Australia - ABS Small Business in Australia
China - Statistical Yearbook
Indonesia - BPS
Japan - JSBRI/MITI, White Paper on SMEs
Korea - Hong et al
New Zealand - Ministry of Commerce
Philippines - statistics provided by NSCB and BSMBD
Singapore - Census of Industrial Production
Chinese Taipei - White Paper on SMEs, SMEA
Thailand - Statistics Thailand - Industrial Census

even greater opportunities for the further expansion and increased competitiveness of regional SMEs. By the late 1990s they contributed well over 90 percent of regional enterprises and were variously estimated to contribute between 50 to 88 percent of the total employment in individual regional economies (see Table 2, APEC (1995), Hall (1995, 2000, 2002))[6]. Consequently, SMEs have the potential to make a major impact on workforce training (Hall (2000), p.2). The contribution of SMEs to employment growth is even higher, if somewhat contentious. Figures for Asia are not available, but in more mature economies, and where reasonably reliable studies are available, as much as 70 percent or more of net employment creation was attributable to SMEs in the 1990s.

Table 4 Employment by size class

	micro	small	medium	all SMEs	
Australia	14.3	22.3	22.5	68.15	1996/7 (1)
China	na	na	na	78.0	na
Hong Kong	na	na	na	61.0	
Indonesia	na	na	na	88.0	
Japan	11.2	10.1	31.2	71.9 78.0	manufacturing 1997 1996 all
Korea	10.5	11.7	30.5	69.3	Manufacturing Services
Malaysia	na	na	na	12.0	
New Zealand	23	18	19	60.0	1999
Philippines	25.5 53.2	17.7 27.4	8.2 5.5	51.6 86.3	Manufacturing Services 1995
Singapore		5.2	20.6	25.8	Manufacturing
Chinese Taipei	na	na	na	na	
Thailand	na	na	na		
Vietnam	na	na	na		

Sources - as for Table 3 unless otherwise noted
(1) ABS 1321.0 1999 p 31 Table 2.5 private sector only.

Tables 3 and 4 indicate the distribution of enterprise numbers, and employment, by firm size across a number of regional economies. Table 3 indicates that in many of the regional economies most of their SMEs are micro enterprises. That is enterprises employing less than 5 employees. Table 4 suggests that SMEs generally contribute more than 50 percent of employment but that the contribution tends to be proportionally more from medium sized businesses, defined as those employing between 20 and 99 people. Medium sized enterprises typically make up only about 4 percent of all enterprises (or about 20 percent of manufacturing enterprises) but they employ about 20 percent of the workforce (or about 30 percent of the manufacturing workforce). Across the region, while there are a considerable number of SMEs, and about 80 percent of these are micro businesses, micro business does not contribute much to overall employment. Typically only about 10 to 20 percent.

Tables 3 and 4 suggest that for many of the developing economies in the region they have many very small SMEs and a dominant large enterprise sector, but they do not have many enterprises in between. Hence there is a "missing middle". This contrasts with the more developed economies where medium sized enterprises contribute

[6] The figures for SME employment in Malaysia and Thailand are distorted. See footnote 3 in Table 2.

significantly to employment, and are a major source of high growth firms that contribute significantly to employment growth.

Contribution to Sales, Output, Value Added

Estimates of SME contribution to economic value added, sales, or output are difficult to obtain for the East Asian region, and more difficult to interpret in comparable terms. The contribution to GDP is particularly difficult to obtain, but SMEs have been typically estimated to contribute somewhere between 30 percent and 60 percent of GDP (Hall (1995)). Table 5, taken from Hall (2002), shows that SMEs contribute about 50 percent of value added or sales on average, but that this ranges from about 30 percent to about 70 percent. Small and micro firms make a significant contribution in developing economies (about 50 percent of output in China and Philippines for example), but less in the more developed economies.

Table 5 Contribution to output, sales, or value added

	micro	small	medium	all SMEs	
Australia	na	na	na	30%	1997/8 Sales all sectors
China		49.4	16.7	66%	Industrial only 1996 gross output
Hong Kong				~63%	all sectors
Indonesia				na	
Japan	4.1	5.1	22.0	50.8 42.5 56.6	Manufacturing 1997 all SMEs - sales all SMEs value added
Korea	 16.5	9.6 8.4	20.2 38.4	46.3 63.2	Manufacturing Services
Malaysia				na	
New Zealand	19.0	16.0	20.0	55.0	Sales 1998
Philippines	35.8 24.0	12.0 30.1	10.8 8.4	26.5 62.7	Manufacturing Services value added 1995
Singapore		2.7	11.8	14.5	Manufacturing
Chinese Taipei		na	na	32.0	Sales 1997
Thailand				na	
Vietnam				na	

Sources as for Table 3 unless otherwise noted.

SME wage payments typically make up over half of GDP in regional economies, and hence are important for domestic demand expansion, and for the generation of savings funds (Hall (2000), p.2).

Contribution to exports

There is very little information on those SMEs that export and import goods and services. Hence reliable estimates of the proportion of exports generated by SMEs are traditionally difficult to obtain. The proportion of exports produced by SMEs in Asia is, however, large by OECD and world standards. Table 6 draws upon figures presented in Hall (1995, 2000) which shows that, weighted by GDP for the East Asian countries identified, SMEs generally contribute as much as 35 percent of direct

exports[7]. However, this does vary widely between countries. Export growth rates are generally higher than GDP growth rates, and, where figures are available, the rate of growth of SME exports is higher than the growth of overall exports. This points to SMEs in Asia already being significantly internationalised, and becoming more so. It is difficult to gauge the importance of SMEs by size of firm because few countries keep such export statistics. In addition, many SME exports are made indirectly via a larger firm or an agent, and are difficult to attribute to SMEs even when statistics are kept. The indirect contribution to exports is likely to be larger, however, and is probably close to 50 percent for APEC Asian economies.

The weighted[8] contribution of international SME exports to the GDP of those economies for which export figures are available is about 4 percent for the OECD countries (6 percent if indirect exports are included), and about 12 percent for the Asian economies. These figures are indicative only. They assume, for example, that where only manufacturing SME export figures are available that these are representative of exports generally in that economy. Similarly the estimates use the indirect export figure for SMEs where this is available, but for most economies it is not. Hence the overall contribution of SMEs to exports is likely to have been understated. In addition, SME foreign direct investment (FDI) is usually export oriented, thereby adding further to the potential for regional exports and technology transfer (Hall (2000), p.2).

This international role for SMEs in the East Asian region remains volatile, however, for three reasons. First, export markets are inherently subject to volatility via currency and exchange rate movements. This was amply demonstrated by the 1997-98 crisis. Second, export markets are affected by general economic conditions in both the exporting and the destination economies. Third, structural competitive shifts occur that render SMEs in one economy uncompetitive with those in another in supplying global markets. These variations can lead to shifts in demand of $\pm$ 50 percent at least over two to three years, and more in the longer term as structural changes flow through. This volatility has important implications for the stability of the SME sectors and for the continued growth of the regional economies. Hence the financial crisis of 1997-98 could be expected to have had important implications for the growth of this sector.

Contribution of SMEs to growth

SMEs make a major contribution to economic and, particularly, employment growth. Most of the available evidence suggests that SMEs contribute about 60 to 70 percent of net employment growth, so they are an important "Entrepreneurial Engine". This contribution has two main aspects. First, the net addition of new firms, net start ups, generate economic growth. About 80 to 90 percent of SMEs are micro enterprises, and they "churn"; that is, a significant proportion (between about 5 to 20 percent) "die" each year, while a similar proportion are "born" each year. If there is a net gain of births over deaths then this tends to add to overall economic growth, even though the average micro firm itself does not grow much in size. Second, it is the sustained growth of a relatively small group of successful (or high growth) firms that

[7] The equivalent figure for selected OECD countries, where estimates and statistics were available, was 26 percent.
[8] By country.

contributes significantly to economic growth. These firms typically survive for more than eight years, and often experience growth rates exceeding 30 percent per annum. It is only a relatively small percentage of SMEs (perhaps 5 percent or less) that contribute significantly to overall growth in this way, but their contribution can be quite large (see Hall (2002)).

Table 6 Structural contribution of SMEs to exports 1991-2

	GDP $US millions	Exports as per cent of GDP	Share of SMEs in total Exports %
Japan	3 337 191	12	13.5
PRC	435 000	21	40 - 60
Korea	285 000	27	40
Indonesia	128 000	23	10.6
Chinese Taipei	210 000	44	56
Thailand	108 000	29	10
Malaysia	60 000	72	15
Singapore	46 000	138	16
Vietnam	14 000	7	20
weighted contribution	11.7		30 -35%

Source: adapted OECD 1997
Note: ~ indicate estimate only. M = manufacturing only. Exports are direct exports by SMEs. This understates the true contribution of SMEs to exports.
Weighted contribution. For exports is the sum of GDP multiplied by the percentage of exports multiplied by the percentage of direct SME exports expressed as a percentage of total exports.

A number of observations can be made about the contribution of SMEs as the Entrepreneurial Engine of East Asia (see Hall (2002)). *First* it is clear that SMEs do provide the lion's share of growth. Typically, in the economies for which there are reliable data, about 70 percent of employment growth comes from SMEs. Anecdotally, even in economies for which there are no data, SMEs play a major role; for example almost all net employment creation in China, Vietnam and Indonesia in the last five to ten years has been in SMEs. In China and Indonesia, for example, large firms have been net job destroyers as they downsize - a phenomenon also common in Europe and the USA.

Second, the Entrepreneurial Engine is underpowered in much of East Asia, especially in the less developed economies of China, Indonesia, Philippines, Thailand and Vietnam. In these economies there are simply fewer SMEs than might be expected. Table 2 shows that the number of people per SME in these economies is much higher than in the more developed economies. This means that there are fewer start ups, and the pool of SMEs from which high growth SMEs can emerge is much smaller. Consequently there is less growth than there would otherwise be. In a *very* rough order of magnitude calculation, for these economies to achieve a benchmark level of 20 people per SME, there would have to be about 70 million new SMEs created (See Table 7). This needs to be compared with the 20 million or so SMEs in *all* of East Asia at present. This means 70 million or more people will need managerial skills and training. Most of these are in China. Table 7 suggests that there is considerable room for advancement in the development of SMEs in countries such as Indonesia and Thailand, two of the three most adversely afflicted economies during the period of the financial and economic crisis. Not surprisingly, these countries have given increased emphasis to SME sector development, with the objective of providing a firm base for

sustainable economic recovery, an expansion in employment opportunities, and as a means of alleviating poverty particularly in some of the more adversely affected regions in these countries. This situation is also similar to that in China and Vietnam, where, for historical, political, and cultural reasons, the development of the SME sector has also been retarded. Hence the sheer potential for SME start-ups in countries such as China, Indonesia and Vietnam could be a major source of job creation and growth for these economies in the future. In economies like Vietnam and Philippines, there need to be about 3 million or more additional managers. In the past this would be seen as a government responsibility, but the task is just to enormous to even contemplate for most governments. Changing technology (notably the www, and especially WAP access to the www) are changing this, and making it more feasible for the private sector to train large numbers of managers in a relatively short period of time, but it will still need public-private cooperation to achieve the sort of growth that is needed (see Hall (2002)).

Table 7 Estimated benchmark SME numbers in developing East Asia (millions)

	population	estimated number of SMEs now	benchmark SMEs if ratio is 20 people per SME	Additional SMEs needed to meet benchmark
China	1244.2	8.0	62.2	54.2
Indonesia	203.4	2.0	10.2	8.2
Philippines	71.4	0.5	3.6	3.1
Thailand	59.7	0.67	3.0	2.3
Vietnam	76.5	0.5	3.8	3.3
Totals	1655.2	11.7	82.8	71.1

Third, in developing East Asia the bulk of the SME contribution to growth will probably come from net start ups, while in developed East Asia, the growth contribution will tend to come more from high growth firms. Start-up rates tend to be relatively low, especially in Japan, which is the largest economy in the region. Japan's net start up rate (domestically at least) has been negative for some time. Part of this is the economic downturn, and part of it is cultural and institutional inhibitions to taking risk and starting a business. These cultural and institutional factors need to be actively addressed if East Asia is to really make use of the potential of its Entrepreneurial Engine.

Fourth, the Entrepreneurial Engine is being internationalised. For example, a small but significant proportion of SMEs in Japan, Korea and Chinese Taipei have already expanded operations abroad; about 13 percent of Japan's manufacturing output is now sourced abroad. It is becoming easier for SMEs to operate across borders. This is partly as a result of efforts to reduce trade and non trade impediments by WTO, APEC and ASEAN. It is also part of the general globalisation of business occurring as a result of improved communications (particularly E commerce and the web) and other technological and social changes. This SME internationalisation is not limited to specific regions, such as East Asia, but is more global. It is to this last aspect of the potential of SMEs to contribute more to the international economy that we now turn (see Hall (2002)).

Table 8 summarises nine key common features, and the differences, in the profile of SMEs in East Asia that have been discussed in this section.

Table 8 A Summary Profile of SMEs in East Asia

	common features…	**..and differences**
Numbers of Enterprises	1. There are about 20 to 30 million SMEs in East Asia. 2. On average there are about 85 people for every SME.	1. Most of the SMEs are in China (8 million) and Japan (5 million) and Korea (2.6 million) which together have 70% of the SMEs in East Asia. 2. In developed economies there are only about 20 people per SME, but the ratio is above 100 in the developing economies, especially in China, Vietnam, Philippines and Indonesia.
Employment	3. SMEs employ over 50% of the workforce. 4. Over 95% of enterprises employ less than 100 people, and over 80% employ less than 5 people. 5. SMEs seem to contribute about 70% of net employment growth.	3. In developing economies (below about $15,000 USD per head income) SMEs employ about 75% of people, above $15,000 the level is closer to 50%. Japan is a major exception - Japan's SMEs employ around 80% of the workforce. 4. More developed economies seem to have more medium sized SMEs and they play a greater role. Developing economies seem more likely to have a "missing middle". 5. In developed economies most of this growth probably comes from fast growth firms, in developing economies a higher proportion probably comes from net start ups.
Output measures (sales, value added etc)	6. SMEs contribute about 50% of sales, value added or output.	6. The contribution varies from lows of 15% (Singapore) and 30% (Australia) to about 60% for most other economies.
Exports	7. SMEs generate about 30% of exports, much less than the SME contribution to employment (about 60% to 70%) or output (about 50%).	7. SME exports figures are difficult to verify, but they range from about 5% or less (Indonesia) to around 40% (Korea) of total exports.
FDI	8. SMEs generate about 50% of cases of FDI, but only less than 10% of value of FDI.	8. Korean, Japanese and Chinese Taipei SMEs contribute most FDI originating in the East Asian region.
Entrepreneurial Engine and international potential	9. SMEs already contribute the bulk of growth, and SMEs could make a much bigger contribution to the Asian regional economy if efforts were made to address impediments to SME internationalisation. This could add as much as $1 trillion per year in trade.	9. The developing economies need to create about 50 to 70 million more SMEs if they are to achieve "benchmark" levels of SME activity.

Source: Hall (2002)

3. IMPACT OF THE CRISIS ON, AND RESPONSE BY, REGIONAL SMEs

3.1 Impact of the crisis on SMEs

With the onset of the crisis SMEs, as with other enterprises, have had to face an extremely unfriendly domestic and external environment (see Harvie (2002)). SMEs must operate within the macroeconomic environment of international and domestic markets, and as such are affected by changes in this environment. The major impact effects upon enterprises, including SMEs, arising from the crisis include: the price and volume of purchasing and sales both domestically and internationally; squeezed profit margins on existing products; reduced overall profitability arising from higher costs of inputs from higher domestic inflation and higher costs of imported inputs due to the collapse of the domestic currency, in conjunction with a decline in sales revenue; liquidity and cash flow difficulties arising from customer bankruptcies and bad debts, difficulties in getting paid from similarly cash constrained customers, and suppliers wishing to be paid as quickly as possible; a rising interest burden on outstanding loans; difficulties in gaining access to, and the cost of, temporary or longer term finance from financial institutions; the need to strengthen efforts in regard to marketing; investment, particularly in R&D, is likely to be severely curtailed; and downsizing and potential loss of key personnel in an attempt to reduce costs.

Declining profits are likely to have had the broadest impact on SMEs, arising from changes in sales and purchasing. Weak exports and domestic demand resulted in falling orders and reduced prices, and a reduction in overall sales revenue. While the volume of raw material inputs required would also correspondingly fall, the cost of these, particularly if they were imported and denominated in US dollars, would increase in domestic currency terms with weakened exchange rates. Thus SMEs experienced a reduction in post tax profit because of a fall in sales volume and a reduction of profit margins on existing orders. As a result of the overall falling off in profits, some enterprises found themselves in severe operational and financial difficulties. Many SMEs were affected by the recovery of accounts receivable from other financially constrained enterprises and customers, and consequently the percentage of their customer bad debts increased.

Based on available data from Taiwan, by comparison with large enterprises the percentage of SMEs that found themselves affected by: a fall in post tax net profits; a reduction in the volume of orders; and reduced raw material purchasing, was significantly higher, demonstrating that the effects of the financial crisis on SMEs were far broader in scope than that experienced by large enterprises (Ministry of Economic Affairs (1999). In addition, the fall in the percentage of total operating revenue accounted for by exports was higher among SMEs than large enterprises. This indicates that SMEs were feeling the effects of the crisis in a wider range of product items or regions, or that, because of their small scale of operations, SMEs were unable to diversify their product lines so that when market demand fell the percentage of companies affected was that much higher (Ministry of Economic Affairs (1999)).

Changes in the domestic financial environment, in particular, is liable to have had an impact upon SMEs in terms of financing, interest burden, liquidity and other

yardsticks of financial soundness. When a financial squeeze occurs it causes financial institutions to become more conservative in their lending to business enterprises, as a result of which SMEs have often not been able to secure the funding they needed, even on a short-term basis, creating cash flow problems. As far as changes in interest rates are concerned, SMEs have always been viewed by financial institutions as having a relatively unsound financial structure. Thus, when the basic loan rate is raised, the increase in the interest rate charged to SMEs is often higher than the increase in the basic loan rate. Besides financial crises, Central Bank monetary policy, fluctuations in the foreign exchange market and the overall state of the economy can all lead to changes in interest rates, foreign exchange rates and the availability of financing, which in turn can affect an enterprise's operational and financial status.

During the financial crisis banks were generally unwilling to make loans, although many large enterprises were still able to expand their loans. For SMEs, on the other hand, either because of the conservatism of the enterprise owners or because banks are generally less willing to make loans to them, the percentage of SMEs which increased their loans was far lower than that for large enterprises. Private loans, from family, friends and other network sources, are still an important potential source of support, even on a short-term basis, for SMEs during a financial crisis. Before the crisis SMEs had considerably smaller dependence on bank loans in comparison to large enterprises. Hence with the onset of the financial crisis, and the banking crisis in particular, it can be suggested that SMEs were affected to a smaller extent than large enterprises. Traditionally, they are more dependent upon alternative sources of finance, and were less severely affected by the credit crunch and the unwillingness of banks to lend.

For many years SMEs have been playing an increasingly important role in exporting and investing overseas. Under these circumstances, the occurrence of international financial crises is likely to affect SME competitiveness in terms of foreign trade and also as regards the success of overseas investment projects, the import cost of raw materials, and other external factors. Because of the falling off in exports, the percentage of operating revenue accounted for by exports will fall, and this could be made up to some extent by sales to the domestic market instead. However, it is more difficult for companies to change their reliance on imported raw materials. Even those SMEs oriented solely towards domestic demand are still affected by developments in international markets, owing to their reliance on imported raw materials. In addition, international financial crises can also be expected to affect domestic financial markets, thereby having an impact upon SMEs' financing and domestic investment activities.

3.2 Strategies used by SMEs in response to the financial crisis

Both past and recent experience of the aftermath of economic crises demonstrate that interest rates and exchange rates can have a major impact on SME production, sales, cash flow and profits. The question of how to conduct risk avoidance operations in the midst of a financial crisis is thus an important issue. Under current economic and financial circumstances in Asia a key issue is how corporate governance of SMEs can be maintained, or enhanced, to a point where risk can be controlled, and where the relationship between cost and profit is stable and predictable. This can prevent excessive fluctuations from affecting the long-term development of SMEs. If SMEs

are able to make effective use of risk avoidance strategies, tools and methods, they should be able to keep the impact of financial crises down to a minimum. In the following, emphasis is placed upon risk avoidance, risk management, market diversification, and other options as a means to keep the impact of financial crises at a minimum.

Risk avoidance

SMEs found themselves facing significant market, interest rate and exchange rate fluctuations during the period of the crisis. From the point of view of a business enterprise having to deal with major fluctuations in the state of the market, interest rates and exchange rates, the use of financial derivatives constitutes the most economical and fastest response strategy. Recent evidence from Taiwan (Ministry of Economic Affairs (1999) suggests that generally speaking, prior to the Asian financial crisis, the majority of SMEs considered credit risk (i.e. the risk of their customers dishonouring their debts) to be the biggest risk they faced; this was true for almost every category of enterprise. However, after the Asian crisis, exchange rate risk was considered to be the greatest risk. Hence there will be increasing interest for SMEs in exchange rate related derivatives (such as advance sale or purchase of foreign currency, currency swaps, foreign currency options etc.). For a relatively open economy with a high level of dependence on foreign trade, such as that of many of the East Asian economies, this means that the threat posed by exchange risk is a serious one, which obliges companies to make extensive use of derivatives to reduce their exposure to risk. The other major forms of risk are credit risk and liquidity risk (risk related to market liquidity and cash flow).

Risk management

The basic strategies employed in risk management can be divided into five categories. These include strategies relating to production, sales, products and R&D, investment and organisation, and personnel. In the area of production strategies, many SMEs have already begun to increase their level of outsourcing so as to reduce the burden of production facilities. The use of outsourcing for production can reduce the amount that needs to be spent on fixed costs, thereby reducing the company's leverage, which in turn reduces the effect of fluctuations in operating revenue and net operating profit. SMEs making use of outsourcing as a method of risk management tend to be higher than that for large enterprises, and outsourcing has become an important characteristic of the production strategy of many SMEs.

As far as sales strategy is concerned SMEs' most commonly used method of risk avoidance in this area is market diversification, followed by negotiation with customers to share exchange rate risk. Some SMEs are willing to sacrifice profits to maintain their market while a similar proportion adopt the opposite strategy, viewing market preservation as less important than profits. SMEs seem to emphasise market diversification more than large enterprises do.

In regard to product and R&D strategy, the main risk management methods employed by SMEs are product diversification and raising the level of product technology. The development of new products with high value added is another important product

strategy. Mass market products are subject to a high level of competition and also tend to be particularly badly affected by the vagaries of the global economy.

In terms of their investment strategy many SMEs temporarily halted investment plans as a response to risk, while many chose to strategic alliances to improve their position in terms of production or sales and to reduce the risk of overextending themselves. For many SMEs overseas investment, particularly with the severity of the crisis, played a relatively minor part in their overall investment strategy.

SMEs suffer from considerable restrictions in terms of both capital and personnel. This puts them at a disadvantage when it comes to research and development and marketing. In the context of a crisis SMEs need to retain their flexibility in terms of employment, but this should be done in such a way without losing key personnel, in key areas, essential for the long-term growth of the enterprise.

Market diversification

As a consequence of the financial crisis, evidence from Taiwan (see Ministry of Economic Affairs (1999)) suggests that many SMEs changed the regions to which they exported. This was a reflection of the change in exchange rates and economic growth in different regions. Because of the worsening creditworthiness in some countries, particularly in some the of the southeast Asian nations, many SMEs in Taiwan changed the method of payment which they requested from their customers. While the changes in SME exports were fairly noticeable, the percentage of companies which made changes in purchasing and import quotations was lower. There were relatively few companies that made changes to their choice of production location or to their main products.

Export prices for SMEs in Taiwan changed by more than that for large enterprises, while those changing their import quotation was less. This situation reflects the fact that when it comes to negotiation over sales and purchasing prices, SMEs are in a weaker position than large enterprises. Being in a weaker position for price negotiation was also one of the reasons why SMEs' profits fell more than that for large enterprises.

Others

SME skill and information deficiencies suggest the need for government agencies to provide advice on financial planning. In addition, in the future, SMEs will need to secure more support from banks and actively communicate with them. They also need to be more active in the management of their own cash flow. SMEs also need to develop a more thorough understanding of the benefits offered by the different types of financial products available from banks; and they must also try to establish themselves as the indispensable suppliers of larger companies, so as to be able to secure their support.

4. IMPORTANCE OF THE SME SECTOR FOR COMPETITION, RESTRUCTURING AND SUSTAINING ECONOMIC RECOVERY

The development of SMEs is largely recognised as being of primary importance for the generation of economic growth, export growth, the alleviation of poverty, the promotion of more pluralist societies, employment growth, and the generation of competition in domestic and international markets (World Bank). In market economies SMEs are the engine of economic development. Due to their private ownership, entrepreneurial spirit, their flexibility and adaptability as well as their potential to react to challenges and changing environments, SMEs can contribute to sustainable growth and employment generation in a significant manner. In Asia, with the liberalisation of economies, the restructuring of industries and, in some economies, the process of change of ownership, have resulted in governments facing difficulties due to the growing number of unemployed. Many of the crisis afflicted countries in Asia are recognising that SME development will be a crucial factor in the process of industrial restructuring, employment growth, export growth, and providing the basis for a sustained recovery of regional economies. Parallel with ownership reform and privatisation, the number of SMEs is increasing.

4.1 Strategic importance of SMEs

SMEs occupy an important and strategic place in APEC. This should not be surprising given our discussion in Section 2. They contribute significantly to the region's wealth and employment, as intermediate and final producers as well as consumers of goods and services. They are the primary vehicles by which new entrepreneurs provide the economy a continuous supply of ideas, skills and innovation. Strong SME sectors attract and enable foreign investors to establish and expand domestic linkages. SMEs thus play a critical role in creating opportunities that make the attainment of equitable and sustainable growth possible.

The strategic importance of SMEs today is recognised for a number of reasons, including the following:

- SMEs are contributing to employment growth at a higher rate than larger firms. The private sector, and in particular SMEs, form the backbone of a market economy, and in the long term are likely to provide most of the employment. SMEs tend to be concentrated in relatively labour intensive activities, consequently playing an important role in employing the growing labour force in developing countries and alleviating the severe unemployment that threatens the survival of the poor. A recent World Bank sector policy paper showed that labour intensity is from 4-10 times higher for small enterprises.

- support for SMEs will help the restructuring of large enterprises by streamlining manufacturing complexes, as units with no direct relation to the primary activity are sold off separately. Through this process the efficiency of the remaining enterprise might be increased as well.

- SMEs curb the monopoly power of large enterprises, and offer them complementary services and absorb the fluctuation of a modern economy;

- through inter-enterprise cooperation, they raise the level of skills with their flexible and innovative nature. Thus SMEs can generate important benefits in terms of creating a skilled industrial base and industries, and developing a well prepared service sector capable of contributing to GDP through higher value added;

- a characteristic of small industrial enterprises is that they produce predominantly for the domestic market, drawing in general upon national resources and use and develop predominantly domestic technologies and skills;

- a structural shift from large enterprises, privately and state owned, to smaller privately owned SMEs will increase the number of owners, a group that represents responsibility and commitment to meeting changing market demands;

- an increased number of SMEs will bring more flexibility to society and the economy and might facilitate technological innovation, as well as provide significant opportunities for the development of new ideas and skills;

- new business development is a key factor for the success of regional development, particularly given the need to restructure and reconstruct many existing businesses and industries in the crisis afflicted economies;

- SMEs not only play a key role in the economic development of individual economies, but, according to APEC, are also instrumental in promoting trade and investment activities among different economies. They are therefore instrumental in promoting the facilitation of a more open investment environment in the APEC region.

4.2 Assistance provided to SMEs in the region

Though the definition of SMEs varies with each economy, governments in the East Asian region, and APEC more generally, recognise the important role of SMEs in the development of their economies and especially in providing employment opportunities and in increasing and upgrading indigenous enterprises. Hence, SME development has been included as part of the economic development plans and most economies have adopted some specific policies and implementation measures relevant to SMEs. These policies and measures by their nature cover a very wide range of issues, for example: finance; taxation; market promotion; R&D; export strategies; and technology transfer amongst others. It should be stressed that policies utilised in one economy are not necessarily directly applicable to another economy, and may need further adaptation to suit local conditions and circumstances. Therefore, policies for SME development can differ widely across the regional economies. Most economies have financial assistance policies of some sort; these include export loans, financial instruments, reinsurance and lending institutions etc. Many economies also encourage their SMEs to export, although some are more active in this area than others. For example, Taiwan has not only established a comprehensive system encompassing eight areas: financing systems; management system; production technological system; research and development system; information management guidance system; industrial safety system; pollution prevention system; market guidance marketing system, it also has established certain key supporting systems and organisations

including: a credit guarantee fund for SMEs; specialised export processing zones; a central-satellite plants system and an SME development company and an SME development fund.

Besides government policies and measures, most economies have designed a number of private agencies or organisations to improve and support existing government policies involved in providing assistance of one kind or another to SMEs. These supporting organisations provide various services to SMEs that include consulting, market or technology information, training courses etc. For instance, may Australian SMEs are members of a number of industry associations, which meet regularly and submit their views to the Australian government. In Thailand, the Department of Industrial Promotion encourages the entrepreneurs to set up SME Associations with a major aim to bring about cooperation among SMEs themselves and provide assistance and beneficial activities to members such as specific training courses, study tours, sub contracting and joint ventures promotion, technical assistance, loans and other privileges.

Because of the strategic importance of SMEs a number of specific measures have been used to promote the development of SMEs in both developing and developed economies. These include:

- improvement of management training for SME managers;

- reduction of administrative burdens for SMEs. Such firms have special difficulties in complying with too many regulations and procedures, especially in the start-up phase. SME managers have little time for this, and cannot afford consultants and lawyers to help them with advice and administrative requirements. There is a need for one-stop shopping;

- facilitate financing for SMEs. This is an important and sensitive issue, as many SMEs have continuous cash-flow problems, even outwith a financial and economic crisis. As practice shows, large banks are much more ready to give loans to larger enterprises than to small enterprises. Often SMEs have to pay 2-6 per cent more interest rate for bank credits than larger firms;

- stimulate industrial research and development activities in SMEs. Many SMEs perform little or no R&D, partly because they have no tradition of it, and partly because they cannot afford it. Measures to increase industrial R&D in SMEs have to be created, especially if the SME is a supplier to a larger firm.

4.3 Difficulties encountered by SMEs

The difficulties encountered by SMEs differ considerably in the aspects of exporting, investing abroad, industrial upgrading, industrial structure change, and developing and expanding. SMEs in some economies, specifically the more technologically advanced, have concerns about intellectual property rights protection, particularly copyright and patenting in exporting. Other countries, such as Indonesia, have concerns with a lack of information, orientation and experience in SMEs trading and investing abroad. Shortage of skilled labour and lack of access to loans reduce the ability of SMEs to ensure or upgrade quality production in Malaysia and New

Zealand. Despite these differences the difficulties faced by SMEs have several things in common with respect to exporting and investing abroad, namely: a lack of information on overseas markets; shortage of funds for setting up business channels abroad; lack of experience in international business practice; and difficulties in managing workers employed abroad.

The Ottawa meeting of APEC, concerned with SMEs and their development, in September 1997, focused upon five key areas of importance to SMEs. These are access to: markets; technology; human resources; financing; and information.

- *Access to markets*. SMEs are recognised as facing special problems relating to their size and that, in the context of rapid trade liberalisation, they need to develop capacities to take advantage of opportunities arising from a more open regional trading system. The internet is regarded as being of particular importance, as is the need to identify appropriate partners for joint ventures, to harmonise standards and professional qualifications, including investment laws and taxation procedures, and the protection of intellectual property rights.

- *Access to technology*. In a knowledge based economy, applications of information and communications technology can be a great leveller for SMEs. However, when SMEs have limited access or understanding of these technologies, their prospects of acquiring and utilising these for their benefit is reduced.

- *Access to human resources*. Human resource development for SMEs requires a comprehensive approach including: social structures and systems such as broad educational reforms; encouragement of entrepreneurship, business skills acquisition and innovation in society; mechanisms for self learning and ongoing training and enhancement of human resources; and appropriate governmental support programs.

- *Access to financing*. Many SMEs lack awareness of financing resources and programs available from commercial banks and other private sector and government sources, and that they have difficulty defining and articulating their financing needs. Financial institutions need to be responsive to their needs and for continuing simplification of trade documentation.

- *Access to information*. Accurate and timely information is crucial for SMEs to compete and grow in a global market environment

While government strategies to assist SMEs vary, depending upon the country's stage of development, there are some basic principles of successful SME development strategies. Firstly, the creation of a level playing field. The fundamental key to a successful SME development strategy is the establishment of a business environment that helps SMEs compete on a more equal basis. To establish a level playing field, governments need to re-evaluate the costs and benefits of regulations that place a disproportionate burden on SMEs, implement regulations with the flexibility needed by SMEs, and place greater emphasis on competition and procurement policies to open SME access to markets. Secondly, to carefully target public expenditure in order to use scarce public resources effectively. Governments need to design a clear, coordinated strategy for SME development that carefully separates equity and

efficiency objectives. Public expenditure should be confined to those services and target groups that are under-served by the market and for which there is a clear justification based on public goods or equity considerations. Using the methodology of microfinance, good practice in the delivery of services to SMEs can be judged according to the performance criteria of coverage, cost effectiveness, financial sustainability and impact. Finally, encourage the private provision of a wide array of financial and non-financial services. In most developing countries, SMEs do not have access to institutions and instruments appropriate to their needs. To ensure SME access to a diverse range of financial and non-financial services, governments should strive to develop private markets for services suitable for SMEs, stimulating market development on both the demand and supply side.

5. CONCLUSIONS AND POLICY IMPLICATIONS

This paper has reviewed the strategic importance of SMEs to the East Asian economy, their response to the recent financial and economic crisis, policy measure to assist their recovery, and on going problems that they face. In the process a number of key issues for regional policy makers can be identified.

First, SMEs (generally those enterprises with less than 100 employees) are important to economic growth, and are especially important to jobs and job creation. SMEs already contribute over half the jobs in the East Asian region, and about 70 percent of new job creation seems to be coming from SMEs. In developing economies the contribution of SMEs to employment tends to be higher, around 70 percent of the workforce, but as economies develop to higher income per head levels, the contribution to employment by SMEs tends to decline to around 50 percent. In developing economies the jobs tend to be created more by start-ups, but in the developed economies jobs seem to be created more by high growth SMEs. It is important for policy makers to understand and to foster the way this Entrepreneurial Engine works and evolves.

Second, the Entrepreneurial Engine in developing East Asia from the data provided in this paper appears to be underpowered. That is the job creating potential of SMEs is less than it could be. There are about 2 billion people in East Asia, and about 20 million SMEs. In most of the developed economies there are about 20 people per SME, but in developing East Asia there are about 100 people per SME. This means that the ability to create jobs by start-ups is less, and the pool of SMEs from which fast growth SMEs emerge is smaller. This is largely due to historical and political reasons; for example, China and Vietnam have only followed policies to stimulate SME growth in the last decade or so, and there is a lot of catching up to do. Policy makers in both the developing and developed economies need to work with the private sector to address this aspect of catch up.

Third, internationally, SMEs have more opportunities than ever before, but they seem to be growing only at about the same rate as the international economy. SMEs contribute about 30 percent or so of direct exports, about what they contributed at the start of the 1990s, but is less than might be expected in an increasingly globalised economy. Part of the problem here is the paucity of statistics on SME international activity. Part of it is that the trade barriers that *have* been addressed so far by APEC and WTO tend to favour larger trading firms, and do not address the more specific

non-border non-trade impediments that SMEs tend to be obstructed by when operating across borders. These impediments need to be identified and addressed more aggressively.

Finally, SMEs have tended to become more important economically and politically. SMEs are given political recognition by most national and provincial governments because they employ so many people. However, politically, SMEs have tended to be taken for granted by many national governments because they are a relatively weak domestic political force. It is only in the last decade that SMEs have had the real choice of being able to internationalise, just as larger enterprises did in the 1950s and 1960s. SMEs, especially those fast growth SMEs which contribute much to economic and employment growth, can increasingly decide where to locate their business activity. This is very much a two edged sword for policy makers. However, they need to see that as much as 70 percent of the longer term growth for their economies comes from SMEs, and that there is a need to work together to build an attractive and conducive entrepreneurial business environment in the region, and, more specifically, in their own economies.

REFERENCES

APEC (1994), The APEC Survey on Small and Medium enterprises (available at http://www.actetsme.org).

APEC (1998), Profile of SMEs in East Asia, (available at http://www.actetsme.org)

Davis, S.J. Haltiwanger, J. and Schuh, S (1993), Small Business and Job Creation: Dissecting the Myth and Reassessing the Facts. National Bureau of Economic Research, Working Paper No 4992, Cambridge AM.

Hall, C. (1995), APEC and SME policy: suggestions for an action plan (available at http://www.arts.monash.edu.au/ausapec/smepolic.html)

Hall, C (1998), APEC SME Indicators - A feasibility study, APEC, Sydney.

Hall, C (1998) Squeezing the Asian Entrepreneurial Engine; the impact of the credit squeeze on sustainable entrepreneurial job creation in Asia, Paper to the ICSB 43rd World Conference Singapore, 8 - 10 June 1998

Hall, C (1999), Using the International Entrepreneurial Engine to Restart Asian Growth, in Leo Paul Dana (ed) International Entrepreneurship, an Anthology, NTU Entrepreneurship Development Centre, Singapore

Hall, C (1999), The Challenges and the Opportunities of E-commerce and International SMEs; implications for HRM in APEC, Paper to the APEC HRM Symposium, Kaohsiung 29 - 31 October 1999

Hall, C. (2000), E-commerce and SMEs in APEC – HRD implications and the role of PECC, Paper presented to the ninth annual meeting of PECC – HRD, Pacific Economic Cooperation Council Human Resource Development Task Force,

Hua, Taiwan, October 21-22.Hall, C. (2002), Profile of SMEs and SME Issues in East Asia, Chapter 2, pp.21-49, in C.Harvie and B.C. Lee (eds.), The Role of Small and Medium Enterprises in National Economies in East Asia, Edward Elgar, Cheltenham, UK (forthcoming).

Harvie, C. (2002), The Asian Financial and Economic Crisis and Its Impact on Regional SMEs, Chapter 2, in C.Harvie and B.C.Lee (eds.), Globalisation and Small and Medium Enterprises in East Asia, Edward Elgar, Cheltenham, UK (forthcoming).

Harvie, C. and Lee, B.C. (2002) (eds.), Globalisation and Small and Medium Enterprises in East Asia, Edward Elgar, Cheltenham, UK (forthcoming).

Harvie, C. and Lee, B.C. (2002) (eds.), The Role of Small and Medium Enterprises in National Economies in East Asia, Edward Elgar, Cheltenham, UK (forthcoming).

Ministry of Economic Affairs (1999), White Paper on Small and Medium Enterprises in Taiwan, Small and Medium Enterprises Administration, Taiwan, September.

OECD (1997), Globalisation and SMEs, Vol 1 and 2, OECD, Paris

Pomerleano, M. (1998), The East Asia Crisis and Corporate Finances: the Untold Micro Story, Mimeo, International Finance Corporation.

Tran, V.H., and Harvie, C. (editors) (2000), The Causes and Impact of the Asian Financial Crisis, Macmillan, Basingstoke, UK.

UNCTAD, (1998), Handbook on Foreign Direct Investment by SMEs - Lessons From Asia, UNCTAD, Geneva.

World Bank (1993), The East Asian Miracle: Economic Growth and Public Policy, Washington, DC: World Bank, Oxford University Press.

World Bank (1998), East Asia: the Road to Recovery, Washington DC: World Bank, USA.

STRATEGY DEVELOPMENT AMONGST SMALL AND MEDIUM BUSINESSES: AN ANALYSIS

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ABSTRACT

Although strategic management ideas are common amongst larger enterprises, many Small and Medium Businesses (SMBs) have survived by adopting passive or reactive management approaches in the past. In order for SMBs to maintain their sustainable competitive advantage and survival, they need to incorporate strategic visioning competencies and develop ability of utilizing professional management team, as well as strategic management tools and techniques in their strategic decisions. To what extent is this currently happening within Malaysian SMBs? This study is an exploratory attempt to examine the perceptions of owners/managers of SMBs on how strategic decisions are made in their organizations.

INTRODUCTION

Malaysia has a growing food processing industry which produces for the domestic and export markets. The Malaysian Government has placed great emphasis on its food processing industry and is providing incentives to food processors and manufacturers in the form of import duty exemptions for raw material ingredients and tax incentives to encourage investment in infrastructure development. This has attracted local and foreign investors who are now able to produce and export their products competitively from Malaysia. The Industrial Master Plan prepared by the Malaysian Industrial Development Authority (MIDA) has identified several high potential sectors in the food processing business, such as the processing of meat products, cocoa, fruits and vegetables, aquaculture and poultry products. Malaysian food processors are becoming increasingly more sophisticated in the types of products they offer and the way in which these products are marketed. The Federation of Malaysian Manufacturers and other related organizations are aggressively assisting Malaysian food processors and exporters in marketing their products in foreign markets. Marketing seminars and workshops are routinely organized to assist food processors in finding new markets overseas.

Sustained economic recovery is now well underway and investors are now focusing on Malaysia's growth rate, which is outpacing that of the Asian tigers. As globalization becomes a reality, so would competition from international and domestic markets in the food industry. Food companies of every size need to look at ways of generating new business, relating existing business and making their operations more efficient and cost effective. The pressure and challenges facing businesses in the new millennium have never been greater. Rapidly developing technology, increasing domestic and international competition, legislative demands and the sheer speed of economic change have resulted in growing demand for food safety and food quality management systems. Obviously, Malaysian companies need to develop a better strategy in dealing with the increasing challenges and pressures of globalization. How these companies look at, and what processes are involve in developing their strategies is the focus of this research.

Organizations develop their strategy differently from one another. The ways organizational executives look at and define strategy, as well as the processes they undertake in developing their company's strategy also differ. This study utilizing the Strategy development Questionnaire (SDQ), examines six dimensions in the process of strategy development amongst the Malaysian Small and Medium Size Businesses (SMBs) who are manufacturers, distributors or suppliers in the Food Industry. These dimensions are planning, incrementalism, cultural, political, command and enforced choice respectively. Data were collected through a small-scale mail survey from a cross section of Malaysian manufacturers, distributors and suppliers in the Food Industry.

RESEARCH OBJECTIVES

The objective of this paper is to determine the process of strategy development amongst SMBs specifically the manufacturers, distributors or suppliers in the Food Processing Industry. This research looks at how SMBs in Malaysia develop their strategy. In particular, the research focuses on how these SMBs, perceive and view the dominant processes that operate in these organizations in developing strategies. The research also compares the different perceptions of strategy development processes among these companies. This study is also aimed at determining whether there is any correlation between the companies' turnover and the strategy development dimensions of these companies.

LITERATURE REVIEW

Strategy is often referred to as a set of policies adopted by senior management that guides the scope and direction of the company. It takes into account the environment in which the company operates. Strategy is an inherently creative process (Saloner, Shepard & Podolny 2001). A strategy reflects a company's awareness of how to compete against whom, when, where and for what. According to Mintzberg and Waters (1985), there are five different forms that strategy can take. Intended strategies combined an organization's aspirations with its plans for future actions. Realized strategies refer to the past and depict what actually has come to pass. Deliberate strategies refer to elements of intended strategies that are actually realized.. However, plans that never materialized are labeled

unrealized strategy. Unplanned developments, on the other hand, create emergent strategies, that take shape over time without specific initiation.

In their book, *Exploring Corporate Strategy*, Johnson and Scholes (1999) state that typically, strategic issues have six identifiable dimensions: They (1) *require top management decisions*. Strategic decisions overarch several areas of a firm's operations. Therefore, top management involvement in decision-making is imperative. Only at this level is there the perspective for understanding and anticipating broad implications and ramifications, and the power to authorize the resource allocations necessary for implementation. (2) They *involve the allocation of large amounts of company resources.* Strategic decisions characteristically involve substantial resource deployment. (3) They have a ***significant impact on the long-term prosperity of the firm.*** Strategic decisions ostensibly commit the firm for a long period of time, typically for five years; however, the time frame of impact is often much longer. Once a firm has committed itself to a particular strategic option in a major way, its competitive image and advantages are usually tied to that strategy. (4) Strategies also tend to be ***future oriented.*** Strategic decisions are based upon what managers anticipate or forecast rather than on what they know. (5) They also have ***major multi-functional or multi-business consequences.*** A strategic decision is coordinative or necessarily involves a number of a firm's strategic business units (SBUs), functions, divisions or program units. Each of these will be affected by the allocation or reallocation of responsibilities and resources related to the decision. (6) ***Strategic decisions also consider factors in the external environment***. All business firms exist in an open system. They impact and are impacted by external conditions largely beyond their control. .

In strategy formulation, we are looking at the decision maker as a strategist. Strategy formulation is about a sense of purpose or mission, idea generation and planning of the effective utilization of corporate resources. Johnson and Scholes (1999) discussed some key aspects of strategic decision-making in firms. According to them, strategic decisions are likely to be affected by the scope of the company's activities, because the scope concerns the way the management conceive the company's boundaries. It has to do with what they want the company to be. Strategy development involves the matching of the activities of the company to its environment and to its resource capability. It is not just about awareness of the firm's environmental threats and opportunities but also about matching the organizational resources to these threats and opportunities. Strategies need to be considered in terms of the extent to which resources can be obtained, allocated and controlled to develop a strategy for the future. Operational decisions will be affected by strategic decisions because they will set off waves of lesser decisions. Strategy will also be affected by the expectations and values of those who have power within and around the company. Thus strategic decisions are apt to affect the long-term direction of the organization.

Strategic Management in Practice

One of the most fundamental means of approaching strategy is to consider the different processes that strategic management involves (Andrews 1995). Different types of

company have different configurations of strategy processes There are three types of development process; strategies developed as a result of managerial intent, as the outcome of cultural and political processes in and around the company, and strategy development that is imposed on the company (Ambrosini, Johnson and Scholes 1998). It is important to understand the nature of strategy development process because attempts to alter strategy development need to be based on a real understanding of the existing process rather than on assumptions about that process.

Strategy development as managerial intent

The dominant dimensions of strategy development as a managerial intent are the planning view, a command view and logical incrementalism. *Strategic planning* is a sequence of analytical and evaluative procedures to formulate an intended strategy and the means of implementing it. Many companies set up corporate planning departments and prescribed tools and techniques to be used. These includes the setting of objectives or goals by senior management; analysis of the environment and resources of the company to match environmental opportunities and threats with resourced-based strengths and weaknesses; generation of strategic options and evaluation; planning of implementation through resource allocation processes, structuring of the organization and design of the control system. A *command view* is where strategy develops through the direction of an individual or group. It is the situation where a dominant leader has become personally associated with the strategy development of the company. Thus has high degree of control over strategy. *Logical incrementalism*, on the other hand, is the deliberate development of strategy by 'learning through doing'. The arguments for adopting the incrementalist perspective depend on basically 3 points: (1) The future is unknown and unknowable, (2) External forces are too powerful to be controlled by organizations or their members, and (3) Managers cannot enforce adherence to their plans (Nutt 1987). Managers have a view of where they want the company to be in years to come and try to move towards this position in an evolutionary way. They sensitize environmental signals through constant scanning and by testing changes in strategy in small-scale steps. Continual testing and gradual strategy implementation provides improved quality of information for decision making and enables better sequencing of the elements of major decisions.

Strategy Development as Outcome of Cultural and Political Processes

Cultural view takes the position those strategies as outcome of the taken-for-granted assumptions and routines of companies shared by the members. The taken-for-granted collective experience. *Political view* is that strategy developed as the outcome of processes of bargaining and negotiation among powerful internal or external interest groups (stakeholders). Powerful individuals or groups may also exert influence over scarce resources, important information, identification of key issues, objectives of the company and strategies eventually selected.

Imposed Strategy Development

An *enforced choice* is the imposition of strategy by agencies or forces external to the company. Government may dictate a particular strategic course or direction; exercising extensive regulations over an industry. Multi National Corporation as seeking to develop businesses in some parts of the world may be subject to governmental requirements to do this in certain ways, like joint ventures or local alliances. Operating subsidiaries may have strategies imposed on them from corporate head office

Strategy Development and Small Firms

Past researchers have investigated the effects of strategic planning on financial performance of small firms (Greenley, 1986; Orpen, 1985; Rhyne, 1986). Robinson and Pearce (1984) argued that formal strategic planning is a conceptual activity that is more suitable for large firms and has no effect on financial performance of small firms. This view was supported by Greenley (1986) but refuted by Ramanujam and Venkatraman (1987) and Schwenk and Shrader (1993). Empirical studies in small firms have generally employ a single dimension measures such as the presence or absence of planning or its degree of formality to explain variations in organizational performance. Such conceptualizations are inconsistent with the multidimensional view of planning systems that is being viewed as more important in the recent literature (Kargar and Parnell, 1996; Veliyath and Shortell, 1993). Kargar and Parnell (1996) stressed that the relationship between planning and performance in small firms bears significantly on strategic management research and practice.

METHODOLOGY

Instrumentation

The Strategy Development Questionnaire (SDQ) developed by Bailey and Johnson (1992) was the instrument utilized for data collection. It is a self-administered technique, and each respondent can carry out assessment in approximately 15 minutes. Respondent's perception on how strategic decision is made in his/her company was gauged by evaluating each statement in the questionnaire using a Likert scale of 1 to 7. The thirty-six statements in the questionnaire measure the above-mentioned six dimensions of strategy development, namely planning, incrementalism, cultural, political, command and enforced choice. These questions were randomly arranged as items in the research instrument. The output from this self-completion questionnaire is a pictorial representation that identifies the dominant process operating within an organization – strategy development profile. The SDQ has a number of benefits (Bailey and Avery 1998). It builds on a conceptual framework and language for explaining strategy development and clarifies the complex processes at work in organizations. It also allows such processes to be made explicit when, so often, they are taken for granted or masked by what managers think should occur rather than what does occur. In this way it can facilitate the discussion of processes that are often not discussed. Furthermore, the SDQ can be used to compare different perceptions of strategy development processes.

Sample and Data Collection

In Malaysia, the small-scale business refers to companies having less than 50 workers, and an annual sales turnover not exceeding RM10 million. Medium-scale business refers to business entities employing between 51-150 workers and an annual sales turnover of more than RM10 million but less than RM25 million. In short, small and medium-scale business or SMBs can be defined as business entities with an annual sales turnover not exceeding RM25 million and having full-time employees not exceeding 150 workers. Sample population consists of randomly selected small and medium size manufacturers, distributors and suppliers within the food industry listed in Malaysian Directory of Small and Medium Sized Industrial Development Corporation (SMIDEC). A total of 100 Strategy Development Questionnaires (SDQs) were mailed to the respondents. The number of SDQs returned was 40, representing about 40% response rate.

RESEARCH HYPOTHESES

The hypotheses that will be tested in this study are:

Hypothesis 1

Companies with higher paid-up capital are bigger in size (in terms of capital and number of employees) and are more involved in strategy development especially the planning dimension.

Hypothesis 2

A Company's turnover is related to its involvement in strategy development

Hypothesis 3

Company size is related to the choice of strategy dimension in the strategy development process.

FINDINGS

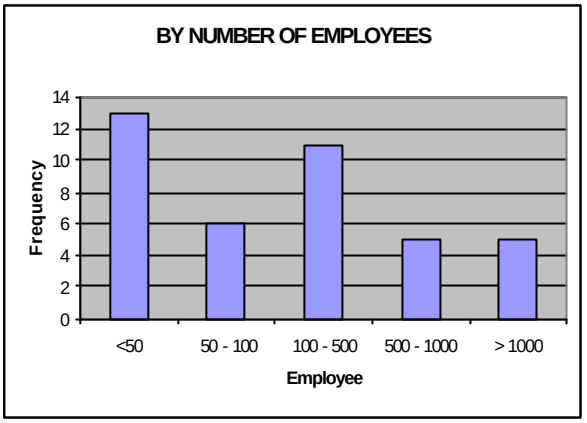
Profile of the respondents was categorized according to their principal business, estimated paid up capital, type of market, number of employees and estimated annual turnover. The following tables and figures depict this information respectively.

Profile of Respondent Firms

Table 1: By Number of Employees **Figure: 1: By Number of Employees**

EMPLOYEE

Group	Frequency	Percent
<50	13	32.5
50 - 100	6	12.5
100 - 500	11	27.5
500 - 1000	5	15
> 1000	5	12.5
Total	40	100



CAPITAL

Group	Frequency	Percent
<RM 100k	3	7.5
RM 100 k - 500 k	4	10
RM 500 k - 1 mill	7	17.5
RM 1 mill - 5 mill	10	25
>RM 5 mill	10	25
>RM 10 mil	6	15
Total	40	100

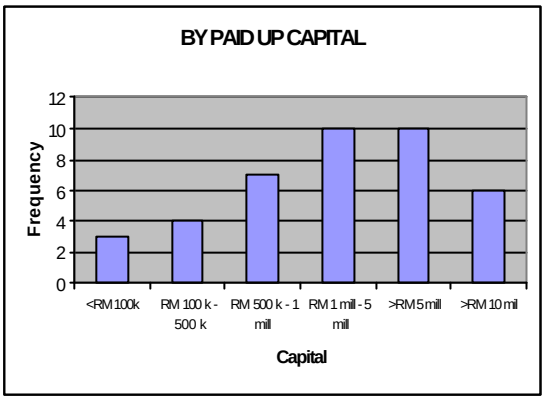


Figure 3: Profile of Respondents by size of Turnover

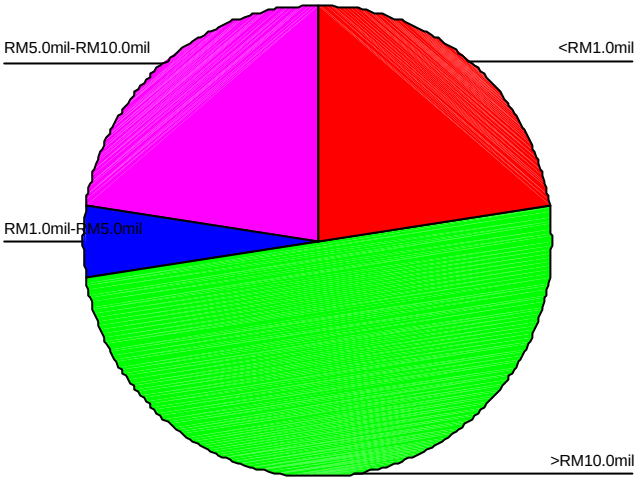


Figure 4: Profile of Respondents by Activity

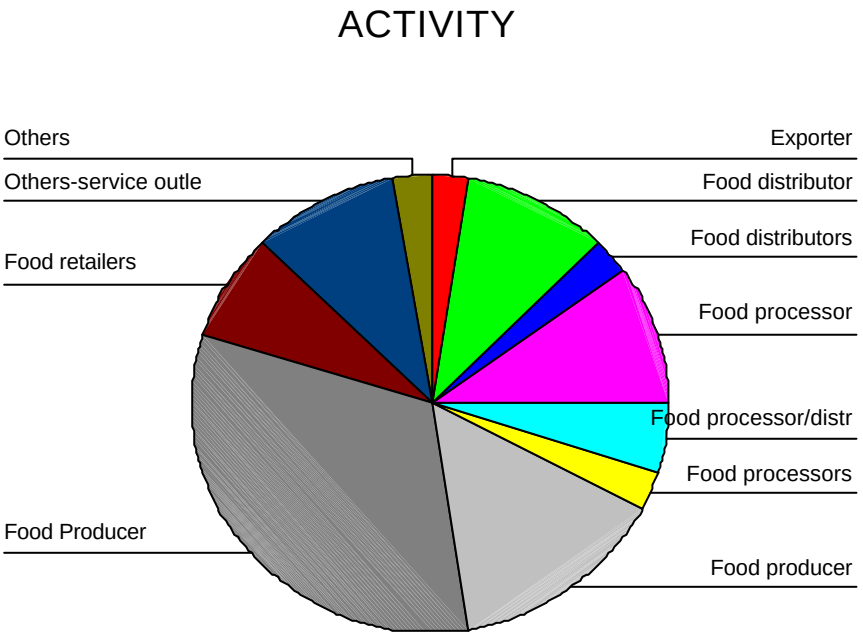
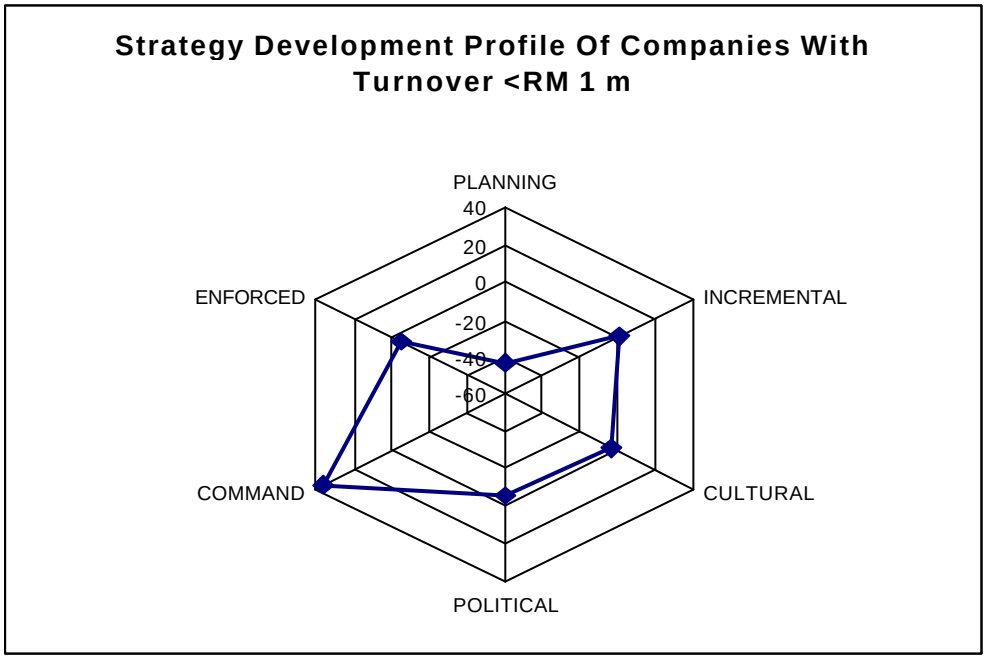


Figure 5: Strategy Development Profile of Companies with Turnover of RM 1 million or less



It can be seen from the findings that the companies with less than RM 1 million turnover tend to be smaller companies, possibly managed by a small management team. Consequently strategy development is driven by powerful individuals who are usually in "command" of, or at the helm of the company. Other dimensions are not apparent for this group of companies.

Companies with turnover of about RM 1 million to RM 5 million tend to develop strategy based on the "way of doing things" in the organization. The strategies are also developed in accordance with a set of shared assumptions based on past experience and history. In addition this group of companies are also influenced in their strategy development by the political and command dimensions. That is, the strategies are developed through the aspirations of either a group of people or an individual who is powerful and have a high degree of control over the strategy (See Figure 7).

Figure 8 shows that for the companies with turnover between RM 5 million to RM 10 million, the strategy development process in these companies are characterized mainly by 2 dimensions, namely, Enforced Choice and Incrementalism. The companies that are influenced by the Enforced Choice and Incrementalism dimensions are affected by the changes in the operating environment. They either adjusted their strategies to match with the changes in the operating environment or they are succumbed to the choice made by the external forces.

Figure 6: Strategy Development Profile of Companies With Turnover of RM1-5 million

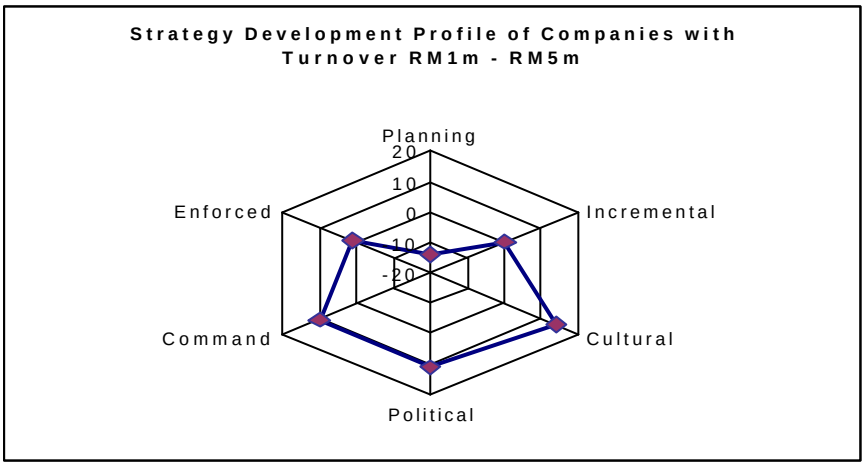


Figure 7: Strategy Development Profile of Companies With Turnover of RM5-10 mil

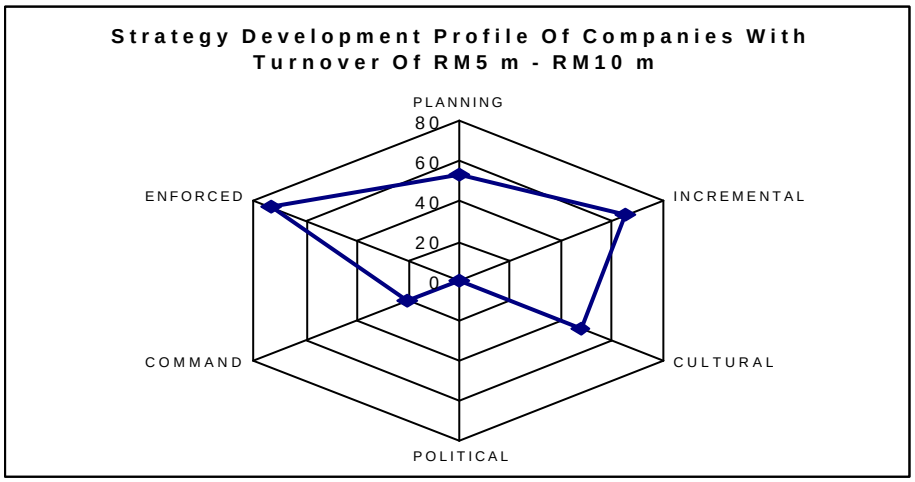
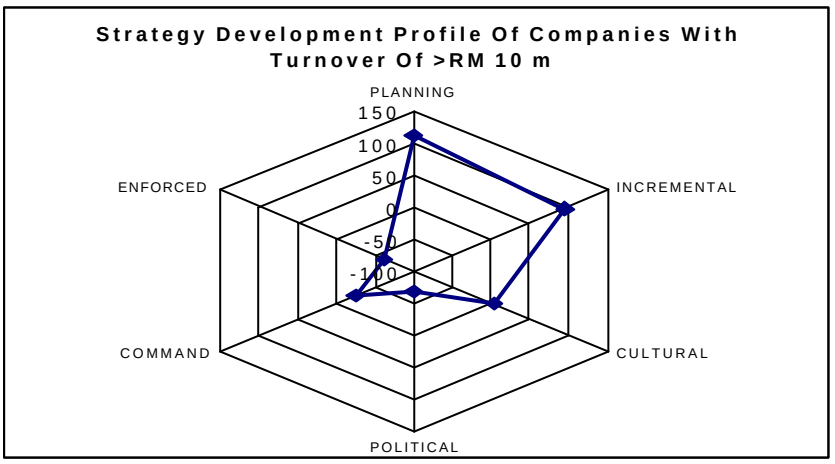


Figure 9: Strategy Development Profile of Companies With Turnover of Greater Than RM 10 million



It can be observed from Figure 9 that the companies with more than RM 10 million turnover tend to be influenced by Planning and Incrementalism. This supports hypothesis 1. Due to the companies' size in terms of capital and number of employees, the strategies are developed in a rational, sequential and methodical procedure, with adjustments continually made to match the changes in the operating environment of the firm.

Figure 10 places all of the four groups of respondent companies in one bar chart; this depicts a comparative analysis of the dimensions of strategies applicable for each of the respondent group of firms relative to the other respondent groups. From the chart in Figure 10, it can be summarized that:

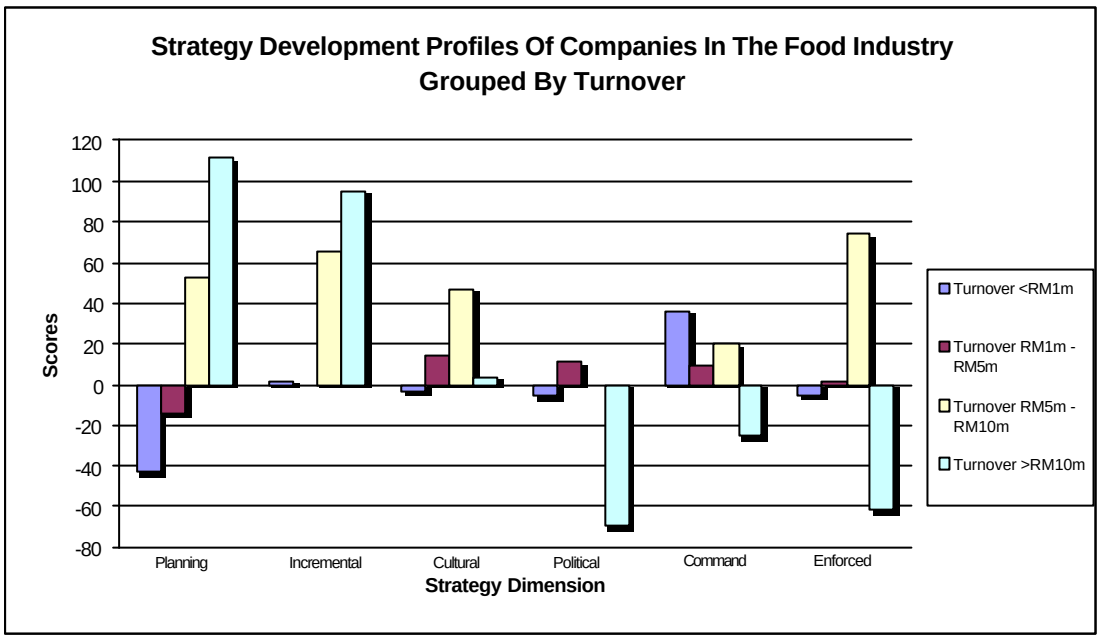
i. Companies with turnover of more than RM10mil emphasize on Planning and Incrementalism. Under these dimensions definite and precise objectives are set. Political, command, cultural, and enforced dimensions are not almost non-existent within this group of companies.

ii. SMI companies with turnovers of RM5m to RM10m are involved with almost all the dimensions of strategy development with Enforced Choice, Planning, and Incrementalism being the dominant ones.

iii. Smaller companies are usually more influenced by command and Enforced Choice, and in contrast to high-turnover companies, they are least involved in the planning dimension of strategy development

Thus, hypothesis 2 and 3 of this study is supported by the above-mentioned findings. Companies' s size is related to its choice of strategy development dimensions; whilst companies' turnover is related to its involvement in strategy development.

Figure 10: Strategy Development Profile of Respondent Firms Grouped by Turnover



MANAGERIAL IMPLICATIONS

The result of the survey supports the hypotheses drawn up at the beginning of this paper. It lends further support to the notion that smaller companies are less involved in strategy development, instead are leader-influenced ("command dimension"). This is reflective of small management team or sole proprietorship.

The higher the company's turnover could possibly imply that the company:

- Has higher capital investment and larger number of employees that correlates with higher turnover, and consequently is more involved in strategy development.
- That these companies probably make use of appropriate strategic tools and strategy development to achieve success, and
- These successes of high turnover may have been achieved by implementing strategy development through Planning and Incrementalism dimensions.

Hence, this study indicates that the dimensions of strategy development within an organization is reflective of and are dependent on the size of the company. The bigger the company, the more defined is the strategy development process.

Managers must realize that discovering and defining the process of strategy development is an integral part of a company's growth and development. This is evident in this study, as exemplified by large turnover firm that focuses more on the Planning dimension of strategy development. Managers and leaders must take note of internal and external environment and the importance of planning and incrementalism dimensions in their strategy development for the success of their business. Strategy development, thus, should be an integral part of the strategic management process of even small firms. However, what is even more critical is that effective dimensions of strategy development, not just the process of strategy development appears to be associated with higher turnover

LIMITATIONS AND FUTURE RESEARCH DIRECTION

This study focuses only on SMBs in the Malaysian Food Industry and it is based solely on perceptions of strategy development in these sample firms. Future research may look at SMBs in other industries and make a comparative analysis of the different dimensions of strategy development in different industries. Research may also utilize the SDQ to compare different perceptions of strategy development processes between different SBUs of functions within a firm; or even between different levels of management. Longitudinal studies could also look at the different dimensions of strategy development in firms over time.

REFERENCES

Andrews, K. .Z. (1995). It's all in the Process. *Harvard Business Review*, 73 (September-October): 10-11

Ambrosini, V., G. Johnson and K. Scholes. (1998) *Exploring Strategic Management.* New York: Prentice Hall

Bailey, A. and G. Johnson. (1992). How Strategy Develop in Organizations, in D. Faulkner and G. Johnson (eds), *The Challenge of Strategic Management*. London: Kogan Page

Gerry Johnson and Kevan Scholes (1999). *Exploring Corporate Strategy*.5th Edition. London: Prentice Hall

Greenley, G. 91986) Does Strategic Planning Improve Company Performance? *Long Range Planning*, 19: 101-109

Mintzberg, H and J.A. Waters (1985). Of Strategies, Deliberate or Emergent. Strategic Management Journal, 6: 257-272

Napuk, K. 1996. *The Strategy-Led Business: Step-by-Step Strategic Planning for Small and Medium Sized Companies*. London: McGraw Hill

Nutt, P.C. (1987). Identifying and Appraising How Managers Install Strategy. *Strategic Management Journal*, 8: 1-14

Orpen, C. (1985). The Effects of Long Range Planning on Small Business Performance: A Further Examination. *Journal of Small Business Management*, 1: 16-23.

Kargar, J. and J.A.Parnell. (1996). Strategic Planning Emphasis and Planning Satisfaction in Small Firms: An Empirical Investigation, Journal of Business Styrategies, 13 (1) Spring: 42-64.

Ramanujam, V., and N. Venkatraman. (1987) Planning and Performance: A New Look at an Old Question, *Business Horizon*, 30:19-25.

Rhyne, L.C. (1986). The Relationship of Strategic Planning to Financial Performance, *Strategic Management Journal*, 7: 423-426

Robinson, R.B. , and J.A. Pearce. (1983). The Impact of Formalized Strategic Planning on Financial Performance in Small Organizations, *Strategic Management Journal*, 4: 197-207

Saloner, G., Shepard A. and J. Podolny. (2001). *Strategic Management*. New York: John Wiley & Sons

Schwenk, C.R., and C.B. Shrader. (1993). Effects of Formal Strategic Planning on Financial Performance in Small Firms: A Meta-Analysis, *Entrepreneurship Theory and Practice*, 17: 53-64.

Veliyath, R., and S.M.Shortell. (1993)Strategic Orientation, Strategic Planning System Characteristics and Performance, Journal of Management Studies, 30: 359-381.

ECONOMIC PERFORMANCE AND PRODUCTIVITY GROWTH OF INDONESIAN SMES

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ABSTRACT

This study examines the development of SMEs in Indonesia, using the unpublished manufacturing data of BPS. Along with LEs, SMEs developed reasonably well in terms of output and employment growth. Particularly, SMEs in the machinery sector recorded good results. The share of SMEs in value added was relatively small, but the SME sector contributed to a great extent to the Indonesian economy in terms of the number of establishments and labour force. The analysis of economic performance in the Indonesian manufacturing industry by firm size indicates in broad terms that SMEs can coexist with LEs, by producing a unit of output with less capital but more labour than LEs. In Indonesian manufacturing as a whole, SMEs and LEs increased labour productivity at a similar rate during 1986-96. SMEs in the machinery industry increased labour productivity faster than SMEs in other main sectors. SMEs in the machinery industry also increased their TFP markedly, compared with SMEs in other key sectors, and even compared with LEs in the same sector.

1 INTRODUCTION

The Indonesian economy experienced significant economic growth during 1966-97. The manufacturing industry has played an increasing role in this process (Hill 1996). It is often said that the LE (large-scale enterprise) sector, supported by government policies and measures, has been an important player in rapidly expanding the Indonesian manufacturing sector (e.g., Berry and Levy 1999: 33). This study seeks to examine whether SME development also took place in Indonesia in line with LE development and to what degree the SME sector contributed to industrial development.

The rest of this study is organised as follows. Section 2 provides an overview of SME development in Indonesian manufacturing industry. Subsequently, the development of SMEs in Indonesia is analysed, based on the national-level statistical data. The economic performance of manufacturing enterprises by firm size is discussed in Section 3, while the growth of labour productivity and total factor productivity (TFP) are calculated for SMEs and LEs separately in Section 4. The last section summarises the main conclusions.

2 SME DEVELOPMENT IN INDONESIA

There are several definitions of SMEs and different definitions are used by various Indonesian government agencies. This section first defines SMEs suitable for the

purpose of this study. In the next part, SME policies and measures in Indonesia are reviewed in order to understand the general conditions under which SMEs developed. Thereafter, the section provides an overview of the development of SMEs in the manufacturing industry, particularly the machinery sector.

2.1 Definition of SMEs in This Study

The Indonesian government often perceived the promotion of SMEs not as an aspect of industrial development but of social development. It tended to support micro and smaller SMEs. Berry and Levy (1999: 31) state that LEs and micro- or very small-scale enterprises have received a large part of the incentives which the Indonesian government provided.[1] These enterprises occupied a considerable share of output and workforce. In contrast, medium-scale viable firms have received limited attention and occupied a modest share in production and employment.[2] The experience of these medium-scale enterprises with 100 to 300 workers has hardly been highlighted in the context of Indonesia.

Consequently, most of SME definitions in Indonesia cover only smaller SMEs and do not include larger SMEs. As indicated in Table 1, BPS (the former Central Bureau of Statistics, currently Statistics Indonesia) defines firms with four or less workers, those with 5 to 19 workers and those with 20 to 99 workers as household, small-scale, and medium-scale enterprises, respectively. The Indonesian Ministry of Industry and Trade (MOIT) defines manufacturing SMEs on the basis of the value of their assets (excluding land and buildings). Firms with assets of less than Rp 200 million are small-scale enterprises and those with assets of Rp 200 million to Rp 5 billion are small- and medium-scale enterprises. The Indonesian Small Business Law of 1995, which aimed to foster small-scale enterprises for the purpose of promoting fair and equitable society, defines small-scale enterprises as firms with assets (excluding land and buildings) of less than Rp 200 million or with sales of less than Rp 1 billion.[3] This definition has been used by Bank Indonesia, the central bank, and by the State Ministry of Cooperatives and Small & Medium Enterprises (MOCSME).

[1] Despite frequent manifestations of great sympathy for SMEs, the public policies in Indonesia have tended to favour LEs (Hill 2001: 253). On the other hand, when the government extends assistance to SMEs, the main target group has been not medium-scale enterprises but cottage or small-scale enterprises particularly owned by *pribumi* entrepreneurs. Hayashi (2000 and 2001) illustrated that the latter group had better access to technical and financial support provided by the public sector.

[2] As stated above, in Indonesia, dynamic SMEs do not have a broad base in industrial structure and are ignored at policy levels as being too big to be small and too small to big. Berry and Levy (1999: 31) characterized this industrial phenomenon in Indonesia as a "missing middle." The "missing middle" results in the underutilisation of productive capability that viable SMEs potentially have.

[3] In addition to small-scale enterprises, medium-scale enterprises have recently been defined by the government as firms with assets of Rp 200 million to Rp 10 billion or with sales of Rp 1 billion to Rp 50 billion. This definition can include larger SMEs. Based on these capital and sales criteria, however, firms cannot easily or quickly be classified into size categories when data from BPS or our field survey are used.

Table 1 Definition of Manufacturing SMEs in Asian and Pacific Countries

Country/ Organization		*Definition of Manufacturing SMEs*	
		Criterion	*Size* [1]
Indonesia	BPS[2]	Employment	SMEs < 100
	MOIT[2]	Assets	SMEs < Rp 5 billion (US$ 0.7 million)
	Bank Indonesia/ MOCSME[2]	Assets	SMEs Rp 10 billion (US$ 1.4 million)
		Sales	SMEs Rp 50 billion (US$ 7 million)
Japan		Employment	SMEs < 300
		Invested Capital	SMEs < ¥ 300 million (US$ 3 million)
Korea		Employment	SMEs 300
Malaysia		Invested Capital	SMEs MR 2.5 million (US$ 0.7 million)
Philippines		Employment	SMEs < 200
		Assets	SMEs P 60 million (US$ 1.5 million)
Singapore		Assets	SMEs S$ 15 million (US$ 9 million)
Taiwan		Employment	SMEs < 200
		Invested Capital	SMEs NT$ 60 million (US$ 2 million)
Thailand	Bank of Thailand	Employment	SMEs < 300
	MOI[3]	Employment	SMEs < 200
	MOI[3]	Assets	SMEs < 100 million baht (US$ 2.7 million)
Canada		Employment	SMEs < 500
		Sales	SMEs CDN$ 20 million (US$ 14 million)
USA		Employment	SMEs < 500

Notes: 1) Figures in parentheses in this column indicate the amount in terms of US dollars converted by respective exchange rates at the end of 1999 (IMF, International Financial Statistics). Indonesia: US$ = Rp7,085, Japan: US$ = ¥102.20, Malaysia: US$ = MR3.80, Philippines: US$ = P40.31, Singapore: US$ = S$1.67, Taiwan: US$ = NT$31.40, Thailand: US$ = 37.52baht, and Canada: US$ = CDN$1.44.

2) BPS = Statistics Indonesia, MOIT = Ministry of Industry and Trade, and MOCSME = the State Ministry of Cooperatives and Small & Medium Enterprises.

3) MOI = Ministry of Industry.

Sources: APEC (1994: 10-2) and JSBRI (1998: 6).

Table 1 indicates that most of the neighbouring countries adopt the number of workers as their main criterion which distinguishes SMEs from LEs and they often use the size of 200 to 500 employees as a cutoff between SMEs and LEs. For instance, Japan, South Korea and Thailand regard manufacturing firms as SMEs if their number of employees is less than 300 workers. In addition, this study aims to cover not only SMEs that can be promoters of distributional or welfare goals but specifically SMEs that can be a driving force in the process of industrialisation. Attention is paid to the "missing middle" or potential and dynamic SMEs. For these reasons, it seems

appropriate to define in this study SMEs in Indonesia as enterprises with 299 or less employees.[4]

2.2 Policies and Measures for SME Development in Indonesia

The Indonesian government has advocated the importance of SMEs in many official statements. It has formulated and implemented various types of policies and measures aimed at the development of the SME sector. For example, in Repelita VI (the Sixth Five-year Development Plan during 1994/95-1998/99), the government emphasised the promotion of SMEs, aiming mainly at 1) creating employment and 2) improving huge imbalances of income distribution across regions and ethnic groups. Table 2 provides a chronological overview of the policies, programs and organisations relevant to the promotion of SMEs in Indonesia.

Table 2 reveals that the Indonesian government has tried almost all types of SME support at one time or another. The BIPIK (small industries development) program was introduced in 1974 and carried out as one of the main technical support programs for small-scale industry. Under this program, technical assistance was extended to small enterprises through UPTs (technical service units) staffed by TPLs (extension field officers). After the BIPIK program finished in 1994, the PIKM (small-scale enterprises development) project was launched and has continued until now. However, because of budget constraints and institutional problems, the UPTs-TPL system has not functioned well. Consequently, the PIKM has not been able to provide small industry with sufficient technical support.[5]

As financial support programs, the government initiated the KIK (credit for small investment) and the KMKP (credit for working capital) in 1973 and continued them in the 1980s. In 1990, however, because of high default rates and budget constraints of the government, such subsidized credit programs were abolished and, instead, the non-subsidized KUK (credit for small businesses) scheme was established (Thee 1994: 101-4). During the last five to ten years, the main credit programs available to SMEs have been: 1) the KUK (credit for small businesses) scheme, which requires banks in Indonesia to allocate 20 percent of their lending to small-scale firms; and 2) the Liquidity Credit Scheme, which restarted in 1998 and provided credits to farmers, cooperatives and SMEs. Despite these programs, only around 10 percent of SMEs use bank credit and the remaining 90 percent do not receive loans from formal financial institutions (Urata 2000: 16-32).

[4] In support of this definition, we can refer to Goeltom (1995: 18) who, in her empirical analysis on the effects of financial reforms in Indonesia on the manufacturing industry, classified firms as small if the number of employees is less than 100, medium if the number of employees is between 100 and 500, and large if the number of employees is more than 500. This definition allowed her to evaluate in detail the impact of financial liberalisation on larger SMEs that have not usually been focused on.

[5] UPTs are public technical institutions specialising in technical support for SMEs. In the middle of the 1990s, the Indonesian Ministry of Industry and Trade (MOIT) stopped allocating a budget to UPTs and they have since then faced serious financial difficulties. The number of UPTs declined from more than 160 in the peak period of the 1980s to around 80 in 1997. When the author visited the UPT in PIK Pulogadung of Jakarta in October 1999, it had six staff members who managed their operations on a very limited budget of Rp 2,000,000 (around US$ 300) per month.

Table 2 Policies, Programs and Organisations for SME Development in Indonesia

Technology	1969	MIDC (Metal Industry Development Center) established.
	1974	BIPIK (Small Industries Development) Program formulated as a technical support program for SMEs.
	1979	Under BIPIK program, LIK and PIK (Small Industrial Estates) constructed and technical assistance extended to SMEs in or near LIK/PIK mainly through UPT (Technical Service Units) staffed by TPL (Extension Field Officers).
	1994	BIPIK program finished and PIKM (Small-scale Enterprises Development Project) launched.
Marketing	1979	Reservation Scheme introduced to protect markets for SMEs.
	1999	Anti Monopoly Law enacted.
Financing	1971	PT ASKRINDO established as a state-owned credit insurance company.
	1973	KIK (Credit for Small investment) and KMKP (Credit for Working Capital) introduced as government subsidized credit programs for SMEs.
	1973	PT BAHANA founded as a state-owned venture capital company.
	1974	KK (Small Credit) administered by BRI (Indonesian People's Bank) launched and later (1984) changed to KUPEDES scheme (General Rural Savings Program) aimed at promoting small business.
	1989	SME Loans from state-owned enterprises (1 to 5 % benefits) introduced.
	1990	Government subsidized credit programs for SMEs (KIK/KMKP) abolished and unsubsidized KUK (Credit for Small Businesses) scheme introduced.
	1998	The Liquidity Credit Scheme restarted.
	1999	The responsibility of directed credit programs transferred from Bank Indonesia (the central bank) to PT PNM (State-owned Corporation for SMEs) and Bank Export Indonesia.
	2000	Major government credit programs for SMEs, including KUK, abolished.
General	1973	Ministry of Light Industry and Ministry of Heavy Industry merged into Ministry of Industry.
	1976	Deletion (localization) Programs for the commercial cars introduced (motorcycle in 1977 and some other products such as diesel engine and tractors later on).
	1978	Directorate General for Small-scale Industry established (in Ministry of Industry).
	1984	Foster Father (*Bapak Angkat*) Program introduced to support SMEs.
	1991	Foster Father-Business Partner Linkage extended to a national movement.
	1991	SENTRAs (Groups of Small-scale Industry) in industrial clusters organized as KOPINKRA (Small-scale Handicraft Cooperatives).
	1993	Deletion Programs for the commercial cars finished and Incentive Systems adopted.
	1993	Ministry of Cooperatives started handling small business development.
	1995	Basic Law for Promoting Small-scale Enterprises enacted.
	1997	Foster Father (*Bapak Angkat*) Program changed to Partnership Program (*Kemitraan*).
	1998	Ministry of Cooperatives and Small Business added medium business development to its responsibilities.
	1998	SME promotion emphasized in People's Economy as a national slogan.
	1999	New Automobile Policy announced and Incentive Systems finished.

Sources: Thee (1994: 101-11), internal documents prepared by the Indonesian Ministry of Industry and Trade, and author's interview survey.

From 1976 to 1993, the government attempted to foster small- and medium-scale parts supplier firms through the Deletion (localisation) programs for some import-substitution products, such as commercial vehicles, motorcycles and diesel engines.

Recognising that inter-firm linkages would be a key to the development of SMEs, the Indonesian government initiated a forced subcontracting program, known as the Bapak Angkat (foster-father) program.[6] However, these programs did not achieve significant results. LEs did not participate in the programs in a positive way, because the forced subcontracting linkages tended to provide them with only limited benefits.

Even though several ministries and organisations in the government sector such as MOIT and MOCSME have experimented with various kinds of programs for the promotion and protection of SMEs, most of them were not effective or did not function well. Thee (1994) attributed these outcomes to insufficient institutional capabilities of the government sector as well as inadequate designs of policies and programs. Berry, Rodriguez and Sandee (2001: 377) suggested that unproductive assistance to small firms extended by public agencies be ascribed to a philosophy that the government should guide and help weaker groups in society, many of which comprise people who work in the SME sector. Such motivations have induced the government to extend free of charge support services not to viable medium-scale enterprises but to innumerable micro- and small-scale enterprises. By spreading the effort over so many firms, the public sector has tended to provide "one-shot" support to micro- and small-sized enterprises only, without sufficient follow-up services.

2.3 An Overview of SME Development in Indonesia

As was already observed, Indonesia experienced dynamic economic development through the rapid growth of its manufacturing industry since the early 1970s. The LE sector, particularly in those subsectors that allowed specialisation in labour-intensive assembling operations and a shift toward export-oriented production, played an important role in this remarkable industrial development in Indonesia (Berry, Rodriguez and Sandee 2001: 364). How did the SME sector contribute to the development of manufacturing industry? This subsection examines the role of SMEs in the process of industrial and economic development in Indonesia.

Table 3 indicates that LEs with 300 or more employees recorded generally higher growth rates of value added and employment than SMEs with 299 or less employees. During 1986-99, value added and employment of SMEs in manufacturing as a whole expanded at average annual rates of 6.4 percent and 4.5 percent, lower than those of LEs. Annual value added growth of smaller SMEs (including microenterprises) with 19 or less workers was less than 4 percent, while that of medium and larger SMEs with 20 to 99 workers and with 100 to 299 workers was 7.5 percent and 8.1 percent, respectively.

During 1996-99, however, output in the entire manufacturing SME sector decreased by 0.1 percent per annum, significantly less than the decrease of output in the LE sector of 3.2 percent. Within the SME sector, medium to larger SMEs with 20 to 299 employees

[6] The "Foster Father-Business Partner" partnership and linkage program (Program Kemitraan dan Keterkaitan Bapak Angkat-Mitra Usaha) was introduced in 1984 to promote the development of local SMEs. The program urged LEs as the "Foster Fathers" to support SMEs as small "Business Partners" through the establishment of subcontracting relationships. The government expected LEs to provide SMEs through these forced linkages with assistance in the areas of technology, management, marketing, financing and so on. For further details, see Thee (1994: 106-7).

responded more flexibly to the sudden changes in economic conditions than smaller SMEs with 19 or less employees.

Table 3 Growth of Value Added and Employment in Indonesia's Non-Oil/Gas Manufacturing Industry by Firm Size, 1986-1999[1)]

Sector/Firm Size[2)]	*Average Annual Growth Rates* (%)[3)]					
	1986 -1996		*1996 - 1999*		*1986 - 1999*	
	Value Added	*Employment*	*Value Added*	*Employment*	*Value Added*	*Employment*
Manufacturing						
1 - 19	7.7	6.6	-7.8	-2.6	3.9	4.4
20 - 99	9.4	5.7	1.3	-1.6	7.5	3.9
100 - 299	8.8	7.8	5.7	-0.2	8.1	5.9
SMEs	8.5	6.6	-0.1	-2.3	6.4	4.5
LEs	13.3	11.1	-3.2	0.6	9.3	8.6
All Firm Size	11.8	7.7	-2.4	-1.5	8.3	5.5
Food (31)						
1 - 19	6.8	7.2	-6.8	-4.8	3.5	4.3
20 - 99	7.9	4.2	4.9	-1.7	7.2	2.8
100 - 299	9.5	5.2	20.4	1.7	11.9	4.4
SMEs	7.8	6.9	5.3	-4.3	7.2	4.2
LEs	9.4	4.5	7.2	0.6	8.9	3.6
All Firm Size	8.9	6.5	6.7	-3.5	8.4	4.1
Textile and Apparel (32)						
1 - 19	11.9	8.5	-12.5	-2.2	5.7	5.9
20 - 99	2.8	5.1	0.0	-3.4	2.1	3.1
100 - 299	4.2	8.4	14.8	-0.1	6.6	6.4
SMEs	7.1	8.0	-0.3	-2.1	5.3	5.6
LEs	10.3	16.0	-0.6	0.0	7.7	12.1
All Firm Size	9.5	11.2	-0.5	-1.0	7.1	8.3
Machinery (38)						
1 - 19	8.7	5.1	-9.9	-2.8	4.1	3.2
20 - 99	9.8	6.4	12.0	-0.4	10.3	4.8
100 - 299	13.4	8.4	-4.6	-3.7	8.9	5.5
SMEs	11.7	6.1	-1.4	-2.6	8.5	4.1
LEs	22.5	13.5	-7.7	1.0	14.7	10.5
All Firm Size	19.7	9.1	-6.6	-0.8	13.0	6.8

Notes: 1) Oil and gas subsectors (ISIC 353 and 354) are excluded.

2) The numbers in parentheses represent ISIC industrial code. Firm size is indicated in terms of the number of employees: SMEs = firms with 299 or less workers; and LEs = those with 300 or more workers.

3) The growth of value added is calculated using 1993 constant prices.

Sources: Calculated from BPS, unpublished data of Large and Medium Manufacturing Statistics, Economic Census (1986 and 1996), and Statistical Year Book of Indonesia.

Table 4 Share of SMEs in Indonesia's Non-Oil/Gas Manufacturing Industry, 1974/75-1999[1)]

Sector[2)]	*Share of SMEs in All Firm Sizes (%)*[3)]											
	Number of Establishments				*Number of Employees*				*Value Added*			
	1-19	*20-99*	*100-299*	*1-299*	*1-19*	*20-99*	*100-299*	*1-299*	*1-19*	*20-99*	*100-299*	*1-299*
Manufacturing												
1974/75	99.5	0.4	-	-	86.5	-	-	-	22.1	-	-	-
1979	99.5	-	-	-	80.6	-	-	-	22.4	-	-	-
1986	99.2	0.6	0.1	99.9	67.5	6.7	5.8	80.0	15.4	7.3	14.0	36.7
1991	99.3	0.5	0.1	99.9	61.5	5.6	6.4	73.5	11.8	5.7	16.1	33.6
1996	99.2	0.6	0.1	99.9	61.2	5.6	5.9	72.7	10.7	5.9	10.7	27.3
1999	99.1	0.6	0.2	99.9	59.2	5.6	6.1	70.9	9.0	6.6	13.6	29.2
Food (31)												
1974/75	99.5	0.4	-	-	85.3	-	-	-	21.7	-	-	-
1979	99.6	-	-	-	85.7	-	-	-	24.2	-	-	-
1986	99.2	0.6	0.1	99.9	70.9	5.9	3.7	80.5	16.7	5.6	8.1	30.4
1991	99.4	0.4	0.1	99.9	73.8	5.2	3.3	82.3	11.0	3.8	16.9	31.7
1996	99.4	0.4	0.1	99.9	75.7	4.7	3.3	83.7	13.6	5.1	8.5	27.2
1999	99.3	0.5	0.1	99.9	72.8	5.0	3.8	81.6	9.1	4.8	12.3	26.2
Textile and Apparel (32)												
1974/75	98.6	1.2	-	-	73.8	-	-	-	15.6	-	-	-
1979	98.9	-	-	-	62.8	-	-	-	18.9	-	-	-
1986	98.3	1.3	0.2	99.8	49.1	10.3	8.0	67.4	8.5	6.6	10.4	25.5
1991	98.8	0.8	0.2	99.8	40.2	6.3	7.9	54.4	17.2	4.6	8.9	30.7
1996	98.8	0.8	0.2	99.8	38.4	5.9	6.2	50.5	10.5	3.5	6.3	20.3
1999	98.6	0.9	0.2	99.7	37.0	5.5	6.4	48.9	7.1	3.6	9.8	20.5
Machinery (38)												
1975[2)]	97.4	1.9	-	-	58.2	-	-	-	10.2	-	-	-
1979	98.0	-	-	-	55.0	-	-	-	14.3	-	-	-
1986	96.9	2.2	0.6	99.7	39.5	12.2	14.5	66.2	7.3	8.6	18.4	34.3
1991	95.7	2.7	1.0	99.4	29.2	10.6	14.4	54.2	4.6	6.9	17.9	29.4
1996	96.2	2.4	0.8	99.4	27.1	9.4	13.6	50.1	2.8	3.6	10.8	17.2
1999	95.7	2.8	0.9	99.4	25.5	9.5	12.4	47.4	2.5	6.3	11.4	20.2

Notes: 1) Oil and gas subsectors (ISIC 353 and 354) are excluded.
2) The numbers in parentheses indicate ISIC industrial code.
3) The numbers in the column headings indicate firm size in terms of the number of employees. The mark (-) illustrates unavailability of the data.
Sources: Calculated from BPS, unpublished data of Large and Medium Manufacturing Statistics, Economic Census (1974/75, 1986 and 1996), and Statistical Year Book of Indonesia.

It is necessary to recognize that the impact of the economic crisis on SMEs has been different case by case. Case studies conducted by Center for Economic and Social Studies (1999) show that small-medium supplier firms in heavy equipment, snack food and telecommunication equipment have suffered losses from the economic crisis, while those in rattan handicrafts have experienced the crisis as a boom. According to a case study conducted by Sandee, Andadari and Sulandjari (2000), the furniture industry in Jepara on the north coast of Central Java did well in flexibly adjusting to changes in economic conditions. Small-scale furniture producers in Jepara have been successful in expanding their export production since the outbreak of the economic crisis, due to a low rupiah exchange rate and their low dependence on imported inputs. Tambunan (2000: 143-53, 160-1) pointed out that the influence of the financial crisis on SMEs depends on the kinds of products, types of input materials and destination of products. Sato (2000) stated, based on her case study of the metalworking industry in Java, that an evaluation of the damage caused by the crisis to the SME sector is not easy, because sufficient statistical data for small firms with 19 or less employees are not available. In addition, she noted that the impact on SMEs is quite heterogeneous according to factors such as firm size (even within SMEs), sector (even within metalworking), location and market orientation.

The selected sectors in Table 3, food (ISIC 31), textile and apparel (ISIC 32) and machinery (ISIC 38) show almost the same trend as manufacturing as a whole. SMEs as a whole in the machinery sector recorded a higher growth of value added during 1986-99 than their counterpart SMEs in manufacturing as a whole and in other selected sectors. In terms of the growth of value added and employment, medium and larger machinery SMEs with 20 to 299 employees were outstanding during 1986-96. They were able to take advantage of an opportunity to supply parts and components to rapidly growing LEs during the period of high growth.

Table 4 indicates changes in the size distribution of the Indonesian non-oil/gas manufacturing industry in terms of numbers of establishment, employment and value added since the mid-1970s. In accordance with the typical patterns of size structure in developing economies, the Indonesian economy shows that the shares of SMEs are dominant in terms of establishments and labour force, while LEs generate the majority of manufacturing value added.[7]

The SME group as a whole occupied nearly 100 percent of total establishments, without significant changes across sectors and over time. Among SMEs, those with 19 or less employees formed 95-99 percent of the total. In the case of the machinery sector (ISIC 38), the share of smaller SMEs with 19 or less workers was slightly lower than two other sectors and manufacturing as a whole and, instead, that of medium and larger SMEs with 20 to 99 workers and with 100 to 299 workers was higher. However, the overwhelming majority of establishments consisted of SMEs.

In manufacturing employment, SMEs also dominated, but their shares declined continuously. In the 1970s, smaller SMEs with 19 or less workers employed more than

[7] Based on the 1986 BPS data, Hill (1992: 244) also stated that the size distribution of Indonesian manufacturing resembles the typical developing country pattern in terms of output and employment.

80 percent of total workforce in manufacturing.[8] The employment share of this SME group decreased to 68 percent in 1986 and around 60 percent in the second half of the 1990s. The share of medium and larger SMEs in employment did not change much during 1986-9, and remained above 5 to 6 percent. As a consequence, the employment share of the entire SME sector with 299 or less workers declined from 80 percent to 70 percent between 1986 and 1999. These changes reflect the growth patterns of employment between different firm size groups, in which LEs grew more rapidly in creating employment than SMEs.

During 1986-99, around 80 percent of employment in food processing (ISIC 31) was at SMEs with 299 or less workers. In this industry, scale economies are less significant and the necessity for on-site processing may actually provide advantages to small-scale operations (Hill 1992: 246). On the other hand, the share of employment at SMEs in the textile and apparel (ISIC 32) and machinery (ISIC 38) clearly decreased over the period.

The share of LEs in value added exceeded that of SMEs and generally increased since the mid-1970s. In manufacturing as a whole, the share of smaller SMEs in value added decreased from more than 20 percent in the 1970s to roughly 10 percent in the latter half of the 1990s. This is the main explanation for the decrease in the share of the entire SME sector in value added. Food (ISIC 31), textile and apparel (ISIC 32) and machinery (ISIC 38) reveal similar trends over time in the share of value added between different firm size groups.

Although the share of SMEs in value added was relatively small and decreased since the mid-1970s, it is evident that the SME sector contributed significantly to the Indonesian economy in terms of the number of establishments and employment. In addition, it should be noted that our analysis of the size distribution of manufacturing firms was based on the data in the years shown in Table 4 (current year series). If this study had used the data classified by firm size in a specific base year or in the year when firms started operations (initial year series), the trend in the share of SMEs in value added would have been different. Aswicahyono, Bird and Hill (1996: 353-4) investigated the distribution of value added by firm size, employing the data based on both the current year and initial year series. According to their analysis on the basis of the current year classification, the share of smaller firms with 20-99 workers in value added declined gradually since the late 1970s. On the other hand, their observation on the data of the initial year series revealed a dynamism of SMEs, showing that the share of the 20-99 firm group in value added was substantially higher than that of the counterpart group based on the current year series and that the medium group with 100-499 workers expanded remarkably since the mid-1980s. This implies that firms starting from small- and medium-scale operations tend to grow more dynamically than those from large-scale operations.

[8] The levels of the employment and output share of smaller SMEs with 19 or less employees were remarkably different between the 1970s and 1986. This gap implies that the 1974/75 census and 1979 survey overestimated employment and output of smaller SMEs and/or underestimated those of the remaining firm groups with 20 or more employees. Therefore, it is better to consider the figures of employment and output in the 1970s as rough indications of trend.

3 ECONOMIC PERFORMANCE OF SMES AND LES IN INDONESIA

It is useful to compare economic performance of manufacturing SMEs and LEs in order to understand the characteristics of production structure in both groups. For this purpose, our study uses the unpublished *Large and Medium Manufacturing Statistics* of BPS, which gives value added (Y), the number of employees (L), and wage rates ($\grave{u}$, defined as total labour costs divided by the number of workers) by firm scale during 1986-99. Since BPS's backcast data were not available to the author, our study uses its original data.[9] This study estimates capital stock (K) excluding land in 1993 constant prices (see Appendix 1 to this study). Because of difficulties in estimating capital stock for SMEs with 19 or less workers, these smaller SMEs are not included in our analysis.[10]

What patterns of scale differentials in the economic performance of firms can be found in the Indonesian non-oil/gas manufacturing industry? Are such observations in Indonesia consistent with theoretically expected patterns or those obtained from Japan's experience (Hayashi 2002b)? Table 5 shows productivities, capital intensity, wage rates and income share of labour by firm size in 1986, 1996 and 1999.

Some previous studies (e.g., Berry and Mazumdar 1991: 52; Tajima 1978: 12-5) discussed conditions under which SMEs can compete with LEs. According to the theoretical framework presented in these studies, when capital intensity rises consistently with firm size, labour productivity tends to increase, but (assuming constant returns to scale) less than proportionately to capital intensity, which leads to a decrease in capital productivity. Wages are likely to escalate with firm scale, which is one of the reasons for the increase in capital intensity. However, unless profitability is to decline with firm size, wage rates have to increase less than labour productivity, so that a higher share of value added can be used for investment in fixed capital.

The aggregate manufacturing data for Indonesia indicate a similar trend in three different years before and after the crisis, 1986, 1996 and 1999. Table 5 shows that capital intensity (K/L) rises with firm size, albeit with some irregularities. In 1986 and 1996, the peaks in the capital-labour ratio were found in the second largest scale group with 300 to 999 employees. In 1999, on the other hand, capital intensity increased up to a peak in the range of 100 to 299 employees, before levelling off.

Labour productivity (Y/L) increased with size, except for 1999, when the second largest size group recorded the highest productivity level. Capital productivity (Y/K) was not consistent with expected patterns. The output-capital ratio first decreased, then increased as firms are larger. Wage rates ($\grave{u}$) rose with firm scale, with an anomaly in 1999, when the second largest size group provided the highest wages. The income share of labour ($\grave{u}L/Y$ or $\hat{a}$) fell almost monotonously, with small irregularities in 1996 and 1999. In accordance with normal predictions, labour productivity rose less steeply than capital intensity with the scale of firms, except for anomalies in the largest size

[9] This means that the earlier data were undervalued due to lower response rates and, as a consequence, the average annual growth rates are likely to be overestimated between the earlier and later years. The difference between the BPS original data and its backcast data for employment and value added tends to narrow from around 30 percent in 1980 to 10 percent in 1990 (Ito and Orii 2000).

[10] Since no time series data on annual investment for firms with 19 or less workers has to our knowledge been available, it is extremely difficult to estimate capital stock for those smaller SMEs.

group in 1986 and 1996. Similarly, differences in wages between firm groups by scale are less than those in labour productivity.

Compared to Japan (Hayashi 2002b), Indonesia does not show regular patterns in a set of indicators representing the production structure of firms classified by scale. Tajima (1978: 16-27) suggested three possible reasons for these irregularities in developing economies. As a primary reason, he raised statistical problems such as the limited number of sample firms and inaccurate data, particularly for capital stock. This reason is relevant to the case of Indonesia, where the number of sample establishments in the manufacturing industry as a whole in 1996 is around 23,000, far less than that of Japan.[11] Irregularities are more frequently observed in sectoral performance, because individual characteristics tend to appear in a relatively small sample size.[12] As described above, capital productivity behaves in an irregular fashion in Indonesia. This may be due partly to the limitations of the capital stock estimates.

[11] The annual survey of *Large and Medium Manufacturing Statistics* has been conducted in the form of a complete enumeration. In this survey, questionnaires are delivered to all establishments that are considered to employ 20 or more workers and are recorded in the *Manufacturing Industry Directory* compiled by BPS. However, it seems that a large number of eligible firms are not covered in the directory. In fact, this study found several firms in our sample which were not listed in the directory. In addition, the number of manufacturing establishments with 20 or more workers in Indonesia is not large, because of the nascent stage of industrial development. For reference, the number of sample enterprises in Japan in 1957 described in Hayashi (2002b) was more than 400,000.

[12] In a preliminary analysis based on the data in 1996, our study confirmed this tendency in Indonesia.

Table 5 Economic Performance of Indonesia's Non-Oil/Gas Industry by Firm Size in 1986, 1996 and 1999[1)]

Firm Size[2)]	*Indices of Indicators (Firm Size 20-49 = 100)*[3)]				
	K/L	*Y/L*	*Y/K*	*ù*	*ùL/Y* ($\hat{a}$)
Manufacturing in *1986*					
20 - 49	100	100	100	100	100
50 - 99	257	165	64	146	89
100 - 299	350	281	80	204	73
300 - 999	378	350	93	203	58
1,000 -	320	388	121	218	56
Manufacturing in *1996*					
20 - 49	100	100	100	100	100
50 - 99	256	262	102	143	55
100 - 299	421	293	69	187	64
300 - 999	431	316	73	209	66
1,000 -	361	499	138	245	49
Manufacturing in *1999*					
20 - 49	100	100	100	100	100
50 - 99	222	258	116	159	61
100 - 299	356	317	89	164	52
300 - 999	342	367	107	172	47
1,000 -	356	335	94	166	50

Notes: 1) Oil and gas subsectors (ISIC 353 and 354) are excluded.
2) Firm size is indicated by the number of employees.
3) Y = value added, L = the number of employees, K = capital stock, ù = wages per employee (wage rates), Y/L = labour productivity, K/L = capital-labour ratio, Y/K = capital productivity, and ùL/Y = income share of labour.
Source: Calculated from BPS, unpublished data of Large and Medium Manufacturing Statistics.

Tajima's second reason originates from heterogeneity, which often appears in the process of industrialisation in developing economies. The coexistence of traditional and modern production systems, which are likely to have extremely different capital intensities, causes an anomaly in capital-related indicators. For example, compared to other industries, the chemical and basic metal industries in Indonesia are disproportionately dependent on capital-intensive technology. *Non-pribumi* firms seem to be far more capital-intensive than *pribumi* firms. These kinds of heterogeneity may distort capital productivity in Indonesia.

The third reason is related to policy stance of governments towards different-scale enterprises. The Indonesian government has introduced and implemented industrial policy measures in favour of LEs. This policy distortion usually generates irregularities in economic performance between different-scale firm groups in the manufacturing sector.

However, our analysis of the Indonesian manufacturing industry generally indicate that: 1) capital intensity, labour productivity, and wage rates rise with firm size; 2) the income share of labour declines with firm scale; 3) the differentials in labour productivity between firm groups by scale are larger than those in wage rates; 4) the differentials in the capital-labour ratio by firm size are larger than those in labour productivity in some cases; and 5) capital productivity falls with firm scale in some cases. These findings confirm that SMEs can in principle coexist with LEs, by producing a unit of output with less capital but more labour than LEs (Berry and Mazumdar 1991: 52; Tajima 1978: 27).

4 PRODUCTIVITY GROWTH OF SMES AND LES IN INDONESIA

As was already observed, the Indonesian non-oil/gas manufacturing industry grew rapidly during a decade prior to the 1997-98 economic crisis. This high growth in manufacturing was led by not only LEs but also SMEs. Table 3 showed that, during 1986-96, SMEs increased value added and employment at annual rates of 8.5 percent and 6.6 percent, while LEs raised them at 13.3 percent and 11.1 percent.

This part examines the evolution of dynamic forces operative in the manufacturing industry, and assesses changes in productivity for both SMEs and LEs. Similar to the previous section, this section also uses the unpublished *Large and Medium Manufacturing Statistics* of BPS to obtain the data of value added (Y), the number of employees (L), wage rates ($\grave{u}$), capital stock (K) at a benchmark year and capital fixed investment (I) for SMEs with 20 to 299 employees and LEs with 300 or more employees during 1986-99.[13]

Table 6 displays the average annual growth rates of labour productivity (Y/L) for SMEs and LEs in manufacturing as a whole and several selected sectors/subsectors over the period 1986-96. Labour productivity is a useful indicator, because it can represent the efficiency of labour (as an abundant resource in Indonesia) in generating output. In manufacturing as a whole, average labour productivity for SMEs and LEs increased at annual rates of 2.3 percent and 2.2 percent, respectively. The food industry (ISIC 31) maintained high annual labour productivity growth of 4.2 percent and 5 percent for SMEs and LEs, respectively, while labour productivity in textile and apparel industry (ISIC 32) recorded negative growth at -2.9 percent and -5.6 percent for SMEs and LEs. As already indicated in Table 3, even though output in the textile and apparel industry grew remarkably at the rate of 9.5 percent annually during 1986-96, employment increased more rapidly at the annual rate of 11.2 percent. This rapid absorption of

[13] As stated before, this study uses not BPS's backcast data but its original data. All data are in real terms at 1993 constant prices. Value added (Y), wage rates ($\grave{u}$) and capital fixed investment (I) are deflated by implicit GDP deflator for manufacturing industry from the Indonesian national accounts, consumer price indices from *World Development Indicators 2001* (World Bank) and implicit deflator for gross fixed capital formation from the Indonesian national accounts, respectively. With regard to the capital stock estimates, see Appendix 1 to this study.

employment in the textile and apparel sector is the main explanation for the negative growth rates of labour productivity for SMEs and LEs.

In the machinery sector (ISIC 38), LEs achieved high rates of increase in labour productivity over the period 1986-96. Significant is transport equipment, under which automobile assembling (ISIC 38431), automobile parts (ISIC 38432+38433) and bicycle (ISIC 38443+38444) producing firms all raised labour productivity at more than 20 percent per annum. This implies that LEs improved labour productivity under the condition that the demand for their products rapidly grew during the economic boom. On the other hand, the SME sector in the machinery industry raised labour productivity at 4.8 percent annually. Still, most of the machinery subsectors showed a sufficient performance in labour productivity growth. Among transport equipment subsector, automobile parts (ISIC 38432+38433) and bicycles (ISIC 38443+38444) increased their labour productivity at 8.8 percent and 6.8 percent per year, respectively, under the expansion of their markets in the high economic growth period.

Table 6 Growth of Labour Productivity and Total Factor Productivity (TFP) in Indonesia's Non-Oil/Gas Manufacturing Industry, 1986-1996[1)]

Sector[2)]	*Average Annual Growth Rates* (%)[3)]			
	SMEs[4)]		*LEs*[4)]	
	Y/L	*TFP*	*Y/L*	*TFP*
Manufacturing	2.3	1.9	2.2	2.3
Food and Beverages (31)	4.2	-3.5	5.0	-4.0
Textile and Apparel (32)	-2.9	-6.5	-5.6	2.1
Machinery (38)	4.8	7.5	8.9	4.9
Metalworking (381)	5.9	3.9	2.6	7.0
General Machinery (382)	9.7	16.3	11.3	-19.8
Electrical Equipment (383)	3.6	11.3	8.6	8.6
Automobile Assembling (38431)	-	-	26.7	16.0
Automobile Parts (38432+33)	8.8	10.6	24.2	11.5
Bicycle (38443+44)	6.8	-0.2	22.7	11.4

Notes: 1) Oil and gas subsectors (ISIC 353 and 354) are excluded.
2) The numbers in parentheses indicate ISIC code.
3) The data at 1993 constant prices are used to calculate the growth of labour productivity and TFP.
4) SMEs = firms with 20 to 299 workers, LEs = those with 300 or more workers.
Source: Calculated from BPS, unpublished data of Large and Medium Manufacturing Statistics.

Table 6 also shows changes in total factor productivity (TFP), which can indicate technological progress in a broad sense defined as the residual not explained by increases in factor inputs. In this study, the labour input is not adjusted for quality changes, due to the data constraints. The data for capital stock are weak, as Appendix

4.1 explains. The growth of TFP is measured simply as the residual between output growth and factor input increases.[14]

Several studies measured TFP growth in Indonesia. Aswicahyono (1998) and Timmer (1999) are recent and comprehensive studies that focused on TFP in Indonesia's manufacturing industry over the long-term period. They estimated TFP for each sector in the manufacturing industry with the use of technically sophisticated methods. However, no TFP estimates have been undertaken for Indonesia by firm size category (Berry, Rodriguez and Sandee 2001: 367). Despite its simple approach, this study is the first to measure TFP growth for SMEs and LEs separately.

For the estimates of TFP growth, the following Cobb-Douglas production function is assumed:

$$Y = AF(K, L) \tag{4.1}$$

where manufacturing value added Y is produced from capital K and labour L under the conditions of neutral technological change and constant returns to scale. By taking total derivatives of equation (4.1) with respect to time (t) and dividing all terms by Y, the Cobb-Douglas production function can be written as:

$$g(Y) = g(A) + \acute{a}g(K) + \hat{a}g(L) \tag{4.2}$$

where g indicates the growth rates, and $\acute{a}$ and $\hat{a}$ represent the income shares of capital and labour, respectively, as equivalent with production elasticities of capital and labour.[15] $g(A)$ is a residual in the growth of Y after the effects of increases in K and L are subtracted. Since value added Y is the sum of capital and labour incomes, $\acute{a}$ and $\hat{a}$ add up to one ($\acute{a} + \hat{a} = 1$). Subsequently, by subtracting $g(L)$ from both sides of equation (4.2), the growth of labour productivity can be approximated by:

$$g(Y/L) = g(A) + \acute{a}g(K/L) \tag{4.3}$$

The data for Y, K, L and $\acute{a}$ ($\acute{a} = 1 - \hat{a}$) by firm size during 1986-96 are available from the unpublished BPS source *Large and Medium Manufacturing Statistics*, as explained before. With the use of these data, $g(A)$, the growth of residual or TFP, can be calculated by subtracting measured $\acute{a}g(K/L)$ from measured $g(Y/L)$ based on the relation of equation (4.3).

In the manufacturing industry as a whole, TFP for SMEs grew at 1.9 percent per year, which is slightly lower than that for LEs of 2.3 percent. Both manufacturing SMEs and LEs in Indonesia demonstrated technological advance during 1986-96. The levels of these TFP growth rates are similar to those given by Osada (1994: 482) and Timmer (1999: 86-7), which estimated 3.6 percent during 1985-90 and 2.1 percent during 1991-95, respectively, as the aggregate TFP growth in manufacturing.

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[14] Under these conditions, our rough estimates of TFP growth, of course, include observational and approximation errors and do not purely draw technological or institutional development. For further details of this type of growth accounting and the associated errors, see Hayami (1997: 116-9).

[15] For TFP estimates in this study, income share of labour ($\hat{a}$) is calculated as the average of $\grave{u}L/Y$ in 1986 and 1996. After that, income share of capital ($\acute{a}$) can simply be obtained by subtracting $\hat{a}$ from 1.

SMEs in the food processing (ISIC 31) and textile and apparel (ISIC 32) industries recorded annual TFP growth of -3.5 percent and -6.5 percent, respectively. Value added and labour productivity for SMEs and LEs in the food processing sector increased at remarkable rates. However, the growth of capital input was more rapid than that of output. As a consequence, TFP growth for both firm groups became negative. This result is not significantly different from that of Osada (1994: 482), which indicated annual TFP growth of -1 percent for the food processing industry during 1985-90.

In the textile and apparel industry, some possible explanations for the negative TFP growth of the SME group may be considered. A significant increase in investment in this industry during the period of export boom seems to have surpassed the capacity of SMEs to absorb it. A series of economic reforms since the early 1980s may have had some adverse effects on an improvement of efficiency for textile and apparel SMEs. However, TFP for LEs increased at a modest rate of 2.1 percent per year and the textile and apparel industry as a whole including both SMEs and LEs indicated a positive growth of 1 percent per annum. This rate is lower, but not substantially different from that of Aswicahyono (1998: 218) and Timmer (1999: 87), which presented annual TFP growth rates of 2.4 percent during 1989-93 and 3.6 percent during 1991-95, respectively.

In the machinery industry (ISIC 38), SMEs and LEs showed TFP growth of 7.5 percent and 4.9 percent per year, respectively. Most of the machinery subsectors recorded significant TFP growth of SMEs and LEs, with some exceptions such as general machinery (ISIC 382). SMEs in automobile parts (ISIC 38432+38433) experienced rapid TFP growth of more than 10 percent annually. These estimates are consistent with those of Timmer (1999: 87), which reported that TFP in the machinery sector as a whole grew at an average rate of 6.9 percent per annum during 1991-95.

5 CONCLUSION

Although Indonesia formulated a variety of policies for the promotion of SMEs, most of them were not effective or did not work well, due to inadequate designs of programs and insufficient implementation capabilities of the government sector. The performance of the LE sector was generally better than that of the SME sector. However, along with LEs, SMEs developed reasonably well in terms of output and employment growth. Particularly, SMEs in the machinery sector recorded good results. The share of SMEs in value added was relatively small, but the SME sector contributed to a great extent to the Indonesian economy in terms of the number of establishments and labour force.

The analysis of economic performance in the Indonesian manufacturing industry by firm size indicates that: 1) capital intensity, labour productivity, and wage rates rise with firm size; 2) the income share of labour declines with firm size; 3) the differentials in labour productivity between firm groups by size are larger than those in wage rates; 4) the differentials in capital-labour ratio by firm size are larger than those in labour productivity in some cases; and 5) capital productivity falls with firm size in some cases. Despite several irregularities, these findings support in broad terms the suggestion that SMEs can coexist with LEs, by producing a unit of output with less capital but more labour than LEs (Berry and Mazumdar 1991: 52; Tajima 1978: 27).

In Indonesian manufacturing as a whole, SMEs and LEs increased labour productivity at a similar rate during 1986-96. SMEs in the machinery industry increased labour productivity faster than SMEs in other main sectors. SMEs in the machinery industry also increased their TFP markedly, compared with SMEs in other key sectors, and even compared with LEs in the same sector. As Hill (2001: 270) pointed out, more micro-level SME case studies are required to understand the factors affecting dynamic changes in the performance of the Indonesian SMEs.[16]

[16] For example, Hayashi (2002a) estimated production functions and calculated indices of total factor productivity (TFP) based on micro-level data from 60 metalworking and machinery SMEs in order to investigate whether subcontracting linkages are an important factor for improving their productivity.

APPENDIX 1 ESTIMATION OF CAPITAL STOCK IN MANUFACTURING INDUSTRY

The estimation of fixed capital stock in the Indonesian manufacturing industry is based on the following formula:

$$K_t = (1 - ä) K_{t-1} + I_t$$

where K_t is fixed capital stock in year t, K_{t-1} fixed capital stock in year t-1, $ä$ the average depreciation rate in year t, and I_t annual fixed capital investment in year t. This procedure was used to calculate the real value of fixed assets. These data by firm size exclude land and are from BPS's unpublished *Large and Medium Manufacturing Statistics*. The values of annual fixed capital investment are deflated by the deflator of gross fixed capital formation (1993 = 100) from the Indonesian national accounts. The average depreciation rate is taken to be 7 percent per annum. This is an average of the rates of depreciation in different categories of capital stock; 5 percent (buildings where the period of depreciation is 20 years), 6.7 percent (machinery 15 years), 10 percent (vehicles 10 years), and 15 percent (other items 7 years).[17] The average was obtained as a weighted average, using the shares of these fixed assets in the total for 1988 and 1995. Since BPS does not have the values of annual fixed capital investment in 1996, they were estimated as a simple average of the values in 1995 and 1997.

In accordance with the above formula, this study added the real value of annual fixed capital investment to the value of fixed assets in 1988, with an annual adjustment of 7 percent for depreciation, to obtain the values of fixed capital stock (K) in the 1993 constant prices during 1989-99. The data on fixed assets in 1988 are the oldest ones by firm size available to us. Fixed capital stock in 1986 and 1987 was estimated by deducting annual fixed capital investment in 1993 constant prices in the previous year with an adjustment of depreciation, working backwards from 1988.

[17] These depreciation rates are based on the information from firms we visited during the 1999-2000 field survey in Indonesia. The service lives adopted by this study are similar to those used by Goeltom (1995: 84) and Timmer (1999: 80), which suggested 30 years for buildings, 10 years for machinery and 5 years for vehicles and other equipment.

REFERENCES

APEC, 1994, *The APEC Survey on Small and Medium Enterprises*, Singapore: APEC Secretariat.

Aswicahyono, H., 1998, *Total Factor Productivity in Indonesian Manufacturing, 1975-1993*, unpublished PhD Thesis, Canberra: the Australian National University.

Aswicahyono, H., K. Brd and H. Hill, 1996, "What Happens to Industrial Structure When Countries Liberalise?: Indonesia since the Mid-1980s," *Journal of Development Studies*, Vol. 32, No. 3, pp. 340-63.

Berry A. and B. Levy, 1999, "Technical, Marketing and Financial Support for Indonesia's Small and Medium Industrial Exporters," in Levy, B., A. Berry and J. B. Nugent; with J. F. Escandon *et al*., *Fulfilling the Export Potential of Small and Medium Firms*, Dordrecht: Kluwer Academic Publishers.

Berry, A. and D. Mazumdar, 1991, "Small-scale Industry in the Asian-Pacific Region," *Asian-Pacific Economic Literature*, Vol. 5, No. 2, pp. 35-67.

Berry, A., E. Rodriguez and H. Sandee, 2001, "Small and Medium Enterprise Dynamics in Indonesia," *Bulletin of Indonesian Economic Studies*, Vol. 37, No. 3, pp. 363-84.

CESS, 1999, *Studi Pola Subkontrak dalam Masa Krisis: Revisited* (The Study on Subcontracting Pattern during the Economic Crisis: Revisited)*: Final Report*, Jakarta: Center for Economic and Social Studies and SWISSCONTACT.

Goeltom, M. S., 1995, *Indonesia's Financial Liberalization: An Empirical Analysis of 1981-88 Panel Data*, Singapore: Institute of Southeast Asian Studies.

Hayami, Y., 1997, *Development Economics: From the Poverty to the Wealth of Nations*, New York: Oxford University Press.

Hayashi, M., 2000, "Support Mechanisms for the Development of SMEs in Indonesia: The Case of Automotive and Motorcycle Parts Industry," in Harvie, C. and B. Lee (eds.), *SMEs in East Asia in the Aftermath of the Asian Financial Crisis: Proceedings for SMEs in a Global Economy Conference*, Wollongong: University of Wollongong.

Hayashi, M., 2001, "Subcontracting Linkages and SME Development in Indonesia: Qualitative Data from Firm-level Survey in the Metalworking and Machinery Industry," Canberra: The Australian National University.

Hayashi, M., 2002a, "The Role of Subcontracting in SME Development in Indonesia: Micro-level Evidence from the Metalworking and Machinery Industry," *Journal of Asian Economics*, Vol. 13, No. 1, pp. 1-26.

Hayashi, M., 2002b, *SME Development and Subcontracting in Indonesia: A Comparison with Japan's Historical Experience*, Canberra: The Australian National University.

Hill, H., 1992, "Manufacturing Industry," in Booth, A. (ed.), *The Oil Boom and After: Indonesian Economic Policy and Performance in the Soeharto Era*, Oxford: Oxford University Press.

Hill, H., 1996, *The Indonesian Economy since 1966: Southeast Asia's Emerging Giant*, Cambridge: Cambridge University Press.

Hill, H., 2001, "Small and Medium Enterprises in Indonesia: Old Policy Challenges for a New Administration," *Asian Survey*, Vol. 41, No. 2, pp. 248-70.

Ito, T. and K. Orii, 2000, "Toward Constructing an Asian Manufacturing Database: Thailand and Indonesia," in Odaka, K., Y. Kiyokawa and M. Kuboniwa (eds.), *Constructing a Historical Macroeconomic Database for Trans-Asian Regions: International Research Workshop on the Asian Historical Statistics Database: An Appraisal of Project Outcomes and Future Research Directions*, Tokyo: Hitotsubashi University, Institute of Economic Research.

JSBRI, 1998, *Asia Chusho Kigyo no Genjyo ni kansuru Chosa Kenkyu* (A Study on the Present Conditions of Asian SMEs), Tokyo: Japan Small Business Research Institute.

Osada, H., 1994, "Trade Liberalization and FDI Incentives in Indonesia: The Impact on Industrial Productivity," *Developing Economies*, Vol. 32, No. 4, pp. 479-91.

Sandee, H., R. K. Andadari and S. Sulandjari, 2000, "Small Firm Development during Good Times and Bad: the Jepara Furniture Industry," in Manning, C. and P. van Diermen (eds.), *Indonesia in Transition: Social Aspects of Reformasi and Crisis*, Singapore: Institute of Southeast Asian Studies.

Sato, Y., 2000, "How did the Crisis Affect Small and Medium-sized Enterprises?: from a Field Study of the Metal-working Industry in Java," *Developing Economies*, Vol. 38, No. 4, pp. 572-95.

Tajima, M., 1978, *Small-Medium Scale Manufacturing Industry: Further Discussion in a Comparative Study of Japan and Developing Nations*, IDCJ Working Paper Series No. 8, Tokyo: International Development Center of Japan.

Tambunan, T. T. H., 2000, *Development of Small-scale Industries during the New Order Government in Indonesia*, Aldershot: Ashgate.

Thee, K. W., 1994, "Indonesia," in Meyanathan, S. D. (ed.), *Industrial Structures and the Development of Small and Medium Enterprise Linkages: Examples from East Asia*, Washington, D.C.: World Bank.

Timmer, M. P., 1999, "Indonesia's Ascent on the Technology Ladder: Capital Stock and Total Factor Productivity in Indonesian Manufacturing, 1975-95," *Bulletin of Indonesian Economic Studies*, Vol. 35, No. 1, pp. 75-97.

Urata, S., 2000, *Policy Recommendation for SME Promotion in the Republic of Indonesia*, Tokyo: Ministry of International Trade and Industry (MITI).

SUBCONTRACTING TRANSACTIONS AS SUPPORT MECHANISMS FOR SMES IN INDONESIA: QUALITATIVE EVIDENCE FROM LARGE-SCALE PARENT FIRMS

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ABSTRACT

Based on qualitative data obtained from large-scale assembler firms, this study examines subcontracting transactions with and support for SMEs in the Indonesian machinery industry, particularly the automobile, motorcycle, agricultural machinery and bicycle subsectors. The behaviour or responses to subcontracting varied according to groups of assembler firms by subsectors and origins of investment. However, in general, subcontracting business with SMEs has allowed parent firms to obtain net benefits. Assembler firms perceive foreign-affiliated SMEs as immediately active players and local SMEs as potential actors in their vertical production system. For positive involvement in subcontracting chains of both types of SMEs, large-scale parent firms are prepared to support SMEs, particularly local SMEs, in improving their technological and other capabilities. These results suggest that subcontracting system itself has built-in support mechanisms for SME development.

1 INTRODUCTION

Hayashi (2000) found that inter-firm linkages, particularly subcontracting linkages, were essential support mechanisms for the development of SMEs in the Indonesian metalworking and machinery industry. Hayashi (2002a), based on the estimates of the production functions and TFP indices, indicated that the degree of subcontracting transactions was positively related to the level of productivity of the sample metalworking and machinery SMEs in Indonesia. Hayashi (2001) gave a comprehensive picture of subcontracting mechanisms in Indonesia, using qualitative data from SMEs in the Indonesian metalworking and machinery industry. These studies analysed subcontracting linkages and SME development in Indonesia from the perspective of SMEs.

This study changes the standpoint and gives an insight into subcontracting relations and SME development from the point of view of large-scale principal firms.[1] Hayashi (2002b) theoretically explained why large parent firms seek to conduct subcontracting

[1] There are several studies on subcontracting linkages in the Indonesian machinery industry from the perspective of assembler firms. Recent studies are, for example, Harianto (1996) on bicycle and pump unit producers, Thee (1997) on motorcycle producers, and Supratikno (1998) on motorcycle and diesel engine producers.

transactions with small and medium supplier firms. This present study investigates the detailed characteristics and functions of subcontracting ties with SMEs, in particular local SMEs, using qualitative data from large-scale assembler firms.[2] It examines how large-scale assembler firms perceive subcontracting transactions with SMEs, whether they intend to involve the SME sector in subcontracting linkages, and whether the subcontracting system has built-in support mechanisms for SME development.

More specifically, this study raises the following research questions to confirm whether subcontracting linkages can function as support mechanisms for SME development.

(1) Why did large-scale assembler firms in Indonesia initiate subcontracting transactions with SMEs?
(2) What type of linkages have LEs established with SMEs through subcontracting?
(3) What kind of costs and benefits have LEs borne that are associated with and obtained from subcontracting transactions with SMEs? How significant are they?
(4) To what extent do large-scale parent firms support their small-medium supplier firms?

These four questions will be answered on the basis of a survey among assembler firms in the Indonesian automobile, motorcycle, agricultural machinery and bicycle subsectors.

Previous studies (e.g., Harianto 1996: 55-60; Mead 1984: 1103; Siddharthan 1998: 103-7) have shown that the characteristics of subcontracting linkages with supplier firms depend on sector and nationality of parent firms. This study therefore distinguishes between different groups of principal firms by subsector and origin of investment.

As noted in our previous studies, local SMEs have to rely on external sources through inter-firm linkages, because they have few other sources that can provide technical, marketing and other necessary support. On the other hand, foreign-affiliated SMEs can receive sufficient assistance from their foreign owner or partner companies. Thus, SMEs in the former group may wish more support from parent firms through subcontracting relationships than SMEs in the latter group. Taking account of these characteristics, this study investigates whether the behaviour of assembler firms is different towards local SMEs and foreign-affiliated SMEs.

The rest of this study is organised as follows. Section 2 describes the survey method together with the key characteristics of the sample parent firms. Section 3 presents the reasons why large assembler firms wish to maintain subcontracting transactions with small and medium supplier firms, and Section 4 explores linkage types that LEs have established with SMEs through subcontracting relations. In Section 5, costs associated with subcontracting arrangements and revealed benefits obtained from subcontracting linkages with SMEs are examined. Section 6 investigates the extent to which LEs are willing to assist SMEs and assesses how much effort they made or will make to improve capabilities of their small-medium supplier firms. The last section summarises the answers to the four research questions, which will confirm whether subcontracting linkages can support SME development.

[2] Local SMEs (or LEs) in this study mean non-affiliated domestic SMEs (or LEs).

2 SURVEY METHOD AND CHARACTERISTICS OF THE SAMPLE PARENT FIRMS

This study analyses parent firms that engage in assembling operations in the automobile, motorcycle, agricultural machinery (including diesel engine for agricultural machinery) and bicycle (including tricycle) subsectors.

Table 1 Profile of 15 Sample Assembler Firms: 1998

1. *Subsector*	
1) automobile/motorcycle [1)]	53%
2) agricultural machinery	20%
3) bicycle	27%
2. *Type of Investment* (*Investment Nationality*)	
1) domestic investment	33%
2) foreign investment	67%
3. *Size*: *the Number of Workers*	
1) - 299	7%
2) 300 - 499	26%
3) 500 - 999	20%
4) 1,000 -	47%
4. *Location*	
1) Jakarta (surrounding areas)	73%
2) Surabaya (surrounding areas)	27%
5. *Year Established*	
1) - 1979	67%
2) 1980 - 1989	7%
3) 1990 -	26%
6. *Number of Subcontracting Supplier Firms*	
1) - 19	20%
2) 20 - 49	33%
3) 50 - 99	33%
4) 100 -	14%
7. *Market Share of Sample Firms (1999)* [2)]	
1) automobile	77%
2) motorcycle	40%

Notes: 1) This includes one large-scale automotive/motorcycle components producer.

2) The market share of the sample assembler firms in the agricultural machinery and bicycle subsectors is not available. For the former subsector, our sample includes the first and third largest assembler firms in Indonesia, and for the latter subsector encompasses the first and fourth largest bicycle manufacturers.

Sources: Based on author's interview survey during 1999-2000. The market share data for automobile and for motorcycle are derived from GAIKINDO (Association of Indonesian Car Manufacturers) and PASMI (Association of Indonesian Motorcycle Assemblers and Manufacturers), respectively.

Based on several information sources explained in our previous studies, 48 enterprises were identified as parent firms in the designated subsectors.[3] Of the 48 manufacturers, 20 firms were nominated as those suitable for our survey and they were contacted by telephone. Among the 20 firms, five did not accept out visit because of unwillingness, bankruptcy or internal management problems. Subsequently, our intensive interview with presidents, vice presidents or at least relevant directors was carried out with 15 assembler firms (including one large-scale first-tier automotive component manufacturer) during 1999-2000.[4]

Table 1 demonstrates some of the basic characteristics of the sample parent firms in 1998. The automobile and motorcycle assembler firms accounted for almost half, and the agricultural machinery and bicycle manufacturers for the other half. Concerning investment nationality, one third of the surveyed enterprises were unaffiliated Indonesian firms and the remaining were foreign affiliates. Nearly half of the firms had more than 1,000 workers. Roughly three quarters of the surveyed manufacturers were located in Jakarta (and surrounding areas) and the rest were in Surabaya (including surrounding areas). Two thirds of the sample assembler firms were established before 1979 and the remaining started operations in the 1980s and the 1990s.

Nearly half of our sample parent firms had 50 or more supplier firms under subcontracting ties. The surveyed assembler firms in the automobile subsector occupied nearly 80 percent of the domestic market, whereas those in the motorcycle subsector accounted for 40 percent. For the agricultural machinery subsector, our sample includes the first and third largest assembler firms in Indonesia, and for the bicycle sector contains the first and fourth largest bicycle manufacturers.

3 MOTIVATIONS FOR SUBCONTRACTING TRANSACTIONS WITH SMES

Table 3 explores the reasons for building subcontracting ties with small- and medium-scale supplier firms. It shows the degree of expectation parent firms had of subcontracting business with local and foreign SMEs. Explanation of each motivation is illustrated in Table 2.

What kind of motivations induced principal firms to establish subcontracting linkages with local SMEs? Lower wages were rated at the highest average score of 4.80 on a five-point Likert-type scale, where "5" represented the highest degree of expectation and "1" the lowest. The assembler firms perceived the lower level of wages as the most attractive feature that local subcontractors can provide. For example, a foreign-affiliated motorcycle assembler firm in Jakarta (*Firm A07*) with 73 supplier firms expected the reduction in production costs through subcontracting ties with lower-wage local SMEs in order to survive fierce domestic and international competition. There are no statistically significant differences between the automobile and motorcycle subsectors and the agricultural machinery and bicycle subsectors, or between domestic

[3] See Hayashi (2000, 2002a, and 2002b).

[4] The performance of assembler firms was affected by the 1997-98 crisis. However, since this study was not designed to examine the impact of the economic crisis, it requested parent firms to consider the situation not only in the last 1-2 years but also in the last 5-10 years, when they respond to our interview questions on subcontracting issues. With regard to the impact of the crisis on manufacturing industry in Indonesia, see Thee (2000) and Hayashi (2002b).

investment and foreign investment. Hence, most of the sample SMEs expected that local SMEs would pass on cost advantages based on lower wages.

Table 2 Description of Items Listed in Motivations, Benefits, Costs and Linkage Types: Subcontracting Transactions with SMEs

Items	*Description*
Motivations for and Benefits to Parent Firms	
1. Specialisation	the concentration on assembling and other advantageous operations and the enjoyment of economies of scale, by contracting out disadvantageous processes to SMEs. (*I*)
2. Shock Absorber	the prevention of underutilisation or short capacity of internal resources in an economic fluctuation period, by adjusting order volume contracted out to SMEs. (*I*)
3. Lower Wages	the reduction of production costs of parts and components, by contracting out to SMEs with cheaper labour costs. (*I*)
4. Special Skills	the utilisation of skills unfamiliar to parent firms, by contracting out to SMEs with special technologies. (*I*)
5. Better Products	purchasing of parts and components satisfying requirements, by providing SMEs with stable business environment in a long and continuous contract period. (*S*)
6. Lower Costs for Monitoring Workers	the reduction of costs for monitoring workers, by limiting the number of own employees through contracting out to SMEs. (*I*)
7. Lower Costs associated with Contracting	the reduction of costs such as the collection of information on potential SMEs, preparation for contracts, enforcement of contracts, and following-up of contracts, by establishing close relations with SMEs. (*S*)
Costs for Parent Firms	
1. Initial Finding of SMEs	search for potential SMEs under the conditions of limited information. (*I*)
2. Slow Response	SMEs' slow response to instructions/claims. (*I*)
3. Low Quality	higher defect ratios of products supplied by SMEs due to insufficient QC knowledge, insufficient testing/inspection, etc. (*I*)
4. Low Technology	the difficulties in ensuring required products due to lower levels of production technologies and skills in the areas of process design, process technology, die/mold making, production line arrangements, etc. (*I*)
5. High Prices	higher prices of products because of inefficient production operations by SMEs. (*E*)
6. Unstable Delivery Timing	late or unstable delivery timing due to insufficient awareness, lack of production scheduling, etc. (*I*)
7. Monitoring SMEs	careful monitoring of SMEs to make them satisfy requirements in terms of quality, quantity, delivery time, etc. (*I*) (*S*)
8. Small Production Capacity	the difficulties in ensuring required quantity because of small production capacity of SMEs. (*I*)
9. Technical and Other Assistance	the provision of various support to SMEs that do not have sufficient technical and other related capabilities. (*I*) (*S*)

Table 2 Description of Items Listed in Motivations, Benefits, Costs and Linkage Types: Subcontracting Transactions with SMEs (continued)

Items	*Description*
Linkage Types established by Parent Firms	
1. Support of Establishment	direct assistance to potential entrepreneurs in establishing new supplier firms through the provision of credit, capital participation, guarantee of order, etc.
2. Stable Market	the provision of stable order in a long term, (with some exceptions during an economic fluctuation period).
3. Technical Specifications	the provision of detailed technical specifications (including detailed technical instruction and drawing).
4. Lending of Tools	the supply of tools such as dies, molds, etc.
5. Advice on Machinery	advice on the selection and layout of machinery and equipment.
6. Provision of Used Machinery	the provision of second-hand machinery and equipment at cheaper prices.
7. QC Support	transfer of QC technique (including testing/inspection methods and acquisition of industrial standards) through expert dispatch, training, etc.
8. Production Technology Support	transfer of production technologies and skills in the areas of process design, process technology, die/mold making, production line arrangements, etc. through expert dispatch, training, etc.
9. Joint Design	joint activities between parent firms and SMEs in the area of product design and development.
10. Managerial Support	transfer of managerial skills such as managerial planning, sales management, procurement management, human resource management, financial management, accounting, etc.
11. Provision of Inputs	the supply of input materials.
12. Financing Support (Provision of Credit/Guarantees)	the provision of credit and bank guarantees (including setting-up of reasonable payment conditions for SMEs).
13. Price Negotiations	setting-up of negotiation procedures to determine prices of products and services.
14. Market Information	the provision of information on new markets (products, clients, etc.).

Note: Several contradictory items are included in the table. For example, "Lower Wages" in motivations and benefits and "High Prices" in costs contradict each other. "Shock Absorber" in motivations and benefits and "Stable Market" in linkage types also contradict each other. In the former case, parts and components supplied by SMEs may be cheaper than those produced by parent firms. However, products supplied by foreign-affiliated SMEs will not have cost merits relative to those by local SMEs. Price levels of products supplied by SMEs are sometimes expensive relative to those expected by parent firms. In the latter case, parent firms possibly intend to provide SMEs with large/stable order during the period except for the outbreak of drastic economic changes, while, in sharp economic fluctuation periods like the recent economic crisis, they can use small-medium supplier firms as their shock absorber. In this way, the degree of merits and demerits of subcontracting with SMEs in the above list is not an absolute indication but relative one. In Description above, (I), (S), and (E) indicate more

beneficial or costly than the vertical integration system, spot-base transactions, and expectation by parent firms, respectively.

Table 3 Motivations for Subcontracting Transactions with SMEs

Motivations	Subcontracting with: Local SMEs — Mean Scores and Rank (I)[1)] (s.d.)	Rank	Differences between Groups in Firm Categories: Subsector[2)] *t*-values	Investment[3)] *t*-values	Foreign SMEs — Mean Scores and Rank (II)[1)] (s.d.)	Rank	Comparison: Differences between (I) and (II)[4)] *t*-values
1. *Specialisation*	4.60 (0.51)	2	0.20	0.00	4.53 (0.52)	3	1.00
2. *Shock Absorber*	3.47 (0.74)	5	1.23	0.24	2.93 (0.70)	7	4.00 **
3. *Lower Wages*	4.80 (0.56)	1	1.44	1.50	3.00 (0.65)	6	10.31 **
4. *Special Skills*	3.33 (1.11)	7	1.64	0.81	4.93 (0.26)	1	5.87 **
5. *Better Products*	4.20 (0.77)	3	1.71	0.69	4.80 (0.41)	2	3.67 **
6. *Lower Costs for Monitoring Workers*	3.87 (0.52)	4	2.33 * (-)	1.47	4.07 (0.59)	4	1.87
7. *Lower Costs associated with Contracting*	3.47 (0.64)	5	1.03	2.28 * (-)	3.67 (0.49)	5	1.15
Number of Sample Firms	15				15		

Notes: 1) Figures in the upper row are the average of scores indicated by assembler firms' rating from 1 (the lowest score as not at all important) to 5 (the highest score as very important). Figures in parentheses are standard deviation. (I) and (II) represent evaluation on local SMEs and on foreign-affiliated SMEs, respectively.

*2) Difference in mean scores given by assembler firms in the automobile and motorcycle subsectors (AM) and by those in the agricultural machinery and bicycle subsectors (AB), which is indicated by t-values. ** = significant at the 1 level, * = significant at the 5 % level. When the difference is significant, (+) = AB firms > AM firms, (-) = AB firms < AM firms.*

*3) Difference in mean scores given by assembler firms of domestic investment (D) and by those of foreign investment (F), which is indicated by t-values. ** = significant at the 1 % level, * = significant at the 5 % level. When the difference is significant, (+) = D firms > F firms, (-) = D firms < F firms.*

*4) Difference in mean scores between evaluation on (I) local SMEs and on (II) foreign SMEs, which is indicated by t-values of paired t-test. ** = significant at the 1 level, * = significant at the 5 % level.*

Source: Based on author's interview survey during 1999-2000.

Specialisation was the second most important motivation for subcontracting transactions, with an average rating of 4.60. Assembler firms expected vertical inter-firm linkages to promote a division of labour. For instance, *Firm A08*, a foreign-

affiliated motorcycle producer in Jakarta with 99 vendor firms, intends to concentrate on assembling activities by contracting out other production processes to supplier firms. The parent firms in our sample expect that subcontracting allows them to allocate their capital and labour to the main business activities such as assembling and marketing, in order to optimise the use of resources.

Ensuring better products was also rated high as a reason for subcontracting, with an average score of 4.20. This indicates that, by establishing close subcontracting relationships with local SMEs, parent firms want to ensure that supplied products meet their technical, quality and delivery requirements. Through subcontracting linkages, assembler firms have given local SMEs clear and detailed information on how to produce parts and components. Because local SMEs do not usually have sufficient technical and other necessary knowledge, it seems difficult to procure satisfying products and services from them in spot-base transactions or without any technical guidance through close relationships. The expectations are not significantly different according to groups in firm categories of subsector and nationality of investment.

Reduction in costs for monitoring labour was also rated high, with a mean score of 3.87. If assembler firms adopt an in-house production system, they need to hire a larger number of workers, which may result in an increase in the cost of monitoring the work effort of employees. Subcontracting arrangements enable principal firms to save on such costs. The sample assembler firms in the automobile and motorcycle subsectors expected that such costs would be significantly lower than firms in the agricultural machinery and bicycle subsectors. Producers in the former subsector have usually much longer and more complicated production processes, and as a consequence, they need to hire relatively more employees. From that perspective, their expectations of reducing the cost of monitoring through subcontracting are higher.

Firms also expected subcontracting to lead to lower costs associated with contracting, with an average score of 3.47. The *t*-tests suggest that foreign-affiliated manufacturers had greater expectations of the opportunity to reduce transaction costs of collecting information, coping with uncertainties and risks, and preparing and enforcing contracts than unaffiliated Indonesian assembler firms.

Similar to business costs, the expected role of subcontracting as shock absorber was rated at an average score of 3.47. The differences between groups of firm categories by subsector and investment nationality are small. Therefore, all parent firms expected local subcontractors to enable them to cushion economic fluctuations.

The special skills that local metalworking and machinery firms may offer assembler firms were ranked the lowest, with an average score of 3.33. This outcome was roughly the same according to subsector and investment categories. For example, *Firm A08*, which is a motorcycle assembler firm, regarded local SMEs as producers of simple parts, but saw foreign-affiliated counterparts as producers of complicated components. The low ranking may reflect the fact or perception that the local SME sector has insufficient technical capabilities.

The expectations parent firms had of foreign-affiliated SMEs are different from those of local SMEs, as Table 3 shows. Special skills were mentioned as the most important inducement to establish inter-firm linkages with foreign-affiliated SMEs. An average

score of 4.93 shows that parent firms strongly desire to utilise the special technical skills and know-how foreign-affiliated supplier firms can offer. The mean scores of expectations regarding technological expertise were statistically different at the 1 percent level between subcontracting transactions with local SMEs and with foreign-affiliated SMEs.

Better products were rated in second place with an average score of 4.80. Parent firms clearly expected subcontracting with foreign SMEs to yield better products and services. The mean scores of expectations of local SMEs and foreign-affiliated SMEs were significantly different. *Firm S63*, a Japanese-affiliated SMEs in Jakarta engaged in press stamping for the automotive, motorcycle and electrical parts, mentioned that the majority of its resources have been allocated to produce products of long-term contracts and that, as a consequence, it is not easy to produce output with high quality and sufficient quantity on time on the basis of spot-base orders. Foreign subcontractors often need these long-term work arrangements to guarantee quality, quantity and delivery timing of products. In this sense, the surveyed assembler firms expected foreign-affiliated SMEs through subcontracting to supply good products and services.

Specialisation, lower costs for monitoring workers and lower costs associated with contracting were rated highly, with average scores of 4.53, 4.07 and 3.67, respectively. These ratings and the ranking of subcontracting transactions with foreign-affiliated SMEs are not very different from those with local SMEs.

In contrast, lower wages and shock absorbers were rated not high, with average scores of 3.00 and 2.93, respectively. These expectations for foreign-affiliated SMEs are significantly lower than for local SMEs. This is because wage levels of foreign-affiliated SMEs are higher than local counterparts.[5]

In general terms, the items listed in Table 3 are the most important motivations for contracting out part of the production processes to small-medium supplier firms. Local SMEs were expected to deliver lower wages but not to draw on special skills. On the other hand, foreign-affiliated SMEs were not primarily expected to provide lower wages and perform a shock absorber function but to deliver benefits associated with technological expertise and higher-quality products.

4 TYPES OF SUBCONTRACTING LINKAGES WITH SMES

Lall's pioneering study (1980: 208-9, 213-22) presented ten types of inter-firm linkages between two truck assembler firms and their parts suppliers in India. By modifying Lall's classification, this study identified 14 categories of linkages provided by

[5] This wage difference between local SMEs and foreign-affiliated SMEs is as a consequence of some factors. One of the main reasons can be seen in the shortage of skilled workers compared with unskilled workers (Oshima 1987: 66). Local SMEs without sufficient financial resources generally cannot employ skilled workers, while foreign-affiliated SMEs can do this in a relative sense by paying higher wages. This dual labour market structure can be explained by an efficiency-wage theory of the labour market (Akerlof 1984: 79). Wages at market clearing are observed in the local SME sector and those in excess of market clearing are in the foreign-affiliated SME sector. As indicated in the efficiency-wage hypothesis, by paying higher wages or wages in excess of market clearing, foreign-affiliated SMEs can obtain benefits such as: 1) a larger opportunity to hire skilled workers; 2) the reduction of shirking by employees due to a higher cost of job loss; 3) lower turnover; and 4) improved morale (Yellen 1984: 200).

assembler firms to their supplier firms in Indonesia. Table 2 explains each of these linkage types.

Table 4 shows the number of the sample parent firms which have extended each type of linkages to their local and foreign-affiliated supplier firms under subcontracting relationships. Technical specifications have been provided by all sample parent firms. More than 90 percent of principal firms provided SMEs with technical linkages through support in the areas of QC and production technology. Most of the respondents offered technological support to SMEs particularly in the introduction of new models and the emergence of technical problems. This corresponds with the results of Hayashi (2001), in which around 90 percent and 80 percent of the sample SMEs mentioned receiving QC guidance and production technology assistance, respectively, from their parent firms through subcontracting relationships.

Table 4 Types of Subcontracting Linkages with Local and Foreign-affiliated SMEs

Linkage Types	*No. of Firms and Rank*		*Differences between Groups in Firm Categories*	
	No. of Firms [1)] (%)	*Rank*	*Subsector* [2)] *p*-values	*Investment* [3)] *p*-values
1. *Support of Establishment*	5 (33.3)	12	0.28	0.60
2. *Stable Market*	12 (80.0)	4	0.08	0.02 * (-)
3. *Technical Specifications*	15 (100)	1	-	-
4. *Lending of Tools*	11 (73.3)	5	0.03 * (-)	0.08
5. *Advice on Machinery*	7 (46.7)	8	1.00	1.00
6. *Provision of Used Machinery*	6 (40.0)	10	0.61	0.58
7. *QC Support*	14 (93.3)	2	0.47	0.33
8. *Production Technology Support*	14 (93.3)	2	0.47	0.33
9. *Joint Design*	5 (33.3)	12	1.00	0.60
10. *Managerial Support*	7 (46.7)	8	1.00	1.00
11. *Provision of Inputs*	11 (73.3)	5	1.00	0.56
12. *Financing Support* (*Provision of Credit/Guarantee*)	5 (33.3)	12	0.28	0.60
13. *Price Negotiations*	9 (60.0)	7	0.00 ** (-)	0.00 ** (-)
14. *Market Information*	6 (40.0)	10	0.12	0.58
Number of Sample Firms	15			

Notes: 1) Figures in the upper row indicate the number of assembler firms which provide local and/or foreign-affiliated SMEs with each subcontracting linkage. Figures in parentheses are the share of firms with each linkage in the total sample firms.

*2) Difference in frequency ratios between assembler firms in the automobile and motorcycle subsectors (AM) and the agricultural machinery and bicycle subsectors (AB), which is indicated by p-values of Fisher's exact test. ** = significant at the 1 % level, * = significant at the 5 % level. When the difference is significant, (+) = AB firms > AM firms, (-) = AB firms < AM firms.*

*3) Difference in frequency ratios between assembler firms of domestic investment (D) and foreign investment (F), which is indicated by p-values of Fisher's exact test. ** = significant at the 1 % level, * = significant at the 5 % level. When the difference is significant, (+) = D firms > F firms, (-) = D firms < F firms.*

Source: Based on author's interview survey during 1999-2000.

For example, *Firm A05*, a foreign-affiliated automobile assembler firm in Jakarta, has continuously assessed the performance of subcontractors on product quality and delivery timing. It organised monthly meetings with many of its 105 supplier firms and, based on evaluation of the preceding month, requested them to improve product quality and delivery problems where necessary. *Firm A05* sent QC staff members to supplier firms which consistently failed to overcome difficulties and gave them guidance in product quality, production technology and delivery timing. *Firm A03*, a large automobile manufacturer in Indonesia located in Jakarta, has been very interested in improving the technological capabilities of their parts and components supplier firms.[6] Before 1998, *Firm A03* had 15 quality improvement (*Kaizen*) staff members in its purchasing division, who were fully responsible for technical assistance to vendor firms.[7] It selected a manageable number of its supplier firms and supported these intensively for a certain period in enhancing quality management and production technology, by dispatching its *Kaizen* staff to the individual factory sites. The selected vendor firms were encouraged to upgrade their QC activities and were to participate in an annual QC competition organised by *Firm A03*.

Firm A11 with 42 parts and components supplier firms, a foreign affiliate producing diesel engines for agricultural machinery in Jakarta, also acknowledged the need for technical support, particularly in QC area. It frequently sent employees of its purchasing division to local supplier firms. Since local vendor firms did not usually consult *Firm A11* about technical problems, it visited them regularly in order to familiarise itself with the structural problems of supplier firms and gave them QC and technical guidance to solve such issues. An Indonesian bicycle assembler in Surabaya (*Firm A12*) with around 30 supplier firms stressed the importance of "working together with vendor firms" (the firm's motto). It seeks to improve their product quality and delivery time by arranging a long-term stay of QC staff at workshops. Similarly, the largest bicycle manufacturer in Indonesia (*Firm A13*), which is a non-affiliated Indonesian entity located in Surabaya, has given vendor firms technical support through the dispatch of engineers. However, *Firm A13* pointed out that technical support to supplier firms would not necessarily generate a successful outcome. It experienced that, after technical assistance, some of them did not improve performance, while others moved to different assembler firms and served them in an opportunistic way.

[6] For the effective transfer of technology to supplier firms, many of the automobile and motorcycle assembler firms, including *Firm A03*, have organised vendor firms in individual cooperation groups as institutional devices to provide them with technical support.

[7] In 1998, *Firm A03* had to suspend this support program due to the impact of the economic crisis.

Advice on layout and selection of production machinery has been offered by seven of the sample manufacturers to subcontracting SMEs. Joint design and joint product development have not been so common. Only five firms have given SMEs opportunities for joint design and development under subcontracting ties. Generally, cooperation like joint design requires both assembler firms and supplier firms to have sufficient technological capabilities. Insufficient technological levels of LEs and/or SMEs are likely to lead to infrequent efforts at joint design and development activities.[8]

Nearly half of the large-scale assembler firms have transferred managerial technology to small-medium supplier firms. This percentage is close to the result of Hayashi (2001), where 55 percent of SMEs received management assistance from parent firms through subcontracting linkages. For example, *Firm A08*, a major foreign-affiliated motorcycle manufacturer, noticed that supplier firms, especially local SMEs, were not able to take full advantage of their production facilities and employees mainly because of insufficient management capabilities. For this reason, *Firm A08* started a plant-tour-type study program to let supplier firms exchange ideas on how to improve their management capabilities, as already described in Hayashi (2000, 2001). *Firm A03*, a large auto manufacturer in Indonesia, has a specific program for production management. It offered two types of seminars to improve managerial capabilities for production: one for the top management of vendor companies; and the other for managers responsible for production lines at factories.

According to Table 4, 80 percent of our sample parent firms have provided supplier firms with stable market. For instance, *Firm A08*, a motorcycle assembler firm, has usually given supplier firms a one-year order forecast, which helps stabilise sales and assists firms in preparing long-term marketing strategies. The results of the Fisher's exact test in the last column indicate that foreign-affiliated assembler firms tend to offer subcontractors better marketing support in terms of the provision of stable orders than domestic counterparts. The likely reason is that manufacturers in the former group generally have a larger market size and greater corporate strength than those in the latter group. Market information about new domestic and export markets has also been offered to small and medium supplier firms by 40 percent of parent firms.

More than 70 percent of the assembler firms have provided small-medium parts supplier firms with raw materials, intermediate goods and tools (e.g., dies and molds) through subcontracting arrangements. For example, *Firm A05*, a foreign affiliate in the automobile subsector, stated that small-medium supplier firms in this field have faced difficulties in procuring necessary input materials due to the weaknesses of Indonesia's heavy and chemical industries, which result partly in the underdevelopment of the metalworking and machinery SME sector. Recognising the difficult situation, *Firm A05* has provided raw materials to small and medium supplier firms. In the same way, *Firm A04*, which is a foreign-affiliated automobile assembler firm in Jakarta and has over a hundred vendor firms, explained that, since dies and molds are technologically weak in Indonesia, it has had to lend precision tools to vendor firms engaged in press stamping, die-casting, plastic injection and so on.

[8] Many of the foreign-affiliated assembler firms in our sample admitted that they are usually required to have permission from headquarters for new design or development of parts and components. In addition to insufficient technological capabilities of assembler firms and supplier firms, this organisational constraint is one of the reasons why joint design and development are infrequent.

The share of the assembler firms that have supplied tools to SMEs in the total sample is statistically different between manufacturers in the automobile and motorcycle subsectors and those in the agricultural machinery and bicycle subsectors. The difference may reflect the characteristics of the subsectors. Compared with the agricultural machinery and bicycle subsectors, the automobile and motorcycle subsectors tend to require supplier firms to produce higher quality parts and components, which often need very precise and more expensive tools.

Under subcontracting ties, 33 percent and 40 percent of the sample assembler firms have furnished SMEs with support related to the establishment of firms and the provision of second-hand machinery and equipment, respectively. Similarly, only one third of the principal firms have offered small-medium supplier firms support in the form of credit and financial guarantees. For instance, *Firm A01* is a foreign-affiliated automobile manufacturer in Jakarta, which was established in 1970 and owns more than 80 supplier firms. It is one of a few enterprises in our sample that has assisted in the establishment of new vendor firms by guaranteeing a certain amount of orders and lending the initial investment capital. It has provided supplier firms with credit and financial guarantees. *Firm A10*, a non-affiliated assembler firm in the agricultural subsector, facilitated the establishment of new SMEs by former employees by guaranteeing orders for a certain period.

Nine assembler firms gave small and medium supplier firms chances to negotiate the prices of products and processing services. The statistical tests indicate that the proportion of parent firms that opened price negotiations for SMEs was significantly different at the 1 percent level between groups by subsector and investment nationality. Large-scale assembler firms in the automobile and motorcycle subsectors and those with foreign investment tend to give small and medium supplier firms more opportunities to negotiate the prices of products, compared to their counterparts in the agricultural machinery and bicycle subsectors and those with domestic investment. The assembler firms in the former group have generally adopted the negotiated cost-plus fee method or similar schemes. Those in the latter group do not tend to open up the process of price setting to supplier firms. This tendency is consistent with the responses from SMEs in Hayashi (2001).

Among the financial linkages described above, price negotiations and provision of input materials and tools are popular forms of assistance by assembler firms for SMEs. In contrast, the provision of credit and guarantees, that of used machinery, and assistance in establishing enterprises are not often extended to small-medium supplier firms. This implies that subcontracting cooperation provides SMEs to some extent with working capital. Investment capital may also be made available, but not to a sufficient degree.

This section has shown that, among subcontracting linkages, technological and marketing relations are generally more popular than financial ones. These findings confirm those in Hayashi (2001).

5 COSTS OF AND BENEFITS FROM SUBCONTRACTING TRANSACTIONS WITH SMES

The first part in this section investigates burdens on principal firms in conducting subcontracting business with small-medium metalworking and machinery firms. The

second part explores several kinds of realised benefits to parent firms generated by subcontracting transactions with SMEs. After looking into costs and revealed benefits separately, the last section evaluates cost-benefit balance of subcontracting transactions with SMEs. Each of cost and benefit items is explained in Table 2.

5.1 Costs of Subcontracting Transactions with SMEs

Table 5 lists the costs that principal firms associate with subcontracting with local SMEs, together with the differences of the burdens between groups by categories of parent firms.

Unstable delivery timing was rated at the highest average score of 4.87. Regardless of subsector and investment origin, the large-scale parent firms perceived unreliable delivery time of local SMEs as the heaviest burden in conducting subcontracting transactions. For instance, *Firm A05*, an auto manufacturer, has been aware of losses due to unstable delivery timing of local SMEs and has introduced a monthly evaluation of delivery time as well as product quality. Similarly, *Firm A03* in the automobile subsector considers imprecise delivery time and the resulting shortage or excessive stock of intermediate inputs as the main factor for high product costs. By introducing the well-known "just-in-time system," *Firm A03* has attempted to diffuse this technique to supplier firms, in particular local SMEs, and to improve their management system of delivery timing.

Table 5 Costs of Subcontracting Transactions with SMEs

Costs	Subcontracting with: Local SMEs — Mean Scores and Rank (I)[1] (s.d.)	Rank	Differences between Groups in Firm Categories: Subsector[2] t-values	Investment[3] t-values	Foreign SMEs — Mean Scores and Rank (II)[1] (s.d.)	Rank	Comparison: Differences between (I) and (II)[4] t-values
1. *Initial Findings of SMEs*	4.07 (0.59)	5	0.45	0.60	2.53 (0.52)	6	7.99 **
2. *Slow Response*	3.33 (0.49)	7	1.51	2.08	2.27 (0.46)	7	5.17 **
3. *Low Quality*	4.20 (0.77)	2	1.71	4.16 ** (-)	3.27 (0.70)	3	6.09 **
4. *Low Technology*	4.00 (1.00)	6	1.64	3.87 ** (-)	3.13 (0.83)	4	3.67 **
5. *High Prices*	3.33 (0.90)	7	0.37	0.39	4.53 (0.52)	1	4.58 **
6. *Unstable Delivery Timing*	4.87 (0.35)	1	0.10	0.51	3.53 (0.92)	2	5.74 **
7. *Monitoring SMEs*	4.13 (1.13)	3	0.88	0.64	2.60 (0.83)	5	5.28 **
8. *Small Production Capacity*	2.73 (0.59)	9	3.85 ** (-)	3.15 ** (-)	1.87 (0.64)	9	9.54 **
9. *Technical and Other Assistance*	4.13 (1.06)	3	2.05	2.31	2.27 (0.70)	7	8.67 **
Number of Sample Firms	15				15		

Notes: 1) Figures in the upper row are the average of scores indicated by assembler firms' rating from 1 (the lowest score as very small) to 5 (the highest score as very large). Figures in parentheses are standard deviation. (I) and (II) represent evaluation on local SMEs and on foreign-affiliated SMEs, respectively.

*2) Difference in mean scores given by assembler firms in the automobile and motorcycle subsectors (AM) and by those in the agricultural machinery and bicycle subsectors (AB), which is indicated by t-values. ** = significant at the 1 level, * = significant at the 5 % level. When the difference is significant, (+) = AB firms > AM firms, (-) = AB firms < AM firms.*

*3) Difference in mean scores given by assembler firms of domestic investment (D) and by those of foreign investment (F), which is indicated by t-values. ** = significant at the 1 % level, * = significant at the 5 % level. When the difference is significant, (+) = D firms > F firms, (-) = D firms < F firms.*

*4) Difference in mean scores between evaluation on (I) local SMEs and on (II) foreign SMEs, which is indicated by t-values of paired t-test. ** = significant at the 1 level, * = significant at the 5 % level.*

Source: Based on author's interview survey during 1999-2000.

Lower quality of products and processing services supplied by local metalworking and machinery SMEs was ranked the second highest, with an average score of 4.20. The

assembler firms suffered from low quality of supplied parts and components. The firms also cited low production technology of local supplier firms as a substantial cost factor associated with inter-firm linkages, with a rating of 4.00 on average. The *t*-tests show that foreign-affiliated parent firms perceived low quality and insufficient technology as more serious problems than their domestic counterparts. Because of the higher quality of their final products and their experience outside Indonesia, foreign-affiliated manufacturers are more quality- and technology-conscious than their non-affiliated counterparts.

The cost of monitoring local supplier firms was significant, with a mean score of 4.13. Considering great concerns about unstable delivery timing, low quality and low technology, LEs in our sample have had to supervise their local supplier firms closely. For example, *Firm A08*, a motorcycle assembler firm, monitors and evaluates vendor firms regularly on quality control, production control, production engineering, management control, purchasing control, and labour control. In this way, *Firm A08* has to regularly allocate a considerable amount of money, time and human resources to monitoring in order to prevent costs caused by unreliable delivery time, unsatisfactory quality and insufficient technology.

The sample manufacturers assigned a high average score of 4.13 to technical and other related assistance to local supplier firms. If LEs wish to make vertical inter-firm relations workable, they are required to enable local SMEs to address problems associated with unstable delivery timing, low quality and low technology through technical assistance.

The cost of searching for and finding suitable local SMEs was rated an average score of 4.07. Even large-scale assembler firms do not usually have sufficient data and information on potential local supplier firms. For example, *Firm A08*, a foreign-affiliated motorcycle assembler firm, claimed that since there is limited information on competent local SMEs in Indonesia, the firm had to take substantial man-hours to seek them out. Even after finding potential local producers, *Firm A08* indicated that it still needs to carefully collect information that confirms product quality, production facilities and management capabilities.

High prices of products and services and slow response from local supplier firms were rated at modest average scores of 3.33. Local SMEs can offer LEs much lower prices of products and services than their foreign-affiliated counterparts. Assembler firms did not regard price levels as very serious obstacles to subcontracting business with local vendor firms.

Small production capacity was ranked the lowest, with a mean score of 2.73. Compared to other costs listed in Table 5, the low production capacity of local SMEs was regarded as less obstructive to the successful implementation of subcontracting transactions. This relatively low rating may have been affected by the sharp decrease in demand for products in the subsectors due to the recent economic crisis. If our field research had been carried out in the high economic growth period, the result is likely to have been different. Because of contracted demand during the crisis period, parent firms did not perceive low production capacity of SMEs as a serious problem. Differences in average scores of small capacity were statistically significant at the 1 percent level according to subsector and investment nationality. The assembler firms in

the automobile and motorcycle subsectors and those with foreign investment have been more aware of difficulties due to the low capacity of local SMEs than their counterparts in the agricultural machinery and bicycle subsectors and those with domestic investment, reflecting differences in order volume between the two manufacturer groups. Since LEs in the former group generally place a larger order, they tend to regard the small capacity of SMEs as a more apparent problem than those in the latter group.

The ranking and degree of costs given by our sample parent firms were different between subcontracting transactions with local SMEs and with foreign-affiliated SMEs. Significantly different were the high prices of products and services. In contrast to local SMEs, the parts and components from foreign-affiliated supplier firms were deemed relatively expensive, with an average score of 4.53. The difference was statistically significant at the 1 percent level. Many of the assembler firms pointed out that quality, technology and delivery timing of foreign-affiliated supplier firms were acceptable, but that the prices of their products were high.

Different from local SMEs, technical and other necessary assistance to foreign-affiliated SMEs was ranked the second lowest, with a mean score of 2.27. The difference was statistically significant at the 1 percent level. This seems reasonable, because better quality, technology and delivery timing of foreign-affiliated supplier firms do not require parent firms to allocate much time and costs to technical and other support.

The ranking of other listed variables for foreign-affiliated SMEs was not much different from that for local SMEs. However, the average scores of such variables for the latter group were significantly higher than for the former group. This indicates that, if large-scale principal firms wish to exploit lower price levels of parts and components offered by local SMEs, they have to bear higher levels of other costs, compared to foreign-affiliated SMEs.

5.2 Benefits from Subcontracting Transactions with SMEs

The reasons why parent firms wished to exploit subcontracting business with SMEs were investigated in Section 3. This section analyses realised benefits that parent firms have gained from subcontracting arrangements with SMEs. Table 6 indicates the degree of benefits that the surveyed assembler firms obtained from vertical inter-firm relations with local SMEs and foreign-affiliated SMEs. It also presents differences in the mean scores between groups in the categories of parent firms and between local SMEs and foreign-affiliated SMEs.

The most valuable benefit from subcontracting ties with local metalworking and machinery SMEs was lower wages, which were rated at a mean score of 4.53. The average score and the ranking are similar to those of the motivations in Table 3. It is also consistent with the observation in Table 5, where price levels of parts and components were not a serious problem in conducting subcontracting transactions with local SMEs. LEs obtained significant benefits of lower wages provided by local supplier firms. For example, *Firm A07* explained that cost advantages resulting from lower wage rates based on economies of small-scale production was one of the most

important reasons for price competition in the domestic and international motorcycle market.

Specialisation achieved an average rating of 4.13. Subcontracting business with local SMEs allowed principal firms to specialise in the assembling process and improve production efficiency. For instance, *Firm A06*, a foreign-affiliated manufacturer producing automotive components such as air-conditioners, radiators, alternators and starters, pointed out that the production processes of local SMEs were generally in the areas of simple and labour-intensive technologies, where large-scale parent firms would not have significant advantages. Thus, *Firm A06* has sought to concentrate on specialised processes through the contracting out of processes with little advantages to local vendor firms. It achieved a more efficient utilisation of its production factors.

Table 6 Revealed Benefits from Subcontracting Transactions with SMEs

	Subcontracting with						
	Local SMEs				*Foreign SMEs*		*Comparison*
Revealed Benefits	*Mean Scores and Rank*		*Differences between Groups in Firm Categories*		*Mean Scores and Rank*		*Differences between*
	(I)[1] (s.d.)	*Rank*	*Subsector*[2] *t*-values	*Investment*[3] *t*-values	(II)[1] (s.d.)	*Rank*	(I) and (II)[4] *t*-values
1. *Specialisation*	4.13 (0.92)	2	1.07	0.19	4.33 (0.72)	3	1.38
2. *Shock Absorber*	3.87 (0.64)	4	0.74	1.49	3.67 (0.62)	5	0.76
3. *Lower Wages*	4.53 (0.64)	1	1.46	0.56	3.47 (0.74)	7	5.17 **
4. *Special Skills*	2.53 (0.74)	7	1.23	0.48	4.40 (0.51)	2	8.67 **
5. *Better Products*	4.00 (0.93)	3	1.72	0.95	4.60 (0.51)	1	2.81 **
6. *Lower Costs for Monitoring Workers*	3.67 (0.49)	5	1.88	0.36	3.93 (0.70)	4	1.74
7. *Lower Costs associated with Contracting*	3.00 (0.53)	6	2.18 * (-)	1.03	3.53 (0.52)	6	2.78 *
Number of Sample Firms	15				15		

Notes: 1) Figures in the upper row are the average of scores indicated by assembler firms' rating from 1 (the lowest score as not at all beneficial) to 5 (the highest score as very beneficial). Figures in parentheses are standard deviation. (I) and (II) represent evaluation on local SMEs and on foreign-affiliated SMEs, respectively.

*2) Difference in mean scores given by assembler firms in the automobile and motorcycle subsectors (AM) and by those in the agricultural machinery and bicycle subsectors (AB), which is indicated by t-values. ** = significant at the 1 level, * = significant at the 5 % level. When the difference is significant, (+) = AB firms > AM firms, (-) = AB firms < AM firms.*

*3) Difference in mean scores given by assembler firms of domestic investment (D) and by those of foreign investment (F), which is indicated by t-values. ** = significant at the 1 % level, * = significant at the 5 % level. When the difference is significant, (+) = D firms > F firms, (-) = D firms < F firms.*

*4) Difference in mean scores between evaluation on (I) local SMEs and on (II) foreign SMEs, which is indicated by t-values of paired t-test. ** = significant at the 1 level, * = significant at the 5 % level.*

Source: Based on author's interview survey during 1999-2000.

Ensuring better products was given an average score of 4.00. Subcontracting linkages made it possible for manufacturers to purchase better parts and components from local supplier firms. For instance, *Firm A04* stated that automobile manufacturers could not easily procure good products and services in Indonesia without close relationships and mutual understanding between buyers and local sellers. It maintained that, after the establishment of subcontracting linkages, it was able to purchase reliable parts and components from local vendor firms. In addition, *Firm A12* reported that even a bicycle assembler firm had to establish close subcontracting linkages if it intended to buy products and services with a certain minimum quality from local SMEs.

The role of shock absorber was given a mean score of 3.87. Sample parent firms regarded local supplier firms as shock absorbers, which allowed them to avoid short or idle capacity of workers and production facilities during a period of economic upturn or downturn. All of the surveyed assembler firms admitted that they were able to respond flexibly to the downturn in demand during the 1997-98 economic crisis period by reducing orders to their local supplier firms.

In line with expectations in Table 3, subcontracting linkages enabled sample LEs to reduce the cost of supervising hired employees. A mean score of 3.67 indicates gains of lower costs for monitoring own workers. Consistent with our theoretical framework in Hayashi (2002b), all of the sample manufacturers have struggled to improve work morale and discipline, for instance, by providing incentives including promotions and bonuses. Subcontracting arrangements allow them to reduce the number of their own workers. They are an effective way to save costs for supervising directly hired employees.

The parent firms assigned a moderate average score of 3.00 to lower costs associated with contracting. For example, *Firm A08*, a foreign-affiliated motorcycle manufacturer, indicated that, compared to spot-based transactions, subcontracting could reduce the costs of collecting information on potential supplier firms, coping with uncertainties and risks, preparing contracts, enforcing contracts and following up contracts. Statistical tests show that assembler firms in the automobile and motorcycle subsectors drew more benefit from the reduction of transaction costs than those in the agricultural machinery and bicycle subsectors. The explanation is that the former group generally has a much greater number of supplier firms involved, handles more parts and components under more complicated contracts, and is more engaged in strict enforcement of contracts than the latter group.

The benefits of special skills that local vendor firms offered were ranked the lowest, with an average score of 2.53. Local SMEs do not usually have advanced skills to provide large-scale principal firms with technical expertise through subcontracting. For instance, *Firm A08* maintained that simple parts and easy processes would often be

contracted out to local SMEs, but complicated components and difficult processing to foreign-affiliated SMEs.

The most remarkable benefit from subcontracting linkages with foreign-affiliated SMEs was to ensure better products. With a rate of 4.60, this was ranked the highest. This outcome is statistically different from local SMEs. As explained in the previous section, foreign-affiliated SMEs are generally willing to make a longer-term allocation of their resources in order to supply reliable parts and components.

With an average score of 4.40, special skills were ranked the second highest. This is in contrast to the lowest ranking in the case of local SMEs. The difference was statistically significant, which implies that both categories of SMEs have different levels of technological capabilities.

Lower wages were rated the lowest, with a mean score of 3.47, lower than for local SMEs. The difference between both categories of SMEs was statistically significant at the 1 percent level. This is consistent with the observation in the previous part that the parts and components from foreign-affiliated supplier firms are regarded as relatively expensive.

The ranking of other variables was not so different between foreign-affiliated SMEs and local SMEs. Average scores of benefits were not statistically different, except for lower costs associated with contracting.

Table 6 indicates that subcontracting business with local SMEs provides large-scale parent firms with benefits of lower wages and shock absorption. Subcontracting relationships with foreign-affiliated SMEs offer LEs benefits of special skills and better products.

In Table 7, factor analysis is used to group the above benefits from subcontracting transactions with local SMEs into three major factors. The three extracted factors explain 80 percent of the total variance. The first factor, *Specialisation and Lower Transaction Costs*, accounts for 43 percent of the variance and consists of the first three variables in the table: specialisation (with a factor loading of 0.86), lower costs for monitoring workers (0.82), and lower costs associated with contracting (0.75). The second factor, *Economies of Small-scale Production*, explains 21 percent of the variance and is made up of two variables: shock absorber (0.93); and lower wages (0.78), which are the main revealed benefits specific to local supplier firms. The third factor, *Quality and Skills*, accounts for 16 percent of the variance and comprises two variables of special skills (0.93) and better products (0.70).

Table 7 Matrix of Factor Loadings: Revealed Benefits from Subcontracting Transactions with Local SMEs

Revealed Benefit Variables	Factor 1 Specialisation and Lower Transaction Costs	Factor 2 Economies of Small-scale Production	Factor 3 Quality and Skills
1. *Specialisation*	0.86		
2. *Lower Costs for Monitoring Workers*	0.82		
3. *Lower Costs associated with Contracting*	0.75		
4. *Shock Absorber*		0.93	
5. *Lower Wages*		0.78	
6. *Special Skills*			0.93
7. *Better Products*	0.61		0.70
Eigen Value	2.99	1.48	1.13
Percentage of Variance Explained (%)	42.7	21.2	16.2
Cumulative Percentage (%)	42.7	63.9	80.1
Number of Sample Firms = 15			

Note: Loading values are not listed if they are smaller than 0.40.
Source: Based on author's interview survey during 1999-2000.

Table 8 Matrix of Factor Loadings: Revealed Benefits from Subcontracting Transactions with Foreign-affiliated SMEs

Revealed Benefit Variables	Factor 1 High Skills with Economies of Small-scale Production	Factor 2 High Quality with Less Internal Supervision	Factor 3 Specialisation and Lower Transaction Costs
1. *Special Skills*	0.92		
2. *Shock Absorber*	0.87		
3. *Lower Wages*	0.64	0.55	
4. *Better Products*		0.84	
5. *Lower Costs for Monitoring Workers*		0.82	
6. *Lower Costs associated with Contracting*			0.93
7. *Specialisation*			0.86
Eigen Value	2.77	1.93	1.05
Percentage of Variance Explained (%)	39.6	27.5	15.0
Cumulative Percentage (%)	39.6	67.1	82.1
Number of Sample Firms = 15			

Note: Loading values are not listed if they are smaller than 0.40.
Source: Based on author's interview survey during 1999-2000.

Table 8 also uses factor analysis to extract three principal beneficial factors from subcontracting ties with foreign-affiliated SMEs. The three factors account for 82 percent of the total variance. The first factor, *High Skills with Economies of Small-scale Production*, explains 40 percent of the variance and consists of the variables: special skills (0.92); shock absorber (0.87); and lower wages (0.64). The second factor, *High Quality with Less Internal Supervision*, accounts for 28 percent of the total variance and comprises two variables: better products (0.84); and lower costs of monitoring workers (0.82). The last factor, *Specialisation and Lower Transaction Costs*, explains 15 percent of the variance. It includes two variables: lower costs associated with contracting (0.93) and specialisation (0.86).

5.3 Cost-Benefit Balance of Subcontracting Transactions with SMEs

Table 9 contains a rough evaluation of the cost-benefit balance of subcontracting transactions with SMEs. The parent firms rated the cost-benefit of subcontracting with local SMEs in the long-term at 3.27 on average.[9] The difference in average scores between subsectors was statistically significant at the 5 percent level. Assembler firms in the automobile and motorcycle subsectors perceived larger net benefits from subcontracting arrangements than those in the agricultural machinery and bicycle subsectors. For example, *Firm A07*, a motorcycle assembler firm, enjoyed lower wage rates based on economies of small-scale production through subcontracting transactions with local SMEs, and obtained substantial gains from vertical inter-firm linkages. On the other hand, *Firm A09* of a foreign-affiliated agricultural machinery enterprise noted that subcontracting links did not generate large benefits. Even though *Firm A09* provided various forms of support to local SMEs, it had to put up with their low quality and unreliable delivery time.

The cost-benefit of subcontracting with foreign-affiliated SMEs was rated at 3.93. Compared to local supplier firms, foreign-affiliated supplier firms have been more beneficial to the parent firms. This may reflect the fact that foreign-affiliated SMEs have usually higher technological capabilities and can provide assembler firms with reliable products and services.

[9] Our survey required parent firms to give the evaluation based on their views reflecting not immediately before the interview in 1999 and 2000 but the last 5 to 10 years.

Table 9 Cost-Benefit Balance of Subcontracting Transactions with SMEs

	Subcontracting with				
	Local SMEs			*Foreign SMEs*	*Comparison*
	Mean Scores	*Differences between Groups in Firm Categories*		*Mean Scores*	*Differences between*
	(I)[1] (s.d.)	*Subsector*[2] *t*-values	*Investment*[3] *t*-values	(II)[1] (s.d.)	(I) and (II)[4] *t*-values
Cost-Benefit Balance	3.27	2.46 *	1.04	3.93	3.57 **
	(0.70)	(-)		(0.70)	
Number of Sample Firms	15			15	

Notes: 1) Figures in the upper row are the average of scores indicated by assembler firms' rating from 1 (the lowest score as very costly) to 5 (the highest score as very beneficial). Figures in parentheses are standard deviation. (I) and (II) represent evaluation on local SMEs and on foreign-affiliated SMEs, respectively.

*2) Difference in mean scores given by assembler firms in the automobile and motorcycle subsectors (AM) and by those in the agricultural machinery and bicycle subsectors (AB), which is indicated by t-values. ** = significant at the 1 level, * = significant at the 5 % level. When the difference is significant, (+) = AB firms > AM firms, (-) = AB firms < AM firms.*

*3) Difference in mean scores given by assembler firms of domestic investment (D) and by those of foreign investment (F), which is indicated by t-values. ** = significant at the 1 % level, * = significant at the 5 % level. When the difference is significant, (+) = D firms > F firms, (-) = D firms < F firms.*

*4) Difference in mean scores between evaluation on (I) local SMEs and on (II) foreign SMEs, which is indicated by t-values of paired t-test. ** = significant at the 1 level, * = significant at the 5 % level.*

Source: Based on author's interview survey during 1999-2000.

6 WILLINGNESS OF PARENT FIRMS TO SUPPORT SMES IN SUBCONTRACTING TRANSACTIONS

The large-scale assembler firms in our sample generally regarded subcontracting with SMEs as a useful and beneficial vertical production arrangement. However, the results in Table 5 indicated that utilisation of SMEs through subcontracting requires principal firms to bear various costs, particularly as a consequence of insufficient technical capabilities of SMEs. If parent firms wish to make subcontracting linkages work well, they need to improve the technological and related capabilities of SMEs.

Table 10 shows the degree to which assembler firms are willing to involve small and medium producers as vendor firms in subcontracting deals in the future.[10] The willingness to utilise local SMEs in subcontracting business was rated high at 4.27 on average. The mean scores were significantly different at the 1 percent level between subsectors of parent firms. The automobile and motorcycle manufacturers have a stronger desire to involve local SMEs in vertical inter-firm networks than the firms producing agricultural machinery and bicycles. The willingness to use foreign-

[10] The future here means 5 to 10 years after the date of our interview survey (in 1999-2000).

affiliated SMEs was also rated high at 4.07 on average. Though slightly lower than that of local SMEs, there was no statistically significant difference.[11]

Table 10 Willingness to Utilise SMEs in Subcontracting Transactions in the Future

	Subcontracting with				
	Local SMEs			*Foreign SMEs*	*Comparison*
	Mean Scores	*Differences between Groups in Firm Categories*		*Mean Scores*	*Differences between*
	(I)[1] (s.d.)	*Subsector*[2] *t*-values	*Investment*[3] *t*-values	(II)[1] (s.d.)	(I) and (II)[4] *t*-values
Willingness to Utilise SMEs in Subcontracting	4.27 (0.96)	3.54 ** (-)	1.37	4.07 (0.59)	1.00
Number of Sample Firms	15			15	

Notes: 1) Figures in the upper row are the average of scores indicated by assembler firms' rating from 1 (the lowest score as not at all willing) to 5 (the highest score as very willing). Figures in parentheses are standard deviation. (I) and (II) represent evaluation on local SMEs and on foreign-affiliated SMEs, respectively.

*2) Difference in mean scores given by assembler firms in the automobile and motorcycle subsectors (AM) and by those in the agricultural machinery and bicycle subsectors (AB), which is indicated by t-values. ** = significant at the 1 level, * = significant at the 5 % level. When the difference is significant, (+) = AB firms > AM firms, (-) = AB firms < AM firms.*

*3) Difference in mean scores given by assembler firms of domestic investment (D) and by those of foreign investment (F), which is indicated by t-values. ** = significant at the 1 % level, * = significant at the 5 % level. When the difference is significant, (+) = D firms > F firms, (-) = D firms < F firms.*

*4) Difference in mean scores between evaluation on (I) local SMEs and on (II) foreign SMEs, which is indicated by t-values of paired t-test. ** = significant at the 1 level, * = significant at the 5 % level.*

Source: Based on author's interview survey during 1999-2000.

[11] The decision of course depends to a large extent on the characteristics of the products and services parent firms have to procure. However, here we generalise their willingness to utilise local and foreign-affiliated SMEs.

Table 11 Efforts to Support SMEs in the Past and in the Future

	Subcontracting with				
	Local SMEs			*Foreign SMEs*	*Comparison*
	Mean Scores	*Differences between Groups in Firm Categories*		*Mean Scores*	*Differences between*
	(I)[1] (s.d.)	*Subsector*[2] *t*-values	*Investment*[3] *t*-values	(II)[1] (s.d.)	(I) and (II)[4] *t*-values
Efforts to Support SMEs in the Past	4.27 (0.88)	4.24 ** (-)	3.72 ** (-)	3.13 (1.51)	4.80 **
Efforts to Support SMEs in the Future	4.40 (0.99)	3.06 * (-)	2.66 * (-)	2.87 (1.36)	7.99 **
Number of Sample Firms	15			15	

Notes: 1) Figures in the upper row are the average of scores indicated by assembler firms' rating from 1 (the lowest score as very negative) to 5 (the highest score as very positive). Figures in parentheses are standard deviation. (I) and (II) represent evaluation on local SMEs and on foreign-affiliated SMEs, respectively.

*2) Difference in mean scores given by assembler firms in the automobile and motorcycle subsectors (AM) and by those in the agricultural machinery and bicycle subsectors (AB), which is indicated by t-values. ** = significant at the 1 level, * = significant at the 5 % level. When the difference is significant, (+) = AB firms > AM firms, (-) = AB firms < AM firms.*

*3) Difference in mean scores given by assembler firms of domestic investment (D) and by those of foreign investment (F), which is indicated by t-values. ** = significant at the 1 % level, * = significant at the 5 % level. When the difference is significant, (+) = D firms > F firms, (-) = D firms < F firms.*

*4) Difference in mean scores between evaluation on (I) local SMEs and on (II) foreign SMEs, which is indicated by t-values of paired t-test. ** = significant at the 1 level, * = significant at the 5 % level.*

Source: Based on author's interview survey during 1999-2000.

Table 11 shows the extent to which parent firms made and will make an effort to support small-medium supplier firms in developing technological and other necessary capabilities in the past and in the future.[12] Efforts made by assembler firms to foster local SMEs in the past were rated at 4.27 on average. Differences in mean scores of efforts were statistically significant at the 1 percent level according to groups of subsectors and investment nationality of parent firms. LEs in the automobile and motorcycle subsectors and those with foreign participation made greater efforts to extend assistance to local SMEs than their counterparts in the agricultural machinery and bicycle subsectors and those with domestic investment.[13]

Past efforts to provide technical and other related support to foreign-affiliated SMEs were rated on average at 3.13. Mean scores given by the surveyed assembler firms

[12] The past and future here indicate 5 to 10 years before and after the date of the interview survey (in 1999-2000).

[13] *Firm A06* mentioned that the provision of technical and other relevant assistance to local SMEs was recognised by most foreign-affiliated assembler firms in the automobile and motorcycle subsectors as a necessary condition for the success of subcontracting deals.

were statistically different at 1 percent level between efforts to support local SMEs and those to assist foreign-affiliated SMEs. Assembler firms acknowledged that local SMEs needed more support to serve well as supplier firms, than foreign-affiliated SMEs. This reflects the different levels of technological and other relevant capabilities of local and foreign-affiliated SMEs.

According to *Firm A01*, which has a long experience in business in Indonesia, almost all of the automobile and motorcycle assembler firms in Indonesia strongly preferred subcontracting arrangements to other vertical production alternatives, because these subsectors need a large number of high quality parts and components with good delivery timing. Thus, they have attempted, within the scope of cost-effectiveness, to foster SMEs, in particular local SMEs, to become capable vendor firms. For example, in an effort to enhance supplier firms, *Firm A01* itself, as explained above, has furnished vendor firms with a wide range of support including giving technical guidance, providing credit and guarantees for banks, and establishing local SMEs. In contrast, responses from *Firm A14* and *Firm A15* implied that, relative to their automobile and motorcycle counterparts, both bicycle and tricycle manufacturers did not have a strong motivation to enhance small-medium supplier firms. They wanted to establish beneficial subcontracting ties without significant costs.[14]

The extent of efforts by large-scale assembler firms to assist SMEs in the future is also shown in Table 11. For involving supplier firms in subcontracting chains, future efforts of parent firms to offer necessary support to local SMEs were rated at 4.40 on average. This mean score of future efforts reveals the strong need of manufacturers to purchase lower-priced intermediate inputs through subcontracting networks. It also reveals their commitments to fostering local SMEs as supplier firms in the future. The statistical tests suggest that the foreign-affiliated manufacturers and the automobile and motorcycle assembler firms plan to render support to local supplier firms more actively than their non-affiliated Indonesian and agricultural machinery and bicycle counterparts.

Future efforts to extend assistance to foreign-affiliated SMEs were assigned an average score of 2.87. The difference in mean scores between local SMEs and foreign-affiliated SMEs are statistically significant at the 1 percent level. This result shows that assembler firms perceive foreign-affiliated SMEs as immediately active players who do not need substantial support, and local SMEs as potential actors who require support, in subcontracting transactions in the long-term perspective. For example, *Firm A06*, a large-scale automotive component manufacturer, claimed that technical support provided by auto manufacturers in Indonesia to foreign-affiliated SMEs has been sufficient, and that future assistance should be focused on local supplier firms.

These results confirm a positive attitude of the respondents toward offering support to local SMEs. However, views from the principal firms indicated a recent movement toward the provision of comprehensive support only to supplier firms that can make serious efforts for improving their insufficient capabilities. *Firm A03* and *Firm A13* explained in almost a same way that they would select, from the entire number of vendor firms under them, a certain number of supplier firms that have shown steady

[14] According to *Firm A14*, the limited capabilities of its own employees and lack of technologies are the main factors preventing the firm from deploying support activities for the development of competent vendor firms.

progress in response to support. They would intensively allocate assistance only to such cost-effective SMEs.

7 CONCLUSION

Based on qualitative data obtained from large-scale assembler firms, this study examined subcontracting transactions with and support for SMEs in the Indonesian machinery industry, particularly the automobile, motorcycle, agricultural machinery and bicycle subsectors. The results obtained from parent firms in this study are consistent with those from SMEs in Hayashi (2001). The types of subcontracting linkages established do not show significant differences in views between parent firms and small-medium supplier firms. This suggests that the data and information obtained from LEs and SMEs are both reliable.

UNIDO (2000: 208) reported that principal firms in the Indonesian manufacturing industry have not been induced to identify potential small-medium supplier firms, extend technical support to SMEs, and enter into long-term contracts with them. Supratikno (1998: 140) in his study of the motorcycle and diesel engine subsectors concluded that the possible contribution of subcontracting linkages to the competitiveness of assembler firms has not been significant.

In contrast, our case study of the Indonesian machinery industry has shown that subcontracting transactions with SMEs have generally allowed parent firms to obtain net benefits, although the behaviour or responses to subcontracting varied according to groups of assembler firms by subsectors and origins of investment. Assembler firms in our sample subsectors perceive foreign-affiliated SMEs as immediately active players and local SMEs as potential actors in their vertical production system. Assembler firms seek positive involvement in subcontracting chains of both types of SMEs. LEs recognise that local SMEs have insufficient technological and other capabilities, and are prepared to support such SMEs in improving their performance.

The results of this study indicated that the subcontracting systems in the studied machinery subsectors have built-in support mechanisms for the development of SMEs, in particular local SMEs. As Sato (1998) observed in her study on the Indonesian motorcycle component industry, subcontracting linkages and its support mechanisms for SMEs are developing in the Indonesia machinery subsectors based not on government regulations but business reasons.

REFERENCES

Akerlof, G. A., 1984, "Gift Exchange and Efficiency-Wage Theory: Four Views," *American Economic Review*, Vol. 74, No. 2, pp. 79-83.

Harianto, F., 1996, "Study on Subcontracting in Indonesian Domestic Firms," in Pangestu, M. (ed.), *Small-scale Business Development and Competition Policy*, Jakarta: Centre for Strategic and International Studies.

Hayashi, M., 2000, "Support Mechanisms for the Development of SMEs in Indonesia: The Case of Automotive and Motorcycle Parts Industry," in Harvie, C. and B. Lee (eds.), *SMEs in East Asia in the Aftermath of the Asian Financial Crisis: Proceedings for SMEs in a Global Economy Conference*, Wollongong: University of Wollongong.

Hayashi, M., 2001, "Subcontracting Linkages and SME Development in Indonesia: Qualitative Data from Firm-level Survey in the Metalworking and Machinery Industry," Canberra: The Australian National University.

Hayashi, M., 2002a, "The Role of Subcontracting in SME Development in Indonesia: Micro-level Evidence from the Metalworking and Machinery Industry," *Journal of Asian Economics*, Vol. 13, No. 1, pp. 1-26.

Hayashi, M., 2002b, *SME Development and Subcontracting in Indonesia: A Comparison with Japan's Historical Experience*, Canberra: The Australian National University.

Lall, S., 1980, "Vertical Inter-firm Linkages in LDCs: An Empirical Study," *Oxford Bulletin of Economics and Statistics*, Vol. 42, No. 3, pp. 203-26.

Mead, D., 1984, "Of Contracts and Subcontracts: Small Firms in Vertically Dis-integrated Production/Distribution Systems in LDCs," *World Development*, Vol. 12, No. 11/12, pp. 1095-106.

Oshima, H. T., 1987, *Economic Growth in Monsoon Asia: A Comparative Survey*, Tokyo: University of Tokyo Press.

Sato, Y., 1998, "The Machinery Component Industry in Indonesia: Emerging Subcontracting Networks," in Sato, Y. (ed.), *Changing Industrial Structures and Business Strategies in Indonesia*, Tokyo: Institute of Developing Economies.

Siddharthan, N. S., 1998, "Differential Behaviour of the Japanese Affiliates in the Indian Automobile Sector," *Japan and the World Economy*, Vol. 10, No. 1, pp. 97-109.

Supratikno, H., 1998, *Competitive Strategy, Production Organization and Inter-firm Collaboration: A Case Study of Subcontracting Arrangements in Three Manufacturing Firms in Indonesia*, Amsterdam: Vrije Universiteit.

Thee, K. W., 1997, "The Development of the Motorcycle Industry in Indonesia," in Pangestu, M. and Y. Sato (eds.), *Waves of Change in Indonesia's Manufacturing Industry*, Tokyo: Institute of Developing Economies.

Thee, K. W., 2000, "The Impact of the Economic Crisis on Indonesia's Manufacturing Sector," *Developing Economies*, Vol. 38, No. 4, pp. 420-53.

UNIDO, 2000, *Indonesia: Strategy for Manufacturing Competitiveness Vol. II Main Report*, Jakarta: UNIDO.

Yellen, J. L., 1984, "Efficiency Wage Models of Unemployment," *American Economic Review*, Vol. 74, No. 2, pp. 200-5.

SME INFORMATION SOURCING FOR INNOVATION AND EXPORT MARKET DEVELOPMENT FROM LOCAL OR EXTERNAL NETWORKS?

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ABSTRACT

A survey analysis of innovation information and input sourcing of New South Wales regional exporting firms indicates that the majority of regional exporters were small to medium sized enterprises (SMEs) using the definition of less than 200 employees. The analysis shows that these SMEs have been able to establish their own extensive information linkages into the international economy. Consequently, the need to assess and develop the benefits of linkages between small and large firms is not highly significant within the New South Wales regions.

The survey is derived from the Tiberi-Vipraio and Hodgkinson (2000) method, which allows for the identification and measurement of firms' access to innovation and market information and their patterns of input sourcing. Firms were queried as to whether information and inputs are sourced from international or local networks. These results were then correlated with firms' export performance.

The analysis indicates that the international networking by SMEs brings knowledge to the regions, which facilitates intra-firm learning. However, it suggests that SME's local or regional linkages are relatively underdeveloped, as a source of new knowledge for innovation activity. This is in contrast to the main body of economic literature, which argues that small regional exporters utilize local networks as a major input into their success. This research identifies intensification in the usage of regional networks as one means of improving SME performance in more remote regions.

Participation by SMEs in intra-regional linkages with research institutions within an innovative milieu framework is not supported by the analysis. This is despite SMEs having developed some technological collaborations with other firms and research institutions as a part of their external knowledge networks. Some anecdotal survey evidence suggests that the presence of a regional university provides a source of new entrepreneurs and skilled workers and adds to the overall locational attractiveness of a region for many firms. However, the data suggests that technical linkages between local firms and these institutions were scarce. This highlights another area where

regional outcomes could possibly be improved by intensifying local research relationships.

The analysis also indicates that a two-way effect results by the diversity of regional SME export sector base. Firstly, it restricts the client-supplier relationships preventing closer industry specific collaborations but secondly, it can be advantageous in that it restricts competition between regional exporters. This creates conditions allowing some information sharing regarding the opportunities and ways of entering overseas markets, which do not affect the competitive position of the mentoring firm.

In concluding the paper argues that the basic requirements for regional learning development are in place but requires an increase in the interaction intensity between local SMEs in order to achieve a higher level of collaboration and knowledge sharing.

Key words/phrases: Innovation, regional development, international networking.

JEL Codes: R110, R120, R320.

INTRODUCTION

During the last two decades the process of globalisation within developed economies has led to unexpected increases in regional firms becoming more horizontally integrated within their regions in contrast to the expected dominance of vertically integrated hierarchical firms (Acs and Audretsch, 1993; Loveman and Sengenberger, 1991; Sylos-labini, 1986). This process has coincided with empirical studies which have identified regional SMEs (small to medium sized enterprises) and local information networks as the main sources of information for innovation and technological developments for their developing export industries (Audretsch and Vivarelli, 1994; Pavitt et al.; 1987; Rothwell, 1989). This observation contrasts with the previous expectations of larger firms being the source of regional development, considering their higher concentrations of R&D expenditure, that innovation output depends strongly on R&D input (Scherer, 1991) and that the larger firms are expected to drive the technological process as they source their information from external networks (other regions or global networks).

This paper presents a preliminary analysis of data from a recent survey of regional New South Wales exporters. The analysis investigates the level and type of innovation undertaken by firms in different employment size categories, the extent to which they source new technologies through self-development or via collaborations with other institutions, and their pattern of sourcing new market information using local regional and external networks. Some preliminary analysis of innovative milieu and spatial effects is also provided. A more thorough study which will include a range of additional variables influencing innovation and knowledge networks is underway.

THEORETICAL BACKGROUND

The argument that innovation information is mainly sourced from SMEs is one originally advocated by the Schumpeter I model (Schumpeter, 1939). The Schumpeterian model of the creative entrepreneur was as the risk-taker who converted inventions into commercial innovations. As such, these firms did not necessarily

conduct their own research and development but were often viewed as sourcing their new products from an exogenous bank of independent inventions associated with third parties such as other firms or local research Universities (Simmie 2001). Alternatively, the Schumpeter II model (1942) emphasizes the role of the large oligopolistic firms for the development of endogenous research, and is used as the basic model to demonstrate the contributions of large firms or MNCs within a global economy. It argues that continuing investment and the development of new ideas produces a stream of innovations, the commercial success of which stimulates further research and development investments. As such, it includes a strong positive feedback loop linking successful innovation to increased research and development activities via a self-reinforcing circle, which in turn leads to further increased innovation concentrations (Freeman et al., 1982).

However, it is argued that within the globalized economy, the sources of innovation information for endogenous regional economic development, differ widely between SMEs and large firms due to their resource and networking differences. In much of this analysis, the terms large firms and MNCs are used interchangeably in that large firms whether domestically or foreign owned are considered to have a significant present in overseas markets. Vernon (1979) argued that SMEs networks are less global and more locally based and therefore their information sources are limited to the personal exchanges, collective learning, trust, cooperation and a trickling of information from the local MNCs. It has also been suggested that SMEs receive long distance knowledge spillovers from regional MNCs, particularly in the case of some user-supplier relationship, and that these can weaken as the distance from the relevant MNC increases (Amin and Robins, 1990; Amin, 1991; Pratt, 1991). Alternatively, MNCs are believed to have sufficient resources to search the globe for information and new inventions and therefore produce innovations anywhere they regard as suitable. Consequently, Vernon (1979) argued that they locate their head offices, research sections and financing centres within the metropolitan CBDs, thereby increasing innovation and firm cluster growth. Vernon (1979) further argued as these international cities attract the latest innovation ideas they become the first localities to exploit and benefit from them.

Relevant to this issue are two theoretical concepts: firstly, the significance of networks within a regional economy and secondly, proximity to a network being critical for accessing the guidance and information when developing innovations and export markets. However, as networks may include other firms, universities and support services, increasing support has been given to the significance of locally sourced information (from within the region) through the role of the SME, over that of externally sourced information via multinational corporations or other corporate entities. This emphasis on local networks occurs despite an increasing tendency for some firms to also develop external linkages in line with the increased globalization of their activities.

The significance of networks has long been acknowledged for regional economies. For example, the OECD (1992) argues that they provide a higher degree of flexibility for innovation and production opportunities and Porter and Fuller (1986) have emphasized their relevance for the speed of communication "as being one of the major advantages that networks have over acquisition or internal development through arm's length relationships" (Fischer, 1991). This advantage has become more

important as product life cycles shorten and competition intensifies (Fischer, 1991). Also, high R&D costs have been noted to force SMEs to pool resources with other firms and in some cases even with competitors (OECD, 1992). Lundvall (1988) argues that SMEs and other firms that lack the necessary in-house R&D facilities, may develop information networks to enhance their absorption capacities. This occurs by learning from customers and suppliers, interacting with other firms and taking advantage of knowledge spillovers from other firms and industries, particularly those within close proximity.

This proximity argument presupposes that distance reduces the ability to receive knowledge and consequently a firm's innovations are more dependent upon local, rather than external linkages and networks. It is assumed that the concentration of skilled labour in one location can increase communication flows that lead to new products and processes. Saxenian (1994, 1996) has emphasized this process within large agglomerations of specialized, related and diversified industries in her study of Silicon Valley clusters. As such clusters and the networks within them were found to speed up the movement of ideas and facilitate high levels of inter-firm worker mobility among engineers as well as the informal communication among skilled workers.

Williamson (1975, 1985) drawing upon Coase (1937), developed the institutional analysis theory which argues that economic relations are controlled either within the hierarchies of large companies or by market relations between them and that these relationships were being replaced by collaborative networked forms of production as firms maneuvered to reduce their transaction costs. The resultant vertical disintegration of large companies is similar to that predicted by Piore and Sabel (1984) and may influence the regional distribution of innovations as an innovator's network or capacity to network changes.

Furthermore, global theorists have argued that international networks have a two-way influence. The first function involves collaboration with distant customers, suppliers and competitors and is paramount to accessing required information as it offers new opportunities for regions that fit into world markets (Saxenian, 1994). For example, multinational manufacturing, service or consultancy companies are known to often exchange new international information and knowledge. The second is that they influence MNCs to locate their knowledge-rich head offices and research sections within the core metropolitan regions of their respective national urban hierarchies. As a result, international knowledge is also exchanged between firms of different sizes and the time proximity of these core regions facilitates long-distance knowledge spillovers between them. However, Freeman (1994), citing Stiglitz (1987) argued that the entry of new global competitors can also constrain information access for innovation development.

The close proximity to networks is also noted to facilitate the relationships between regional suppliers and purchases, face-to-face contact, and employee mobility, which in turn facilitates an environment of cooperative learning. Innovative milieu theorists argue that these networks may contain varying combinations of SMEs and MNCs so that the resultant intense inter-industry linkages incorporate R&D and the demand for new products or processes. Consequently, these milieus often develop in large cities

and act as incubators of cooperative learning for the generation of new ideas (Maillat 1997).

PREVIOUS ANALYTICAL TYPOLOGIES

Several typologies have been developed to analyse the impact of the interaction of regional context with the global process. These consist of those developed by Porter (1993), the innovative milieu theorists (GREMI, 1984)[1] and more recently, Tiberi-Vipraio and Hodgkinson (2000). Each considers regional context as a geographical area of common community, culture and values. These values including such aspects as: the region's historical background, local business practices, attitudes towards risk, cooperation, trust and the degree of openness in social and economic relationships within the region and with outsiders. As such, these typologies also assume that changes in regional culture will allow for the adoption of new ideas (i.e. best practice solutions to economic problems) from outside the regions, which when embedded within their local contexts, enhance the competitive export advantage of regional exporters.

Porter's (1993) typology is based upon the assumption that firms distribute and integrate their various production stages (i.e. design, manufacture, sales) and consequently the employment of their factors of production across a region in order to reduce their transaction and production costs. He surveyed firms to measure the intensity of firm trade within the regions and between the regions as well as their regionally integrated value-added production activity, be it kept in-house or outsourced to subcontractors. From this data he determined levels of horizontal or complementary inter-relations (or integration) and derived four main types of sometimes overlapping integration levels, or territorial production systems. These range from the first type, which displays what is termed functional logic to the fourth, which displays territorial logic (Maillat and Perrin 1992; Maillat et al 1994; Camagni 1991, 1998) (Porter, 1993).

According to Porter (1993), firms displaying functional logic have a vertical hierarchical or central management that makes most of the decisions thereby restricting integration into and across the region, whereas firms displaying territorial logic are the opposite. The four main types are described in the paragraphs below (Maillat, 1998) and those more likely to contain SMEs are the first, third and fourth territorial production systems whereas MNCs are more likely to be located within the second territorial production system.

The first identified territorial production system usually consists of small isolated firms, or branches of larger firms that locate their head offices outside of the region. The external head office undertakes all the innovation related decisions and locates all activities, including that of branches according to traditional functional fordist localisation criteria (labour cost, access to infrastructure, raw material and transport facilities etc.) hence it is referred to as functional logic. Consequently the branches act independently of other regional firms thereby demonstrating no integration or

1. Groupe de Recherche Europeen sur les Milieux Innovateurs (European Innovative Milieu Research Group). A body of European academics researching the concept of the Innovative Milieu and developing an ongoing theory regarding its function within the territorial production system (regional economy).

territorialisation whatsoever. Crevoisier (1996) argues that the isolation and resultant non-communication of these firms, causes this system to lack the necessary exchange relations required to generate the interactive learning for regional specific endogenous resources development and therefore provides only passive support for the location of branch activities. This system is referred to as *horizontal organisation of production and absence of exchange relations (functional logic).*

The second identified territorial production system consists of firms that show some integration and no territorialization and therefore demonstrate mainly functional logic. These firms are usually large firms located within a region, who internalize all their value-adding functions such as the conception of ideas, production, distribution, distribution and marketing. As these firms internalise all their decision-making, there is no externalisation of knowledge, or development of new knowledge other than that needed by the large firm. Hence, they fail to develop any complementary and substantial relationships with the other regional players. Consequently, this type of firm can impose itself on a region and mould it to its own design, resulting in the exclusion of their competitors. Maillat and Grosjean (1999) have argued that the self-sufficiency inherent in this type of firm fails to support a region's endogenous development. This system is referred to as *vertical organisation and absence of exchange relations in the region.*

The third identified territorial production system consists of firms that display simultaneous integration and territorialization and therefore demonstrate a combination of functional and territorial logic. This occurs when a large dominant (and more or less integrated) regional firm controls the whole value-added production chain but outsources some of these activities to other local firms and hence maintains relationships with local suppliers, sub-contractors, research and training centres. These firms and their partners are capable of cooperation and therefore generate complementarities in the exchange of knowledge, know-how and technologies that are governed by the milieu rules or codes. This results in the formation of entrenched interdependencies within the territory and a possible milieu effect that further facilitates endogenous development. The effects of this type of organisation in terms of learning depend largely on the nature of the relations that are established between the firm and its partners (the milieu effect).

With this system there are two possibilities. The first, is where the exchange partnership is one of cooperation and non-dependence and there is complementarity, exchange of knowledge, know-how and of technology resulting in the growth of generated synergies and interdependencies between the various partners of the large firm. The stimulation of the small firms and hence the region, by the large firm causes a renewal of the territories and therefore a territorialisation of the large firm. In the second situation, the large firm has exchange relations with the dependent partners of a trading nature similar to those between a principal and subcontractor. There is however some transfer of knowledge or technology to the subcontractor but without any of the resulting synergies of the first case as the sub-contractors have no other partners other than the firm and merely execute its orders.

In these cases the production systems may become unhinged if the firm or any of its suppliers move away from their region. This of course depends upon the degree of dependence between the firm and its subcontractor-supplier. This is why the greater

the milieu effect, the costlier it is for the firm to leave a territorial production system because it will lose the advantages supplied by the latter (trusted partners, synergies, specific resources, etc). These systems are referred to as *vertical organisation and presence of exchange relations.*

The fourth territorial production system consists of horizontally integrated small independent and specialized firms, cultivating numerous relations across a horizontal territorial integration and is therefore referred to as operating according to territorial logic. They may belong to a part, or the whole of the production chain and considerable interactions between the players is the rule. As such, the coordination between the various stages of production is not organised according to the dominant hierarchical model of the large firm, but result from a complex set of relations and rules, which ensure a level of both competition and cooperation within the flexibility of the system (Maillat, 1998). Consequently, there is no dominant player within the various stages of the value-added chain and the mechanism that ensures the coherence of the system is the level of competition or co-operation occurring between the players, within a milieu type framework. As this system derives its strength from the complementarities between the firms, its development can be hindered by gaps in the value-added chain (i.e. lack of relations with the market, gaps in research etc.). This system possesses relative autonomy and has endogenous development capacities.

Certain industrial districts function according to the fourth territorial production system. However, because of the permanent interaction between the actors, there is no appropriation of specific resources in such systems, and the system only functions effectively if the actors are able to maintain cooperation. Compared with the previous case, this type of territorial production system is less risky for the region since the territorial production system's functioning does not depend on a single firm. In actual fact, the disappearance of a firm does not affect the existence of the others. The development potential however of such a system, resting exclusively on SMEs, is obviously weaker inasmuch as it does not possess the mobilising effects a large firm can produce. This system is referred to as *Horizontal organisation and presence of exchange relations.*

The innovative milieu typology (GREMI, 1984) further utilises and expands upon Porter's typology but stresses a cooperative learning capacity and the exchange of shared information via network linkages, which assist in reducing information uncertainty. The innovative milieu is considered a subset of the territorial production system responsible for the cooperative learning element. It collects this innovation information from the global economy and distributes it to various regional players such as research institutions, universities and colleges, MNCs, SMEs, consumers, suppliers and competitors via inter-industry information linkages. Its purpose is to facilitate a level of cooperative learning in order to reduce the decision making uncertainty existing within the innovation development stage (Nelson and Winter; 1982; Dosi et al., 1988). The milieu is not characteristic of all regions and its presence is identified by a greater number of network connections to research institutions, increased knowledge flows from these research institutions, and a balance in the information distribution channels between vertical-hierarchical firms and those that are more horizontally integrated within the region. As such, the presence of a large dominant firm that could possibly relocate, or the partial vertical integration or take over of a large number of competing firms or subcontractors may upset the

established information distributional channels restricting the generation of endogenous innovative activity.

Two basic models of inter-firm cooperation have emerged from a synthesis of Porter's typology and the innovative milieu theories. More specifically, the functionally integrated production systems dominated by large firms and the territorial production systems made up of SMEs. In the first case, coordination and cooperation are explicit and depend on hierarchy whereas in the second case, they are implicit and depend upon the milieu (Maillat, 1998). Furthermore, in the latter case SMEs appear to require proximity in order to establish cooperative networks whereas in the first case, large firms are also finding an increased need for some interaction at the territorial level. As such, this interaction would enhance their flexibility thereby assisting with the identification of new opportunities and may occur by upgrading in-situ and embedding branch plants within the region rather than relocating (Pratt. 1997, p. 128). Hence, large companies can also integrate horizontally by moving from vertical information flows towards horizontal information flows and Lundvall and Johnson (1994) have identified this as one aspect of the learning economy that demonstrates a long-term commitment to the formation of learning networks (Asheim, 1995).

The use and extent of local versus externally sourced information may be significant at various stages of the innovation process. For example, Crevoisier (1993) argues that during the collection of information from the global economy, innovation takes place in two stages. The first stage is where regional players develop an idea, consider the necessary resource requirements, or mobilise the resources to the required location with the developing opportunities in mind. For example, a small machine tool manufacturer may consider their know-how and equipment and perceive opportunities developing within the electronics and information technology industries. Consequently, they may devise a project that will make better use of their existing technologies, or develop new technologies or resources. The second stage is the execution stage and may involve developing the know-how necessary to transform the resources and organisation into a finished product or process. Consequently, as the firms in the second stage have already developed new forms of know-how, resources and production capacities, they open up new opportunities for other innovative projects that sometimes involve the same firms. Hence, the milieu creates autonomous sequences of innovation processes based on specific resources that they collectively mobilise, create or renew.

PREVIOUS EMPIRICAL STUDIES

Studies undertaken by Mensch (1979) and Massey (1984) have found SMEs importing externally produced inventions in the manner predicated by the Schumpeter I model and found that this importing activity was associated with higher levels of clustering and SME start-ups in international cities. Marshall (1987) found a multiplier effect that not only increased the number of SME innovations, but also reduced their absorption time into final inventions. Alternatively, Vernon (1979) argues that MNCs can split their production activities into many production units and relocate them in cities that demonstrate the most agreeable work and industrial cultures, thereby creating spatial divisions of labour, production and innovation.

Alternatively, Dosi et al. (1988) have argued in support of the Schumpeter II model, when stressing the importance of large oligopolies in undertaking systematic research and development while being concentrated within large international cities and metropolitan trading nodes. Since then, studies undertaken by Freeman, Soete and Clark (1982) have found little evidence to support the existence of a strong relationship between innovation clusters and economic crises. Although they recognize that the diffusion process is important in encouraging innovation imitators to invest in new technologies, they have further argued that the mutual relations between innovations, firms, political and socio-institutional forces comprise the necessary conditions for optimal diffusion and therefore economic growth (Davelaar, 1989).

A GREMI study of the Jura Arc areas of Switzerland and France identified two diverging production systems, in terms of their ability to evolve and respond to changes in their environment, from what once were originally comparable systems (Aydalot, 1986; Maillat, Nemeti and Pfister, 1992a). The Swiss Jura Arc displayed (after considerable restructure) some recovery of its watch making industry and the emergence of microtechnology industries. The French Jura Arc was identified as having serious structural difficulties, a disappearing watch making industry and emerging micro-technology industries that relied upon sub-contracting and remaining heavily dependent on major national and international groups.

In a study of the Mittelland region in Switzerland by Maillat (1989) and Grosjean et al., (GREMI, 1997) survey data was used to analyze the degree of integration in the value-added chain the regional relationship types. The method involved analysing the industries' statistical data to identify branches with high levels of employment (by a location coefficient greater than one) and the production percent exported (70%-98%). Interviews were then conducted with twenty experts in order to determine the specific characteristics of these branches, the most important players and the territorial production chains involved. Qualitative interviews of fifty firms were used to identify networking relationships inside and outside of the region, and the nature of their partnerships (customers, suppliers, competitors, research centres, etc.). This analysis identified six different production systems related to different types of industrial specialisation with varying levels of SME, MNC or domestic large firm concentrations. Using Porter's typology, firms operating according to functional logic and territorial logic were identified as contributing to 40 per cent and 60 per cent of employment respectively. The milieu effects were identified using three measures: the level of complementary and partnership type working modes, the presence of innovation networks and significant links with research centres.

The analysis suggests that the Mittelland Area is adjusting successfully to globalization and is organised by a milieu. This gives the regional authorities more leeway to stimulate the development of specific resources such as know-how and special qualifications required by the players and to stimulate interfaces between firms and research centres or to pursue a specific technological policy. The analysis also identifies the simultaneous occurrence of a well-integrated value-added production chain, considerable international trade, exchange between local cooperative networks, and declining territorialization as processes that facilitate both a firm's local and global integration.

Studies of the Silicon Valley region undertaken by Krugman (1991) found that international trade and information networks were stronger than local networks in generating innovation clusters. This suggests that international networks are the prime drivers of cluster formations in international cities. In this example, international networks had transformed an agricultural region into the world's leading production cluster of new information technology and a group of nearby towns was transformed into the fastest growing innovation cluster in the United States in the 1970s, all within a single generation. This implies that both endogenous and exogenous factors to the international cities are driving these cluster formations at varying levels, and that these levels may be influenced by the spatial differences in technologies, markets, capital, know-how, technical culture and representation that arise from international trade (Crevoisier and Maillat, 1989). Similarly, Veltz (1996) has recognized that with increased global competition, firms have located their research, knowledge and production capacities in localities with reduced transport and communication costs, thereby creating international poles where multiple networks intersect.

Studies by Davelaar (1991) of innovating firms in the Netherlands, find inconclusive evidence regarding the presence of a milieu phenomena. Todtling (1990) has obtained similar results, leading some to argue that the theory gives no explanation as to how and why these advantages arise. Storper (1997) argues that in an attempt to explain this, the milieu theorists have reverted to tautological explanations. Hence, questions regarding the existence and significance of the milieu and whether it actually fosters innovation and why and how innovation is located still remain. Others have argued that it does not explain which comes first - innovations or the innovative milieu and as such, it is difficult to understand the processes that would turn a non-innovative region into an innovative region.

INNOVATIVE ACTIVITY IN REGIONAL SMEs

The method used in this analysis is derived from Tiberi-Vipraio and Hodgkinson (2000) which uses a survey-based typology that expands upon Porter (1993). It combines the concept of positioning of a firm along the value-added production chain as defined in terms of being process or product orientated, and its strategies. Strategies are defined in terms of the firm's degree of specialization or flexibility regarding the development of product and process variety and variability. This survey also combines the concepts of international and local networking to more accurately define and identify a firm's level of international versus global sourcing of innovation information and inputs. In combining these two dimensions, it specifically identifies the development of either product or process innovations (or both) in terms of either global or regional information and input sourcing for various sectors. In this way, those aspects of the regional context that provide the information and knowledge from which new internationally competitive variations of a product or process can be developed and, therefore, how local firms can become leaders in their respective international product markets are identified. This analysis therefore asserts that the individual agents or entrepreneurs are the major players in determining a firm's international competitiveness due to their capacity to relate with both regional knowledge and external best practice.

The analysis presented below is based on a survey of 106 exporters located in five rural NSW regions: Wingecarribee (Southern Highlands), Shoalhaven (South Coast), Far North Coast (Coffs Harbour, Byron Bay, Lismore), Northern Region (Armidale, Tamworth) and Murrumbidgee (Griffith, Leeton). All but six of the surveyed firms were small and medium enterprises with less than 200 employees. Thirty-two firms were very small (1 to 9 employees) while 20 were small (10 to 19 employees). Twenty-six firms were small-medium (20 to 49 employees), 10 were medium (50 to 99 employees) and 11 were large-medium (100 to 199 employees). The firms came from a wide range of sectors: predominantly manufacturing but some value-added agriculture, wholesaling, information technology and consulting. Within manufacturing, the only single sector to have substantial representation was wine-making. Most of the analysis relates to the behaviour of the small and medium firms covered by the survey. However, data for the large firms has been included for comparative purposes.

Three basic hypotheses arise from the academic literature on the role of SMEs in regional development which can be examined using the data generated from the survey of regional exporters.

(1) That both SMEs and MNCs/ Large firms have important roles within regional territorial innovation systems.

(2) That the regional context is important as a means of enhancing ideas (best practices) accessed from outside the region in order to turn these into innovations which augment the export advantages of regional firms.

(3) That in 'learning regions' where innovation is the basis of economic growth, a creative milieu is developed which enhances the cooperative learning capacities of SMEs through the exchange of shared information in local networks thus reducing uncertainty within the innovation development stage.

(a) Small versus Large Firms as Regional Innovators

The data in Tables 1 and 2 provide a general picture of the type of innovation activities undertaken by NSW regional exporters. Product innovation activities do not vary significantly by size of firm. New product development is important for all exporters. Export market success depends, in many of these cases, in having a unique or superior product compared with competitors which allows these relatively small firms to find niche markets as the basis of exports.

A slightly smaller number of firms undertake improvements to their product range. The proportion of firms undertaking this sort of activity had some tendency to increase with size. The low proportion among very small firms reflects situations where such firms often only have one product in their range while larger firms are more likely to have a wider product range.

However, these were significant differences by firm size in terms of whether regional exports undertake major changes to their production process. This activity clearly increases with firm size as shown in Table 1. Only one-quarter of very small firms were

engaged in this activity and one-half or less of firms up to 99 employees. By contrast, two-thirds of large firms made significant changes to their production processes.

Table 1 Type of Innovation Activity By Size of Firm
% of Firms

Size	New Product Development (88)	Improvements to Product Range (73)	Changes to Production Process (44)	Continuous Production Improvements (81)
1 – 9 employees	80.6	64.5	25.8	74.2
10-19 employees	75.0	70.0	40.0	75.0
20-49 employees	92.3	65.4	46.2	80.8
50-99 employees	80.0	80.0	50.0	70.0
100-199 employees	90.9	72.7	63.6	81.9
200 Plus employees	100.0	100.0	66.7	100.0

Note: Tables do not add to 100 as multiple responses were accepted.

Table 2 Source of Technologies by Size of Firm
% of Firms

Size	Self-developed within Firm (92)	Adaption of Products from the Market (48)	Developed in Partnerships with other Firms (26)	Licensed from other Firms (12)	Transferred from Parent (10)	Cooperation with Public Research Institutions (18)
1 – 9 employees	83.9	51.6	22.6	3.2	3.2	12.9
10-19 employees	95.0	45.0	30.0	10.0	20.0	25.0
20-49 employees	92.3	42.3	19.2	15.4	3.8	11.5
50-99 employees	90.0	50.0	30.0	10.0	10.0	10.0
100-199 employees	81.8	45.5	27.3	27.3	27.3	27.3
200 plus employees	83.3	33.3	33.3	16.7	0.0	33.3

Note: Tables do not add to 100 as multiple responses were accepted.

From Table 2, it can be seen that the majority of regional exporters self developed their new product and process technologies within their own firms. This did not vary with the size of firm. Less than half of the firms used products or processes observed in the market as the basis of their own innovations. Again there was no consistent variation in this pattern by size of firm. It was a little more common among very small firms (1-9

employees) and these with 50-99 employees but somewhat less common in the larger firms.

Consistent with the high levels of product innovation, regional exporters of all sizes made continuous improvements to their production processes. These activities involve small changes to production configurations to adopt them to the introduction of new products and product varieties. This result reinforces the product emphasis in regional firms export strategies as against a cost competitive focus which is reinforced by the data in Table 3 below.

Regional exporters corporate strategic orientation includes both development of the product range to meet client requirements and production improvement in costs and quality. This reflects the imperatives of operating in international markets where responsiveness to client needs for improved product characteristics must be matched with achievement of continually changing international cost and quality standards. This double orientation tends to increase with size among small and medium sized firms. Small firms are more likely to have a single focus on client needs and development of their product range compared with medium-sized firms. However, this is matched by large firms where 50 percent have a purely client product range focus.

Table 3 Corporate Strategy Orientation By Size of Firm
% of Firms

Size	Clients, Development of Product Range	Production, Cost and Quality Factor	Both Products and Cost/Quality
1 – 9 employees	40.6	3.1	56.3
10-19 employees	45.0	-	55.0
20-49 employees	30.8	11.5	57.7
50-99 employees	30.0	10.0	60.0
100-199 employees	9.1	-	90.9
100 plus employees	50.0	-	50.0

Note: Tables do not add to 100 as multiple responses were accepted.

Table 4 Perceived Position in Market by Firm Size
% of Firms

Size	World Leader	Asia-Pacific Leader	National Leader	Other
1- 9 employees	43.8	6.3	25.0	25.0
10-19 employees	35.0	15.0	25.0	25.0
20-49 employees	53.8	3.8	19.2	23.1
50-99 employees	40.0	20.0	20.0	20.0
100-199 employees	72.7	-	27.3	-
200 plus employees	50.0	33.3	16.7	-

Note: Tables do not add to 100 as multiple responses were accepted.

As shown in Table 4, a significant proportion of regional exporters regard themselves as World or Asia-Pacific leaders in their particular product market. Leadership positions in

world markets are not achieved using 'follower' or imitator innovations strategies. More firms in each size category were more likely to nominate themselves as 'world leaders' then any of the other options. Large-medium sized firms most frequently saw themselves in this role, followed by small-medium sized firms, large firms and very small firms. That smaller firms can perceive themselves as world leaders relates to situations where they have a unique product filling a niche market where no or few effective competitors exist.

In some ways, NSW regional exporters have the characteristics of Schumpeter I type firms being small firms focused on developing and commercializing a superior product or design which provides them with market leadership for a period of time. However, they differ from the early model discussed above in that these firms are both the inventor and innovator of the new product or design variation. As shown in Tables 1 and 2, the majority of the regional exporters are involved in new product developments which are predominantly self-developed within their own firms. The exporters are thus predominantly innovators and also regaard themselves as world or Asia-Pacific regional leaders in their product markets.

(b) Local Versus Global Networks

The second element in understanding regional information flows is determining how regional innovators/exporters access information in market developments. These data are provided in Tables 5 and 6 below.

Table 5 Use of External Networks by Size of Firm
% of Firms

Size	Visits from Service Providers (41)	Publications or Newsletters (72)	Internet (63)	Travel to Clients/ Agents (88)	Meetings o External Organisation (67)	Trade & Business Magazine (78)	Equip-ment or other Supplies (36)
1-9 employees	34.4	56.3	68.8	71.9	50.0	71.9	28.1
10-19 employees	30.0	65.0	45.0	85.0	50.0	60.0	55.0
20-49 employees	50.0	61.5	61.5	92.3	76.9	69.2	30.8
50-99 employees	40.0	100.0	60.0	70.0	70.0	100.0	30.0
100-199 employees	36.4	81.8	45.5	90.9	72.7	90.9	27.3
200 plus employees	33.3	83.3	66.7	100.0	83.3	66.7	33.3
All SME's	38.4	66.7	58.6	81.8	61.6	73.7	34.3
All Firms	38.3	67.3	58.9	82.2	62.6	72.9	33.6

Note: Tables do not add to 100 as multiple responses were accepted.

Vernon (1966) argued that SME information sources were more locally based and limited to personal exchanges or a trickling down of information from local MNCs. If we take large firms (200 or more employees) as a proxy for MNCs in this argument, it can be seen from Tables 2 and 5 that this proposition does not hold for NSW regional exporters. Small and medium firms of all size categories have significant technological linkages outside the region. The percentage of SME firms with technological partnerships and cooperation with public research institutions is just below that for the large firm category. The higher proportion of large-medium firms with technology licensing arrangements was actually higher than that of large firms. The usage of external sources of market information by small and medium firms was very similar to that of large firms.

Table 6 Use of Local Networks by Size of Firm
% of Firms

Size	Local Industrial Developments Offices (31)	Meetings o Local Organisations (42)	Network with Local Business People (35)	Local Service Providers (24)	Informal or Recreational Activities (13)
1-9 employees	34.4	37.5	25.0	31.3	12.5
10-19 employees	35.0	30.0	30.0	25.0	20.0
20-49 employees	23.1	53.8	42.3	23.1	11.5
50-99 employees	30.0	40.0	40.0	30.0	10.0
100-199 employees	18.2	45.5	36.4	0.0	0.0
200 plus employees	16.7	0.0	16.7	0.0	16.7
All SME's	29.3	41.4	33.3	24.2	12.1
All Firms	29.0	39.3	32.7	22.4	12.1

Note: Tables do not add to 100 as multiple responses were accepted.

However, as shown in Table 6, small firms had a significantly higher usage of local market information networks than large firms which supports Vernon's notion that they are more involved in locally based information networks. This does not, however, substitute for being involved in external linkages. Rather it indicates that, if the regional context does play a role in transforming international ideas into regional innovations, this is more likely to occur with smaller than larger firms among exporters.

Vernon also argued that MNCs / large firms prefer City locations. The lack of such firms in our regions may indeed support this proposition, at least in the negative. Indeed, most of the foreign owned regional exporters had originally been local firms which had been acquired by a multinational. Nor did the regional exporters themselves have a strong overseas presence. Only eight (7.6%) had an overseas subsidiary, 13 or 12.3% had a joint venture overseas and nine (8.5%) had licensed their product for overseas production.

Thus regional exporters do utilize external linkages as a means of accessing new technologies in order to enhance their own innovation programs. A significant number of these involved overseas firms particularly from the USA and Western Europe. While a few of these collaborations were with local regional Universities the majority involved Universities or public sector research institutions elsewhere in Australia and occasionally overseas.

As can be seen, regional firms of all sizes are more likely to utilize external market information sources than local networks. The most frequently used mechanism was individual overseas travel to visit clients, agents and partners. This was the most common mechanism for all firm sizes but was slightly more frequently used in firms with 10-49 employees and 100 or more employees.

Other frequently used information sources were trade and business management and industry association publications and newsletters. Trade and business magazines were a particularly important information source for very small firms (1-9 employees) and medium-large sized firms between 50-199 employees. Industry association publications and newsletters were more frequently used by larger firms, 50 employees and above.

Other significant sources of market information were attending meetings of organizations outside the region i.e. in the capital city Sydney, and the Internet. Although managers from 50 percent or more of all regional exporters attended meetings outside the region, it was more prevalent for medium and large than small firms with some tendency to increase with employment size. Internet usage was not closely correlated with firm size. Highest usage was by both the very smallest (1-9 employees) and the largest firms (200 or more employees). It was also significant among small-medium sized firms.

Visits from external service providers and equipment and other suppliers were less frequently used as sources of market information. Service providers were more commonly used by small-medium firms while the main users of equipment and other suppliers as sources of information were small firms with (10-19 employees).

Regional exporters were strongly linked into external market information sources. Thus regional exporters have good access to information on developments in their product market which can be utilized to improve both their innovation and exporting performances. As shown on Table 7, 70 percent of the SMEs regarded their current market information sources as adequate. Satisfaction was highest among very small firms (1-9 employees) and small-medium firms (20-99 employees) and lowest among small firms (10-19 employees) and larger-medium firms (100-199 employees).

Table 7 Current sources of Information Adequate
% of Firms

Size	% Yes
1 – 9 employees	71.9
10 - 19 employees	5.0
20 - 49 employees	80.8
50 - 99 employees	80.0
100-199 employees	54.5
200 plus employees	66.7
All SMEs	69.7
All Firms	68.9

From Table 8, there was not much variation in terms of whether firms regarded their current access to market information as adequate or not according to the types of sources used. Firms which utilized individual travel were slightly more likely to say it was inadequate. However, overall these results suggest it is more to do with how individual managers utilize their market information sources then the type of resource itself which determines the adequacy of information.

Table 8 Adequacy of Information by Source Used
% Small and Medium Sized Firms.

External Source	Information Adequate	Information Inadequate
Visits from service providers	73.7	26.3
Publications & Newsletters	72.7	27.3
Internet	75.9	24.1
Travel to Clients, Agents	69.1	30.9
Meetings of External Organisations	73.8	26.2
Trade & Business Magazines	74.0	26.0
Equipment or Other Suppliers	79.4	20.6

The learning region concept highlights the importance of circulating knowledge within the local economy in order to enhance innovation and hence regional growth. The data from this survey indicates that local networks are relatively under-utilized in NSW regions compared with external linkages as sources of knowledge. There was little cooperative marketing in these regions, except for the Murrumbidgee area where export agents were used by small agriculturalists. While technological partnerships did exist, they were rarely with other local firms.

If the hypothesis supplied by overseas experience that local networking does improve regional innovation performance is correct, then the lack of usage of local networks and cooperative technological and marketing developments may well be limiting the export potential of regional SMEs; or at least making growth more difficult than it need be. This is somewhat supported by the data in Table 9 which shows that the export intensity of regional firms tends to reduce after 20 employees. However, export growth rates are

less affected as shown in Table 10, rising with firm size except for a few firms in the 50 to 99 employees group.

International networks also play a crucial role in the learning region concept, allowing regional firms to access global knowledge about new market opportunities. A number of writers argue that the international knowledge networks tend to be concentrated in metropolitan cities. Thus their distance from these city networks creates a disadvantage for regional SMEs. The survey respondents provided some confirmation of this proposition. Basic business and market knowledge was available in the regions, certainly sufficient to meet the needs of new start-up firms. However, more developed exporters complained of not being able to access more specialised information necessary to help them expand their market distribution and client base once their initial export business had been established. Such information is more readily available to City-based exporters. The distance factor is thus likely to be impacting on the growth rates of regional exporters after the initial start-up phase.

Table 9 Size of Firm by Export Intensity. Average Export/Turnover Ratio.

Company Size	(N2001)	2001	2000	1999	1998	1997	1995	1990	1985
1-9 employees	(32)	42.23	38.01	36.58	35.96	30.25	25.53	16.25	21.67
10-19 employees	(20)	54.68	47.80	50.03	44.72	46.49	33.89	28.33	26.67
20-49 employees	(25)	35.87	26.82	21.44	17.59	14.81	7.35	1.33	0.33
50-99 employees	(08)	35.55	31.27	32.51	30.08	33.09	13.60	1.67	0.00
100-199 employees	(11)	24.87	23.44	22.09	20.70	19.97	29.00	27.00	5.75
200 or more employees	(06)	33.72	32.82	32.07	36.48	35.98	37.75	26.00	23.00

Table 10 Size of Firm by Average Annual Growth in Exports 1997 - 2001

Firm Size	All Cases %	(N2001)	Exported 1997 to 2001 %	(N:2001)
1 to 9 employees	61.33	(30)	36.25	(14)
10 to 19 employees	88.33	(19)	33.26	(15)
20 to 49 employees	167.66	(23)	77.29	(12)
50 to 99 employees	40.56	(8)	39.29	(5)
100 to 199 employees	87.95	(11)	87.95	(11)
200 or more employees	15.50	(6)	16.09	(5)

(c) Level of Regional Integration and Knowledge Creation

The analysis in the first section of this paper identified four territorial production systems. NSW regional exporters appear to be a hybrid of two of these systems. To some extent they represent a horizontal production system of numerous small specialised and independent firms. This system should facilitate interaction and cooperation among firms resulting in the spread of knowledge throughout the region. However, as discussed above, the degree of interaction among regional exporters, while present, is limited. Thus they also exhibit aspects of a production system organised into independent firms which have their major linkages to external organisations with few inter-firm linkages with local institutions.

The learning region concept suggests that the intensity of knowledge accumulation within a region will be increased if there are strong trading relationships within a region relative to those outside the region. Regional trading relationships will be more intensive the more the regional structure consists of small, independent specialised firms within a production chain. This structure enhances both the creative milieu effect and the endogenous development capabilities of the region.

As shown in Table 11, the main inputs sourced from the local regions by NSW exporters consisted of transport services, production inputs and services, ancillary production and capital equipment. Sales, marketing and client services and quality control were normally undertaken internally. There was a relatively low degree of outsourcing among regional exporters and, of this, only a small amount occurred in the local region. Outsourcing is one of the major areas where knowledge transfer is likely to occur followed by ancillary production as both activities require compatiability between the services supplied and the exporters requirements to meet international cost and quality standards. Significant levels of local supply of ancillary production requirements only occurred for small firms with 10 to 19 employees and large firms.

Table 11 Level of Regional Supply of Production Inputs
Average Percentage of Input Requirements Met In Local Region

Firm Size	Transport	Outsourcing Main Product.	Inputs & Services	Sales & Marketing	Quality Control	Ancillary Production	Capital Equip.
1 – 9 employ.	53	14	35	4	1	11	19
10 – 19 employ.	42	8	25	2	1	29	34
20 – 49 employ.	47	11	22	2	-	7	21
50 – 99 employ.	56	-	37	12	12	10	28
100 – 199 employ.	44	5	29	5	-	14	11
200 plus employ.	36	-	34	-	2	33	8

Regional supply of production inputs and services was highest for agricultural based activities such as wineries, food processors, export wholesalers and packers, etc. While some knowledge transfer in terms of issues such as quality requirements would occur, this will be less significant than when supplier firms are part of a manufacturing production chain as found, for example, in the Italian industrial districts.

CONCLUSIONS

In the context of NSW regions, the issue of the relative importance of small and large firms is not relevant. The vast majority of exporters were small or medium sized enterprises using the definition of less than 200 employees. Thus need to assess and develop the benefits of linkages between small and large firms does not arise. Furthermore, it has been demonstrated by the results of this survey that SMEs have been able to establish their own extensive linkages into the international economy.

In terms of the importance of the regional context, it has been shown that the strong external linkages developed by NSW exporters ensure that knowledge is brought into the region which facilitates intra-firm learning. However, linkages among local firms and institutions are highlighted in the economic development literature as necessary to turn a locality into a learning region. It is here where regional development based on SMEs becomes limited in NSW. While small regional exporters utilize local networks more often than large firms, we have shown that their local linkages are still relatively underdeveloped as a source of innovation activity and new knowledge. The basic requirements for this type of development are essentially in place. The next step is to develop processes which will increase the intensity of interactions among local SMEs resulting in higher levels of collaboration and knowledge-sharing.

In some ways, the diverse sector base of regional SME exporters mitigates against closer collaborations as firms lack the self-interest imperative of client-supplier relationships to drive industry-specific collaborations. However, in other ways, this diverse base is an advantage for knowledge sharing. Regional exporters are usually not competitors with each other. Thus, sharing information about opportunities and ways of entering overseas markets will be effectively costless to the 'mentor' firm in terms of its impact on their competitive position. While it may be said that firms gain nothing from local collaborative actions, information networks increase in value as more units participate. Thus the flow of information is more likely to contain something of benefit to everyone, the more firms that participate.

The innovative milieu concept was developed in Europe based on a regional framework centred around the significant presence of research institutions which generate knowledge spillovers into the local industrial structure. NSW regions do not obviously exhibit this feature. While regional SMEs have developed some technological collaborations with other firms and research institutions, these typically do not involve intra-regional linkages and rather form part of their external knowledge networks. There was some anecdotal evidence gathered during the surveys that the presence of a regional University does have an influence in some regions as a source of new entrepreneurs and skilled workers and by adding to the overall cultural attractiveness of the region as a place to locate. However, technical linkages between these institutions and local firms were scarce. This highlights another area where regional outcomes could possibly be improved by intensifying local research relationships.

BIBLIOGRAPHY

Acs, Z., Audretsch. D., (Eds.) (1993), *Small Firms and Entrepreneurship: An East-West Perspective*, Cambridge University Press, Cambridge.

Acs, Z. J. (1993), *U.S. High Technology Clusters*, Discussion Paper Series No. 9315; St. Andrews University, St. Andrews, Fife, Scotland.

Acs, Z. J. (1996), *American High Technology Centres*. In: D. E. la Mothe, J., Paquet, G (Eds.); Evolutionary Economics and the New International Political Economy. Pinter, London, 183-219.

Acs, Z. J. (1999), *Regional Innovation, Knowledge and Global Change.* Cassel, London.

Acs, Z. J., Audretsch, D.B. (1988), *Innovation in large and Small Firms: An Empirical Analysis*, American Economic Review 78, pp. 678-690.

Acs, Z. J., Audretsch, D.B. (1990), *Innovation and Small Firms*, MIT Press, Cambridge Massachusets.

Acs, Z. J., Audretsch, D.B., Feldman, M.P., (1991), *Real Effects of Academic Research: Comment*; American Economic Review 81, pp. 363-367.

Acs, Z. J., Audretsch, D.B., Feldman, M.P., (1994), *Research and Development Spillovers and Recipient Firm Size*, Review of Economics and Statistics 76, pp. 336-340.

Amin, A. and Robin, K. (1991), *"These are not Marshallian Times"*, in R. Camagni (ed.), Innovation Networks: Spatial Perspectives, Belhaven Press-GREMI, London.

Amin, A., (1991), *"Giant shapers and shakers of the world economy leave British hopes behind as wishful thinking"*, The Guardian, 7 January, p. 9.

Asheim, B.T., (1996), *Location, Agglomeration and Innovation: Towards Regional Innovation Systems in Norway*. Paper presented at the International Geographical Congress, The Hague, The Netherlands, August 5-10.

Asheim, B.T., and Dunford, M., (1997), *"Regional Futures"*, Regional Studies 31, 5, pp. 445-455.

Audretsch D.B. (1995), *Innovation, Growth and Survival*, International Journal of Economic Organisation, 13, pp. 441-57.

Audretsch, D.B. (1998), *Agglomeration and the Location of Innovation Activity*, Oxford Review of Economic Policy, 14 (2), pp. 18-29.

Audretsch, D.B., Acs, Z. J. (1991), *Innovation and Size at the Firm Level*, Southern Economic Journal 57, pp. 739-744.

Audretsch, D., Vivarelli, M. (1994), *Small Firms and Spillovers*; Evidence From Italy. Revue d'Economie Industrielle 67, pp. 225-235.

Audretsch, D.B. and Feldman, M.P. (1996), *Innovation Clusters in the Industry Life Cycle*, Review of Industrial Organisation, 11, 2, pp. 253-73.

Audretsch, D.B., Feldman, M.P (1996), *R&D Spillovers and the Geography of Innovation and Production.* The American Economic Review 86, pp. 630-640.

Audretsch, D.B., Stephan, P.E. (1996), *Company-Scientist Locational Links; The Case of Biotechnology,* The American Economic Review, 86, pp. 641-652.

Aydalot, P., (Eds.), (1986), *Technological Trajectories of Innovative Milieux.* In: Innovative Environments in Europe, GREMI, Paris.

Maillat, D., Nemeti, F., and Pfister, M., (1992a), *Les microtechniques et les services associes: quells espaces de production et de cooperation pour la Suisse?*, Rapport final FNSRS, no. 28, Neuchatel.

Camagni, R., (eds.), (1991), *Innovation Networks,* GREMI, Belhaven Press, London.

Camagni, R., (1998), *The City as a Milieu: Applying the GREMI Approach to Urban Evolution.* Paper presented at the GREMI conference in Paris: Le Paradigne du Milieu Innovateur dans l'Economie Spatiale Contemporaine.

Caniels, M. C. J, (Ed.), (2000), *Knowledge Spillovers and Economic Growth: Regional Growth Differentials across Europe,* Edward Elgar, Cheltenham UK.

Coase, R., (1937), *The Nature of the Firm,* Economica 4, pp. 386-405.

Crevoisier, O., Maillat, D. (1989), *Milieu, Organisation et Systeme de Production Territorial: Vers une Nouvelle Theorie du Developpement Spatial.* Dossier de PIRER No. 24, University of Neuchatel.

Crevoisier, O., (1993), *Industrie et region: les milieux innovateurs de l'Arc jurassien,* EDES, Neuchatel.

Crevoisier, O., (1996), *Territorial Economic Development and Regional Management, Grille d' Analyse,* In: Decoutere, S., Ruegg, J., Joyce, D., (Eds.), Le Management Territorial Presses Polytechniques et Universitaires Romandes, Lausanne, pp. 47-61.

Davelaar, E. J., (1989), *Incubation and Innovation: a spatial perspective,* PhD thesis, Free University of Amsterdam.

Davelaar, E. J., (1991), *Regional Economic Analysis of Innovation and Incubation,* Aldershot, Avebury.

Dosi, G., Freeman, C., Nelson, R., Silverberg, G. and Soete, L (eds.), (1988), *Technical Change and Economic Theory,* Pinter Publishers, London.

Fischer, L. M., (1998), *Dell's Earnings Surge, PC Maker Says It Trails Only Compaq,* The New York Times, August 8, D6.

Fischer, M. M., Suarez-Villa, L., Steiner, (Eds.), (1999), *Innovation Networks and Localities,* Springer-Verlag, Berlin

Freeman, C., (1982), *The Economics of Industrial Innovation,* Pinter Publishers, London.

Freeman, C., (1991), *Networks of Innovators: a synthesis of research issues,* Research Policy, 20, pp. pp. 499-514.

Freeman, C., (1994), *The Economics of Technical Change – A Critical Survey,* Cambridge Journal of Economics, 18, pp. 463-514.

Freeman, C., (1982), *The Economics of Industrial Innovation,* Pinter Publishers, London.

Freeman, C., Soete, L., and Clark, J (1982), *Unemployment and Technical Innovation: A study of Long Waves and Economic Development,* London, Francis Pinter.

Grosjean, N. and Crevoisier, O., (1999), *Territorial Production Systems: Towards a Systematic Diagnostic Method,* GREMI website.

Krugman, P., (1991a), *Increasing Returns and Economic Geography,* Journal of Political Economy 99, pp. 483-99.

Krugman, P., (1992b), *Geography and Trade,* MIT Press, Cambridge, Mass.

Loveman, G., Sengenberger, W., (1991), *The Re-emergence of Small-Scale Production: an International Perspective,* Small Business Economics 3, pp. 1-38.

Lundvall, B.A., (1988), *Innovation as an Interactive Process: From User-producer interaction to the National System of Innovation.* In: Dosi, G., Freeman, C., Nelson, R., Silverberg, G., Soete, L. (eds.), Technical Change and Economic Theory, Pinter, London, pp. 349-369.

Lundvall, B.A., Johnson, B., (1994), *The Learning Economy,* Journal of Industry Studies 1 (2), pp. 23-42.

Maillat, D., (1997), *Interactions Between Urban System and Localized Productive System: an approach to endogenous regional development in terms of innovative milieu,* GREMI-website.

Maillat, D., (1998), *PME, Territorial Innovation and Development,* IRER, Dossier No. 18, University of Neuchatel.

Maillat, D., (1998), *From the Industrial District to the Innovative Milieu: Contribution to an Analysis of Territorialised Productive Organisations,* Recherches Economiques de Louvain 64 (1), pp. 111-126.

Maillat, D., Crevoisier, O., Lecoq, B., (1994), *Innovation Networks and Territorial Dynamics: A Tentative Typology.* In: Johansson, B., Karlsson, C., Westin, l., (Eds.), Patterns of a Network Economy, Springer-Verlag, Berlin, pp. 33-52.

Maillat, D. and Grosjean, N (1999), *Globalisation and Territorial Production Systems,* In: Fischer M.M., Suarez-Villa. L. and Steiner, M. (Eds.) Innovation Networks and Localities, Springer-Verlag, Berlin.

Maillat, D., Perrin, J.C., (1992), *Innovative Enterprises and Territorial Development,* GREMI, EDES, Neuchatel.

Marshall, M., (1987), *Long Waves of Regional Development,* London, Macmillan.

Massey, D., (1984), *Spatial Divisions of labour,* London, Macmillan.

Mensch, G., (1979), *Stalemate in Technology: Innovations overcome the Depression,* New York, Ballinger.

Nelson, R., Winter, S (1982), *An Evolutionary Theory of Economic Change,* Harvard University Press, Cambridge, Mass.

OECD (1992), *Technology and Economy: The Key Relationships,* Organisation for Economic Co-operation and Development, Paris.

Pavitt, K., Robson, M., Townsend, J. (1987), *The Size Distribution of Innovating Firms in the UK:* 1945-1983, The Journal of Industrial Economics 55, pp. 291-316.

Piore, M., Sabel, C., (1984), *The Second Industrial Divide: Possibilities for Prosperity,* Basic Books, New York.

Porter, M., (1993), *L'Avantage Concurrentiel des Nations,* InterEditions, Paris.

Porter, M.E., Fuller, M.B. (1986), *Coalitions and Global Strategy,* In: Porter, M.E. (Ed.) Competition in Global Industries, Harvard Business School Press, Boston, pp. 315-343.

Pratt, A., (1991), *"The Principles of Networking"*, in M. Schmidt and E. Wever (eds.) Complexes, Formations and Networks, Utrecht, Nijmegen.

Ratti., R., Bramanti., A and Gordon, R., (eds.), (1997), *The Dynamics of Innovatiove Regions: The GREMI Approach,* Ashgate, Aldershot, Brookfield USA, Singapore, Sydney.

Rothwell, R. (1989), *Small Firms, Innovation and Industrial Change,* Small Business Economics 1, pp. 51-64.

Rothwell, R. (1992), *Successful Industrial Innovation: Critical Factors For the !990s,* R&D Management 22, pp. 221-239.

Rothwell, R., Zegveld, W. (1985), *Reindustrialization and Technology*, Longman, Harlow, Essex.

Saxenian, A., (1994), *Regional Advantage – Culture and Competition in Silicon Valley and Route 128,* Harvard University Press, Cambridge, Mass.

Saxenian, A., (1996), *Regional Advantage – Culture and Competition in Silicon Valley and Route 128,* Harvard University Press, Cambridge, Mass.

Simmie, J., (Ed.), (1997), *Innovation Networks and Learning Regions,* London, Bristol, P. A., Regional Studies Association, 1997.

Scherer, F. M., (1991), *Changing Perspectives on the Firms Size Problem.* In: Acs, Z., Audretsch, D., (Eds): Innovation and Technological Change: An International Comparison, University of Michigan Press, Ann Arbor, 24-38.

Schumpeter, J. A. (1934), *The Theory of Economic Development,* Cambridge, Harvard University Press, Mass.

Schumpeter, J. A., (1939), *Business Cycles: A Theoretical, Historical and Statistical Analysis,* Volumes I and II, New York: McGraw-Hill.

Schumpeter, J. A., (1943), *Capitalism, Socialism and Democracy,* London, Allen and Unwin.

Simmie, J. (2001), *Innovative Cities,* Spon Press, London.

Stiglitz, J. E., (1987), *Learning to Learn: Localised Learning and Technological Progress.* In: Dasgupta, P., Stomeman, P. (Eds.): Economic Policy and Technological Performance, Cambridge University Press, Cambridge, New York, 125-153.

Storper, M., (1997), *The Regional World: Territorial Development in a Global World.* The Guilford Press, London.

Sylos-labini, P., (1986), *Le Classi Sociali negli Anni Ottanta*, Laterza, Rome.

Tiberi-vipraio, P and Hodgkinson, A., (2000), *Globalisation within a local context: Methodology and Pilot Study,* Journal of International Marketing and Exporting, 5 (1), pp. 25-43.

Todtling, F., (1990), *"Regional Differences as Determinants of Entrepreneurial Innovation – Empirical Results of an Austrian Case Study"*. In: Ciciotti, E., Alderman, N. and Thwaites, A. (eds.), Technological Change in a Spatial Context, Springer-Verlag, Berlin.

Veltz, P., (1992), *"Hierarchies er reseaux dans l'organisation de la production et du territoire"*, G. Benko and A Lipietz (eds.), Les regions qui gagnent, PUF, Paris.

Veltz, P., (1993), *"D'une geographie des couts a une geographie de l'organisation. Quelques theses sur l'evolution des rapports enterprises/territores'*, Revue economique, no. 4.

Veltz, P., (1996), *Mondialisation, Villes et Territores: L'Economie d'Archipel.* Presses Universitaires de France, Paris.

Vernon, R., (1966), *International Investment and International Trade in the Products Life Cycle,* Quarterly journal of Economics, 80, pp. 190-207.

Williamson, O. E., (1975), *Markets and Hierarchies,* New York, Free Press.

Williamson, O. E., (1985), *The Economic Institutions of Capitalism:* Firms, Markets and Relational Contracting, Free Press, New York.

ANALYSIS OF PERFORMANCE & PROBLEMS OF INDIAN SMEs IN THE ERA OF GLOBALISATION

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INTRODUCTION

The last half-century has seen rapid developments in technology mainly due to massive investments in R&D by the USA, Europe, Japan etc. In particular, the recent developments in information and communication technologies such as satellite, computers, fax, cellular phones, Internet, etc. have virtually turned the world into a global village; the international community is now getting closer as never before.

During the last two decades and particularly since the beginning of the nineties, there is a growing and irreversible trend towards globalization. The impetus for this is provided by the forces of intense international competition. Large companies all over the world have been forced to outsourcing a large number of parts, components, sub-assemblies and accessories to cut costs of production in order to stay competitive. Thus, there is an increasing word-wide integration of the productive processes based on the economic principle of "efficient international division of labor". This has forced governments all over the world to move towards a regime of liberalized trade and investment policies.

The successful conclusion of the Uruguay Round of trade negotiations leading to creation of the World Trade Organization (WTO) and formation of trading blocks such as European Union, ASEAN, NAFTA, SAARC etc. have resulted in lowering of tariff barriers on international trade. This has thrown open vast opportunities and challenges for the pro-active SMEs whereas the threats of dumping have started surrounding the sluggish SMEs. In all countries, the major firms are racing for higher market share as well as increasing profits and growth. Further, as the prosperity of the people of a country is linked to the growth of GNP and GDP and the SMEs contribute significantly towards this, the governments of most countries tend to protect and promote SMEs. Thus, the strategy for success of SMEs in any country would be collective racing with the SME sector of other countries.

This paper reviews the structure and performance of SMEs, presents the problems faced by them and the promotional efforts undertaken by the Indian government.

STRUCTURE AND PERFORMANCE OF SMEs

Traditionally, the Indian economy was known to be agriculture in character as majority of population was engaged in agriculture and related occupations. However, the agro-industrial base of India was also quite developed simultaneously, in addition to the industries such as gold / silver / copper / tin / iron / sugar / salt / paper / jute / wood / rubber / chemical manufacturing, brick- laying, leather works, pottery, weaving, dying etc. Prior to the beginning of planning era in 1951, there were plenty of tiny industries whereas the modern type of small and medium enterprises (SMEs) were generally missing as there was no planned industrial development of the country before independence. Accordingly, in the era of planned development, the tiny and small scale industries were clubbed together to form the Village and Small Industries (VSI) sector that was designed to cover a wide variety of activities which were sub-divided into eight sub-sectors viz., (a) Khadi, (b) Village industries, (c) Handlooms, (d) Sericulture, (e) Handicrafts, (f) Coir (g) Powerlooms and (h) Small Scale Industries (SSIs). Thus, the modern SMEs in India are known as SSIs.

India's second five year plan (1956-61) laid emphasis on development of heavy industries mostly in the public sector and this absorbed the growing labor force. However, because of the huge capital requirement, such trend of investment could not continue. With the spread of college education, the problem of educated unemployment started surfacing in late 1960s and early 1970s, and the only alternative was development of SMEs which could provide employment to the masses at low capital investment. Table 1 reveals that the number of SMEs grew very rapidly from about 500 thousands in 1975 to about 3.37 millions in 2001 with more than four fold increase in employment to about 18 millions during this period. The Manufacturing SMEs Survey in 1994-95 revealed the sectoral structure of the SMEs as shown in Table 2. It was found that wood products, food products, repair services accounted for more than 50% of the SMEs. Tobacco related, textiles and garments accounted for about 25% of the SMEs.

In 1974-75, the SMEs accounted for production worth Rs. 92 billion (approximately US $ 18 billion) which rose to Rs. 6.45 trillion (approximately US $ 141 billion) in 2000-01 as shown in Table 3. The SMEs had negligible exports in 1951-52. The most remarkable achievement of the Indian SMEs is their contribution to exports and foreign exchange earnings of about Rs. 490 billion (US $ 11.64 billion) in 1998-99 and US $13.13 billion in 2000-01 as shown in Table 4.

Table 1: Number of SMEs in India

Year (as at March end)	Cumulative No. of Units (in Million)	Growth (%)	Employment (in million)	Growth (%)
1975	0.50	-	4.04	-
1980	0.81	62.0	6.70	65.8
1985	1.24	53.1	9.00	34.3
1990	1.82	46.8	11.96	32.9
1995	2.57	41.2	14.66	22.6
2000	3.21	24.9	17.85	21.8
2001 (E)	3.37	4.98	18.56	3.98

E: Estimate
Source: Report of the Study Group on the Development of SSEs (Planning Commission, Govt. of India, 2001)

Table 2: Distribution of SMEs by Industry Groups
(Manufacturing Enterprises Survey 1994-95)

Industry Groups	Enterprises (in '000)	% to total
Food Products	2394.32	16.50
Beverages, Tobacco & Tobacco	1426.56	9.84
Cotton Textiles	818.51	5.64
Wool, Silk & Synthetic. Fibre	340.19	2.35
Jute, Hemp & Mesta Textiles	95.00	0.65
Hosiery & Garments, etc.	1093.60	7.54
Wood Products	2872.71	19.81
Paper Products & Printing	174.93	1.21
Leather & Leather Products	211.31	1.46
Rubber & Plastic Products	143.32	0.99
Chemical & Chemical Products	84.64	0.58
Non-Metallic Mineral Products	853.15	5.88
Basic Metal Industries	34.12	0.24
0.24Metal Products	449.66	3.10
Machinery & Parts Except	95.03	0.66
Electrical Machinery & Parts	28.89	0.20
Transport Equipment & Parts	28.23	0.19
Miscellaneous Mfg. Industries	1159.41	7.99
Other Repair Services	2186.85	15.08
Services (not elsewhere classified)	13.68	0.09
Total	14504.11	100.00

Table 3: Production of SMEs in India

(Figures in Billions)

Year	Production at Current Prices	
	(Indian Rs.)	(Approx. US $)
1974-75	92.00	18
1979-80	216.35	28
1984-85	505.20	43
1989-90	1323.20	79
1994-95	2988.86	94
1999-00	5728.87	132
2000-01 (E)	6454.96	141

E: Estimate

Source: Report of the Study Group on the Development of SSEs (Planning Commission, Govt. of India, 2001)

Table 4: Growth of Exports by SMEs

(Figures in Billions Rs.)

Year	Total Exports (Rs.)	Export by SSEs (Rs.)	Percentage Share of SSEs
1951-52	7.16	Negligible	-
1971-72	16.08	1.55	9.6
1976-77	51.42	7.66	14.9
1981-82	78.00	20.71	26.5
1986-87	125.67	36.44	29.0
1991-92	440.40	138.83	31.5
1996-97	1188.17 ($33.47)	392.48 ($11.06)	33.0
1998-99	1397.52 ($33.22)	489.79 ($11.64)	35.0
1999-2000	1595.61 ($36.82)	542.10 ($12.51)	33.98
2000-01 (E)	2035.71 ($44.56)	599.83 ($13.13)	29.47

E: Estimate
Source: Report of the Study Group on the Development of SSEs (Planning Commission, Govt. of India, 2001)

In spite of the significant contributions to the national economy, the Indian SMEs suffer from the problem of industrial sickness. As on 31st March 2001, there were 249,630 sick SMEs (out of total of 3.37 millions) amounting to 7.41% of the total SMEs. Of these, only 13,076 units (5.24%) were considered potentially viable by the financial institutions (banks) with an outstanding credit of Rs. 3.99 billion (US $ 87.34 million) out of the total blocked amount of Rs. 45 billion (US $ 98.63 billion), i.e. 99.9 % of the total blocked amount will have to be written off on account of bad debts. In India, the sickness of an industrial unit has been defined in alternative ways. According to Reserve Bank of India (RBI), "a sick unit is one which incurs cash losses for one year and which, in the judgment of the bank, is likely to incur losses for the current year as well as the following year, and which has an imbalance in its financial structure, such as a Current Ratio of less than 1 and worsening debt-equity ratio. The Sick Industrial Companies Act (1985) defines a sick industrial company as "a company registered for not less than 5 years which has at the end of any financial year accumulated losses equal to or exceeding its

entire net-worth and has also suffered cash losses in such financial year and the financial year immediately preceding such financial year". The sickness may be caused due to exogenous and/or endogenous factors. Some of the exogenous factors relate to changes in international economic environment (e.g. WTO), government policies pertaining to production, distribution, prices, taxation etc., and/or infrastructure and related problems such as shortage of power, transportation, raw materials, deteriorating industrial relations etc. Some important endogenous factors causing industrial sickness are: mismanagement, bad planning, overestimation of demand, diversion of funds, excessive overheads, insufficient provision for depreciation, wrong dividend policy etc. As mentioned above, out of the total of 3.37 million SMEs, about 7 per cent have been found to be sick which cannot be considered as a very high proportion of the total units, particularly in the emerging WTO regime where the business environment is changing rapidly.

Commercial Banks and specialized financial institutions play an important role in extension of financial assistance, particularly for meeting the working capital requirement of this sector. The major institutions extending credit to the SSI enterprises in India include Small Industries Development Bank of India (SIDBI), State Finance Corporations (SFCs) in each State/Province of the country, public sector commercial banks, regional rural banks and cooperative banks. If the loans of these institutions were not repaid in time then the banking system would tend to collapse. India underwent the first phase of nationalization of major private commercial banks in July 1969 followed by the second phase of nationalization in early 1980. The nationalized banks rapidly expanded their branch network to mobilize resources and disperse loans to the priority sector, which included the agricultural sector, household/tiny industries and small-scale enterprises. The economic policies of the government that were followed during the 1970s and 1980s created an increasing number of willful defaulters resulting in the rapid growth of bad debts and non-performing assets. The economic reforms initiated in the country in 1991-92, which have been continuously strengthened by the successive governments since then, have tended to make the borrowers more responsible and the problem of bad debts has moved in a direction to find the solution.

PROBLEMS OF SMEs

Small and medium enterprises play a key role in the industrialization of developing countries as they provide immediate large-scale employment and have a comparatively higher labor-capital ratio; they need lower investments, offer a method of ensuring a more equitable distribution of national income and facilitate an effective mobilization of resources of capital and skill which might otherwise remain unutilised. The SMEs also promote more diffused pattern of ownership and location. Thus, the SMEs contribute significantly to economic development of a country. This has been so in India too where SMEs have emerged as the engine of growth of the economy in the New millennium.

By the end of March 2000, the SMEs have accounted for nearly 40 per cent of gross value of output in the manufacturing sector and 35 per cent of total exports from the country. Over 3.2 million SSI units provide employment to about 18 million people.

In spite of such importance the SMEs face a large number of problems in the process of their growth and development. Several SSI units become sick and many others incur short-term losses because of the problems these units face. Such problems may be related to finance, production, technology, human resources, industrial relations, marketing, infrastructure, government policies and their implementation etc. Jain (2002) has studied the extent of the problems of the SMEs in the National Capital Territory (NCT) of Delhi i.e. the State of Delhi and neighbouring areas of the States of Haryana and U.P. The results of this empirical study are based on 374 valid responses from the entrepreneurs of the 3400 selected SMEs. The problems that seriously affect the success of the responding units are presented in Table 5. It has been found that problems related to erratic power supply (for 38 % respondents) followed by legislation and policies (for 26 %), government departments (for 19 %), competition or competitors (for 16 %), collection from debtors (for 13 %) and marketing (for 11 %) seriously affect the success of sample SMEs.

This study has also analyzed the extent of various problems related to finance, production, technology, human resources, marketing, government policies and their implementation etc. The results of the survey about the problems which need not necessarily seriously affect the success of SMEs but are routinely faced by the responding units are presented in Tables 6 to 9. The entrepreneurs find their own ways to resolve these problems and if they are not able to do so, there success is at stake. The analysis of these problems follows.

a) Finance Related Problems

It is generally perceived that the SSI units face serious financial problems. Table 6 presents the extent to which the responding units have been facing financial problems. It is discernible that availability of loan is a major problem to about 14 per cent respondents in contrast to about 36 per cent respondents who face no problem at all about the availability of loans. Almost similar pattern is exhibited about the problem of cash credit limits by the banks. However, a little less than one-third of the respondents do not face any problem of working capital shortage whereas it is a major problem for about 16 per cent of the respondents. The most important problem faced by the majority of respondents is that of collection from the debtors. The problem of receipts or payments from the government departments is applicable to only those entrepreneurs who supply their products to such departments. The delay in receipts from the government departments is a part of the normal bureaucratic process and is known to the entrepreneurs. Probably because of these reasons, 52 per cent respondents have indicated this as 'no problem'. However, for about 36 per cent of the respondents, the extent of this problem of 'payments from government departments' is either medium or high.

Table 5: Percentage Distribution of Respondents by the Problems that Seriously Affect Their Organization's Success

S.No.	Nature of Problem	Percentage
1	Power Supply	37.87
2	Govt. inspectors	29.07
3	Govt. policies & legislations (Taxation & Others)	26.40
4	Govt. departments	18.93
5	Competition/competitors	16.00
6	Collection from debtors	12.53
7	Any other (Water)	11.47
8	Marketing (sales volume)	11.20
9	Working capital shortage	9.33
10	Employees sincerity & loyalty	7.20
11	Workers	7.20
12	Availability of trained manpower	6.93
13	Cash credit limits by banks	6.67
14	Availability of loan	5.60
15	Work culture	5.60
16	Employees motivation	5.33
17	Payments from govt. depts.	4.53
18	Production process/technology	3.73
19	Employees absenteeism	3.20
20	Supplies of raw material	2.93
21	Product quality	2.93
22	Rejection rate	2.93
23	Employees leaving job	2.93
24	Managerial competence	2.93
25	Production Planning & Forecasting	2.13
26	Production capacity	1.87
27	Inventory management	1.87
28	Advertising	1.87
29	Wholesalers/retailers	1.87
30	In-house inspection	1.33
31	Supervisory staff	0.80

Table 6 : Percentage Distribution of Respondents by Extent of Finance Related Problems

S.No.	Nature of Problem	Extent of Problem			
		None	Low	Medium	High
1	Availability of loan	36.53	22.40	26.67	14.40
2	Cash credit limits by banks	37.87	19.47	30.40	12.27
3	Working capital shortage	30.93	21.33	31.73	16.0
4	Collection from debtors	22.13	19.47	28.27	30.13
5	Payments from govt. depts.	52.00	11.73	17.60	18.67

b) Production Related Problems

Preliminary discussion with the entrepreneurs and technology experts have revealed the following major problems that SMEs face: (a) production planning and forecasting (b) difficulty in supply of raw material, (c) production process or technology, (d) quality of the manufactured product, (e) inadequate production capacity, (f) in-house inspection due to lack of expertise or otherwise, (g) high rejection rate due to technological reasons or human factors, and (h) poor inventory management. Table 7 presents the findings of this study on production related problems faced by the responding entrepreneurs.

It is interesting to note that the extent of various production related problems faced by the entrepreneurs is 'high' for less than 10 per cent of the respondents. About one-third respondents do not face any production related problem. However, the problems related to 'production planning and forecasting' as also those related to technology and product quality are considered as the areas of concern by about one-third of the entrepreneurs who have indicated the extent of these problems as 'medium'.

Table 7 : Percentage Distribution of Respondents by Extent of Production Related Problems

S.No.	Nature of Problem	Extent of Problem			
		None	Low	Medium	High
1	Production Planning & Forecasting	29.60	29.60	35.20	5.60
2	Supplies of raw material	33.87	34.40	23.20	8.53
3	Production process/technology	29.87	29.07	31.20	9.87
4	Product quality	25.87	34.93	26.93	12.27
5	Production capacity	34.13	28.27	29.60	8.00
6	In-house inspection	40.53	30.67	22.67	6.13
7	Rejection rate	29.07	52.80	14.67	3.47
8	Inventory management	31.73	36.00	26.93	5.33

c) Human Resources Related Problems

The problems related to Human Resources (HR) can be one or more of the following types: (a) non-availability of trained manpower, (b) employee turnover, (c) absenteeism, (d) lack of motivation among employees, (e) lack of sincerity and loyalty among employees, (f) lack of good work culture, (g) workers creating problems in the systematic functioning of the unit, (h) supervisory staff not doing their job appropriately, and (i) lack of managerial competence.

Table 8 reveals the extent of HR related problems faced by the sample SMEs. Although the extent of HR problems is generally low for majority of the respondents, about 10 per cent have found the extent of HR problems as 'high' regarding availability of the trained manpower, employees sincerity and loyalty, work culture and employees motivation. About one-third of the respondents have indicated the extent of these problems as 'medium' along with the problems of managerial competence and workers.

Table 8 : Percentage Distribution of Respondents by Extent of Human Resources Related Problems

S.No.	Nature of Problem	Extent of Problem			
		None	Low	Medium	High
1	Availability of trained manpower	22.13	33.87	33.87	10.13
2	Employees leaving job	29.14	44.39	21.66	4.81
3	Employees absenteeism	23.80	47.59	21.39	7.22
4	Employees motivation	26.67	29.87	34.67	8.80
5	Employees sincerity & loyalty	24.30	33.07	31.73	11.20
6	Work culture	24.00	34.40	32.27	9.33
7	Workers	19.20	42.40	30.13	8.27
8	Supervisory staff	28.27	41.07	27.20	3.47
9	Managerial competence	31.47	31.47	30.13	6.93

d) Marketing Related Problems

In the environment of growing competition, marketing poses the greatest challenge. If a small unit is not able to market most of its production then it may not break-even and start incurring losses. Thus, marketing competency becomes most important in the present scenario. However, it does not mean that marketing alone can do the job; the product has to be of acceptable quality, the finance need to be available for completing the production-receipt cycle as well as there should be good HR functioning.

Table 9 presents the sample responses to the extent of marketing related problems faced by the responding entrepreneurs. About one-third respondents consider competition and the competitors as the most important problem and about an equal percentage of them consider this as a 'medium' intensity problem. This is followed by sluggish sales or difficulties faced in marketing or selling their products. The extent of this problem is indicated as 'medium' by about one-third respondents and 'high' by about 17 per cent respondents. The advertising and management of distribution channels do not seem to be the major problems for most of the responding entrepreneurs.

Table 9 : Percentage Distribution of Respondents by Extent of Marketing Related Problems

S.No.	Nature of Problem	Extent of Problem			
		None	Low	Medium	High
1	Marketing (sales volume)	22.40	26.13	34.13	17.33
2	Advertising	47.20	28.27	17.87	6.67
3	Wholesalers/retailers	57.07	19.20	15.73	8.00
4	Competition/competitors	17.33	17.33	33.07	32.27

PROMOTIONAL EFFORTS

All national governments in the world make policies towards promotion and (direct or indirect) protection of the SMEs. In India also, the State support for the SMEs has been fine-tuned over a period of time. Though often it has been in response to the changes in the business environment, at other times, it has been proactive - anticipating challenges and threats.

Broadly, the SME policy interventions in India can be categorized into three distinct phases: (a) Phase I (1948-1991), (b) Phase II (1991-1999), and (c) Phase III (1999 onwards).

Phase I : 1948-1991

Beginning with the Industrial Policy Resolution of 1948, recognition was given to the small and cottage sector. A slew of measures followed in the 1950s such as the establishment of the Small Industries Development Organisation (SIDO), the National Small Industries Corporation (NSIC) etc. Policy measures were put into place which provided:-

- Access to bank credit on priority basis through the Priority Sector Lending Programme of commercial banks.
- Reservation of products lines for exclusive manufacture in the small-scale sector. Thus a large unit could not manufacture such items without an export stipulation.
- Relief on excise for small-scale units.
- Reservation of certain items for exclusive purchase from small-scale sector by State agencies.
- Price preference of up to 15% was allowed to small business products in respect of Government purchase.
- Industrial estates were promoted at Government cost to provide better infrastructure.
- Training institutes for entrepreneurs were established to promote budding entrepreneurs and train existing entrepreneurs.

- A marketing corporation was established to assist small units in marketing their products.

Phase II : 1991-1999

The policy for Small, Tiny & Village Enterprises announced on 6th August 1991 laid down the framework for government intervention in the context of liberalization of the Indian economy. Liberalization itself implied considerable opening up of the economy and encouraging internal competition. Prior licensing requirements were reduced to the minimum. The initiatives for the SME Sector during this period included:

- A Technology Development and Modernization Fund by Small Industries Development Bank of India (SIDBI).
- Setting up of Testing Centres by Government and industries associations.
- Increased focus on tool rooms with latest equipment and machinery to address tooling requirements of small units.
- Strengthening of entrepreneurship development institutes.
- Enactment of a Delayed Payment Act for ensuring prompt payment to SSI units of their dues from large industry.
- Setting up of Sub-Contracting Exchanges to facilitate buyer-seller interaction.
- Subsidization to SME entrepreneurs for participation in international fairs.
- Training programmes on export packaging.
- Reimbursement scheme in respect of ISO 9000 Quality Certification for individual SMEs.
- Technology upgradation in industries specific clusters.
- IT based initiatives for information sourcing.
- Simplification of Labor Laws governing SMEs.
- Services given enhanced importance in SME sector.
- Focus on the tiny sector.
- Prime Minister's Rozgar (employment) Yojana (plan) (PMRY) for educated unemployed youth.
- Integrated Infrastructure Development (IID) Scheme for setting up industrial estates exclusively for SMEs.

Phase III : 1999 onwards

The establishment of an independent Ministry for the SMEs & Agro Rural Industries in October 1999 ushered in a new phase of SME development. Advocacy for the sector found a new and effective platform. In its early days itself, it became clear that liberalization in world trade and globalization were emerging as huge challenges for the sector. Extensive consultations and discussions spread across the length and breadth of the country culminated in a comprehensive policy package for the sector. This was announced in August 2000, within 10 months of the formation of the Ministry. The package aimed at enhancing competitiveness of Indian SMEs in the context of global competition. The focus of the effort was on:

- Excise exemption upto Rs. 10 million.
- Technological upgradation - 12% Capital Subsid y Scheme.
- Credit Guarantee Scheme upto Rs. 2.5 million.
- Raising of limit of composite loans to Rs. 2.5 million.
- Raising of project cost limits under National Equity Fund to Rs. 5 million.
- Infrastructural Development (IID) Scheme extended to all areas.
- New scheme for upgradation of industrial estates.
- Testing Centres with involvement of Industry Associations.
- Marketing Development Assistance Scheme for SMEs.
- Conduct of the 3rd Census of SMEs.
- Enhancement of family income limits under PMRY.
- Enhancement of investment limit for SSSBEs.

It may be observed that the above government policy package is a laudable effort towards enhancing the competitiveness of Indian SMEs in this era of globalization. However, some basic problems of the SMEs (as discussed earlier) have not been touched upon by the government and probably cannot be, e.g. collection from debtors, production, planning and forecasting, product quality, inventory management, majority of HR problems, marketing in the environment of increasing competition etc. Most of these problems are endogenous and therefore there solutions need to be sought internally by the SMEs. One of the important solutions lies in the training of managerial manpower and workers so as to enhance their competencies and skills. As such, it is important that all the basic problems of SMEs should be diagnosed in a comprehensive and holistic manner and unless such an effort is made the comprehensive policy package of the government may not yield the desired results.

CONCLUSION

The industrial base in most countries is provided for by its SMEs on which the large industry provides the superstructure. Performance of the SME Sector therefore has a direct multiplier impact upon the growth of a nation's economy. India is no exception. The Indian SMEs have contributed to the overall growth of the gross domestic product and have had a special contribution towards employment generation and export. It has been consistently outperforming large industry on crucial parameters such as growth in production and growth in employment.

Inspite of the significant contribution, Indian SMEs have been facing severe problems. The most important among these problems that seriously affect an industrial unit's success relate to power supply, government inspectors, competition, collection from debtors, marketing, human resources, product quality and forecasting etc. The efforts undertaken by the government in terms of policy pronouncement seem to be tangential to some of the real problems. The intervention of government inspectors and dealing with the bureaucracy of the government departments seem to act as the biggest impediments in the growth and development of the SMEs. So long as the basic problems are not diagnosed for the terminal solutions, the SMEs will not be able to contribute to their potential level. Thus, there is a need for designing a system that would keep the

impediments away from the SMEs. The modifications in the policies as worked out by the government may serve only partially whereas there is a dire need of an in-depth analysis of the problems that significantly and adversely affect the success. Thus, more thorough research needs to be undertaken in this area.

REFERENCES:

1. Drucker, Peter F., 1986, ***Innovation & Entrepreneurship: Practice & Principles,*** New Delhi : Affiliated East-West Press Pvt. Ltd.

2. Gautam, Vinayshil, 1992, ***Technical Entrepreneurship: Issues of Research & Application***, New Delhi: Global Business Press.

3. Govt. of India, 2001, ***Report of the Study Group on Development of Small Scale Enterprises***, New Delhi: Planning Commission.

4. Jain, Sudhir K., 2001a, "Emerging Training Needs of Indian SMEs in the Globalizing Business Environment", ***Proceedings of 28th International Small Business Congress,*** Stockholm, Sweden.

5. Jain, Sudhir K., 2001b, "A Study of Training Needs Assessment of the SSI Sector in the NCT of Delhi", Report submitted to Small Industries Development Bank of India (SIDBI), Lucknow (India)

6. Jain, Sudhir K., 2002, "Problems in the Growth of Entrepreneurship in India : Findings of a Recent Survey", ***Proceedings of National Seminar on Growth of Entrepreneurship in India***, Jaipur: EMI, PP 44-52.

7. Tuteja, S.K., 2002, "Characteristics & Contribution of SMEs", ***Laghu Udyog Samachar***, Vol. XXVI, No. 6-8, PP 3-11.

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SMALL FIRM INTERNET ADOPTION: A MARKET ORIENTED APPROACH

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ABSTRACT

Fundamental to the development of new customer value offerings via web-based commerce is a small firm's ability to strategically acquire and exploit knowledge. The focus of this paper is the empirical testing of a normative web-based commerce adoption model developed from a review of the extant literature related to electronic marketing, the Internet and the diffusion of new innovations. A preliminary test of the model's theoretical contentions lent support to its overall focus, but found that the firm's existing learning capabilities were diminished during the adoption of web-based commerce. Consequently, insufficient knowledge levels were associated with sub-optimal adoption outcomes.

INTRODUCTION

Since the mainstream adoption of the Internet by Australian consumers (post 1996), there has been continual and marked increases in household participation, with 33% of all Australian households having Internet access as at May 2000, a 53% increase over May 1999 (ABS, 1999). At July 2001, 75% of small firms, defined as having 19 or less employees (McLennan, 1999) were similarly connected to the Internet (Yellow Pages Business Index, 2001). Despite the high 'Internet implementation' rates by small firms, only 27% utilise the medium to advertise their products online, a mere 19% accept online orders, and only 13% offer an on-line payment service for their customers (Yellow Pages Business Index, 2001). This is in stark contrast to small firm usage of the Internet for e-mail (82%) and general research purposes (65%) (Yellow Pages Business Index, 2001). Interestingly, and despite the apparent low actual usage rates for small businesses to date, 62% of Australian small firms yet to introduce the Internet into their operations, stated their imminent intention to become an on-line business (Yellow Pages Business Index, 2001). Given these base statistics, there appears to be a significant discrepancy between the levels of commercial Internet adoption and its contribution to incremental firm growth.

A review of the literature indicates that although the potential benefits of web-based commerce are well documented (e.g. Armstrong & Hagel, 1996; Hamill, 1997; Hoffman & Novak, 1997), there is a paucity of research dealing with the generic issue of *how to* effectively implement web-based commerce into a small firm's operations. Six specific

areas deemed central to the adoption and effective implementation of web-based commerce were identified. The six areas, integral to the proposed normative web-based adoption model are as follows; 1) Web-based Commerce Adoption Drivers; 2) Market Orientation; 3) Cooperative Behaviours; 4) Web-based Business Models; 5) Value Chain Reconfiguration; and 6) Web-based Value. Through a synthesis of the literature, a normative and generic adoption model for small firm web-based commerce was developed.

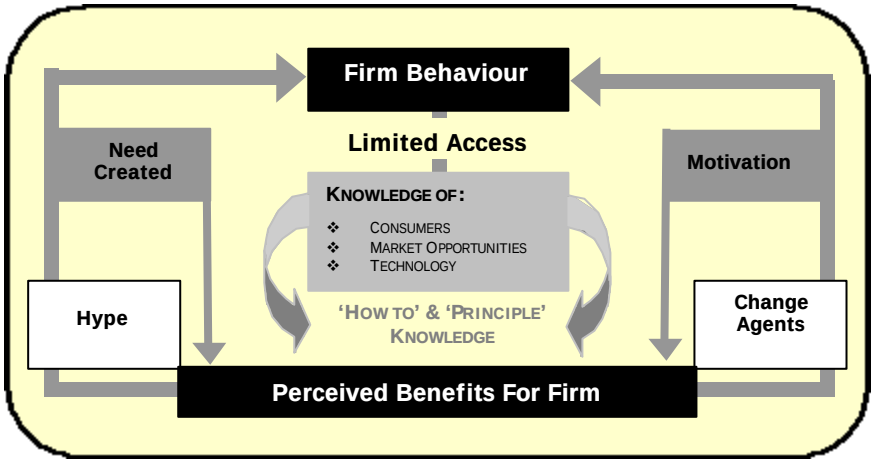
PROPOSED NORMATIVE WEB-BASED COMMERCE ADOPTION MODEL

The model sought to combine components available to small businesses, therefore increasing possible acceptance of the model beyond specific industry characteristics. As such, this research sought to make two specific contributions. Firstly, to provide a generic adoption model for small firms with regard to the strategic implementation of web-based commerce into their overall business strategy. Secondly, to identify sources of potential difficulty and inefficiency in the actual implementation of a web-based commerce strategy for small firms.

Web-based commerce adoption drivers

Previous research into small firm adoption of web-based commerce has identified the medium's perceived benefits as the primary motivator (e.g. Poon & Strom, 1997; Poon & Swatman, 1999). Rogers (1995) argues that successful adoption of complex innovations requires a knowledge base beyond 'mere awareness' of perceived benefits. During stage one (see Figure 1 below) of the of the adoption model, it is predicted that firms gain an awareness of the perceived benefits of web-based commerce through exposure to the hype that surrounds the medium, and change agents (such as Internet service providers [ISPs]) who promote it's virtues.

FIGURE 1
The Normative Web-based Commerce Adoption Model: Stage 1



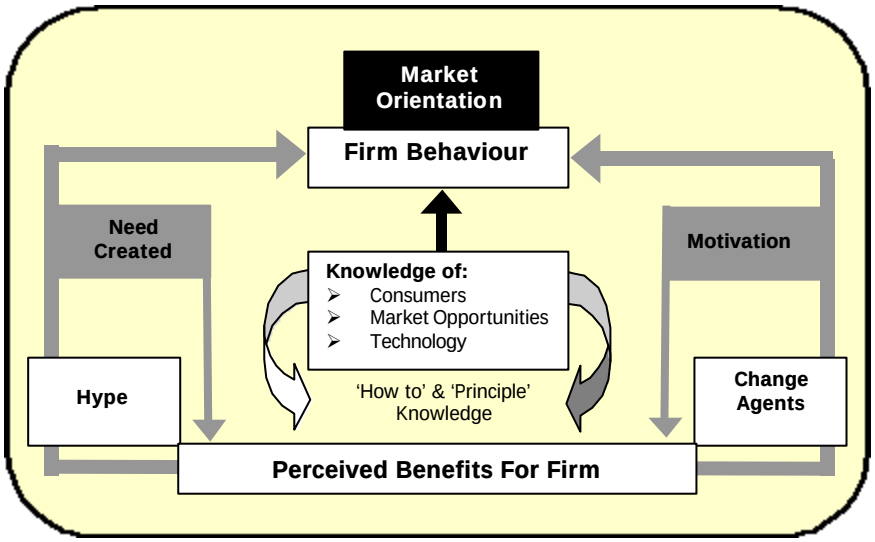
However, complex innovations, such as the Internet, require a knowledge base far exceeding awareness knowledge to (1) appreciate its possible application, and (2) reduce the possibility of misuse. Rogers (1995) states that adopters must acquire a higher

knowledge base comprising 'how to' and 'principle' knowledge. 'How to' knowledge provides web-based commerce adopters with an understanding of how to use the innovation effectively, and 'principle' knowledge refers to the theoretical underpinnings of the innovation. Therefore, while awareness of the innovation may provide a possible 'e-vision' (Sawhney & Zabin, 2001), it is the acquisition of 'how to' and 'principle' knowledge that underwrites its successful implementation (Rogers, 1995).

Market Orientation

The literature supports the reliance upon market orientation during the adoption of technological innovations by firms to enhance organisational learning (Glazer, 1991; Hoffman & Novak, 1997; Morgan, Katsikeas & Appuh-Adu, 1998). Therefore, during stage two (see Figure 2 below), it is argued that market orientated firms will access the required 'how to' and 'principle' knowledge needed to successfully adopt web-based commerce.

FIGURE 2
The Normative Web-based Commerce Adoption Model: Stage 2



The seminal work of Hoffman and Novak (1997) associates market-orientated firm behaviour with the development of a future web-based competitive advantage due to its ability to provide firm access to customer, market and technology intelligence. Glazer (1991) also proposed the use of a firm's market orientation to facilitate increased access to intelligence in information intense markets. In proposing market orientation as a defendable resource system, Hunt and Morgan (1995:11) define a firm's market orientation to be:

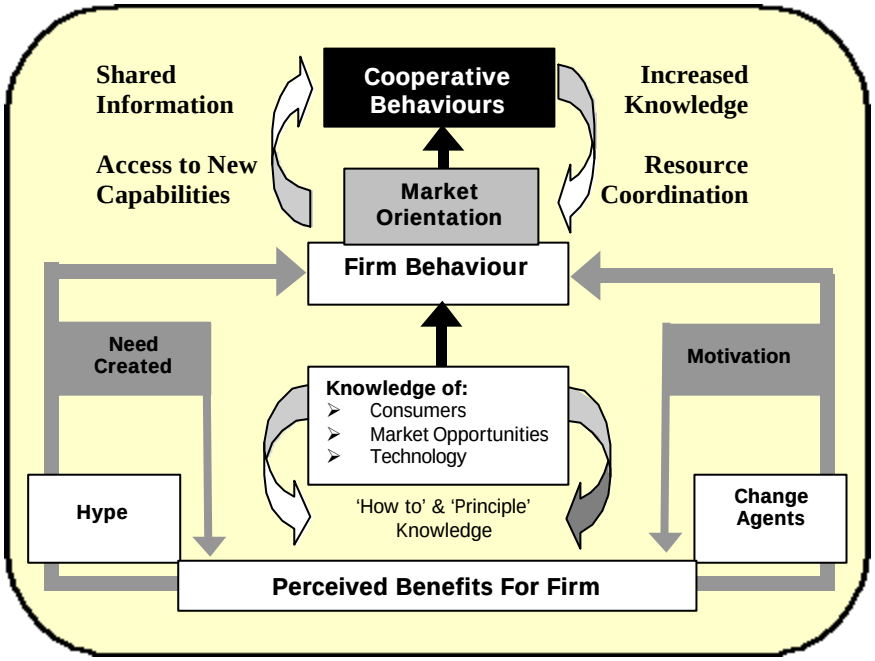
> (1) the systematic gathering of information on customers and competitors, both present and potential, (2) the systematic analysis of the information for the purposes of developing market knowledge, and (3) the systematic use of such knowledge to guide strategy recognition, understanding, creation, selection, implementation, and modification .

Our contention is that such knowledge processes are a prerequisite for successful adoption of a complex technological innovation. In summary, stage two suggests that without access to specific knowledge of customers, technology and the marketplace, the firm's adoption of web-based commerce will be less than optimal.

Cooperative Behaviours

Stage three, as illustrated in Figure 3, proposes the engagement of cooperative behaviours to share information through which the business's knowledge base is expanded. McWilliams and Gray (1995) and Lado, Boyd and Hanlon (1997) propose the use of cooperative strategies (e.g. logistics, payment & referrals) to overcome resource weaknesses that restrict the implementation of resource strengths. Small firms in the possession of 'how to' and 'principle' knowledge may require assistance to access the benefits of web-based commerce due a possible lack expertise and/or time and financial resources.

FIGURE 3
The Normative Web-based Commerce Adoption Model: Stage 3



Hoffman and Novak (1997) propose the development of a cooperative rather than competitive approach to competitors to maintain a market orientation during web-based commerce adoption. Complementary relationships with other firms are recommended to create additional value through new and innovative resource structures (Brandenburger & Nalebuff, 1995). Rayport and Jaworski (2001) also support the use of partnerships and strategic alliances which allow web-based firms to focus on their core competencies while developing resource clusters that enhance overall firm capabilities. However, during this process, the firm's value chain and business model may be subject to a process of reconfiguration (Timmers, 1998), requiring increased knowledge of customers' desired

benefits, technological capabilities and markets (Rayport & Jaworski, 2001).

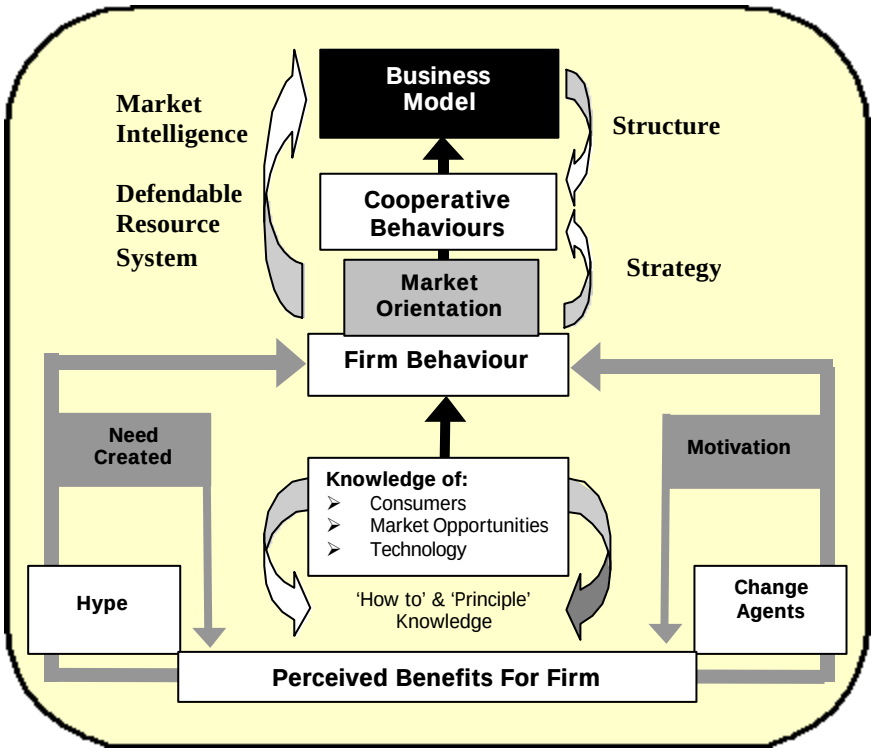
Stage three demonstrates the use of the firm's market orientation to share information and acquire new knowledge of customer needs, technological potential, and marketplace opportunities. This increases the ability to acquire the 'how to' and 'principle' knowledge required for the adoption of web-based commerce. Cooperation at this stage, especially for small firms is vital given that the acquisition of information for web-based commerce may well represent a novel and therefore challenging area of knowledge development with regard a firm's absorptive capacity (Cohen & Liventhal, 1990).

Web-based Business Models

As a result of additional cooperative strategies, two issues related to the firm's business model/s arise. Firstly, the introduction of new firm strategies will require consideration of the existing operating structures, and secondly, the potential reconfiguration of the value chain may impact on a firm's ability to access vital sources of intelligence. As illustrated in Figure 4, stage four contends that as strategy changes, so must structure (Mintzberg, 1990), and the firm's market orientation is the key resource system upon which the new business model is determined.

Rayport and Jaworski (2001) state that a high quality web-based business model should meet the following criteria; it must be unique, provide links between capabilities and benefits, support links between firm activities and capabilities, be mutually reinforcing, provide a link between the physical world and the virtual world, and lastly, the resource must be capable of supporting a sustainable advantage. As such, a firm's market orientation may potentially provide an efficient resource to small firms whom typically have scarce resources (Chappell & Feindt, 1999) and simple operating structures (Chau & Pederson, 2000; Sanchez, 1997; Peterson, 1989).

FIGURE 4
The Normative Web-based Commerce Adoption Model: Stage 4

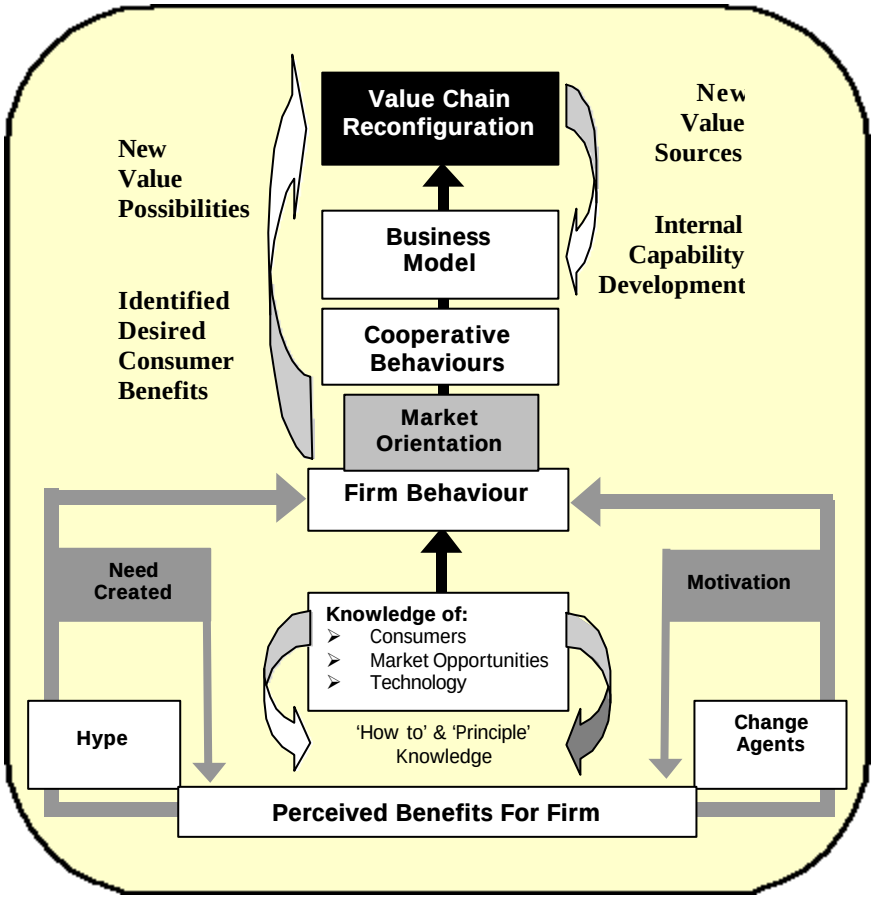


Consequently, such a web-based business model would be well placed to use market intelligence to develop capabilities that supported the value propositions so central to its function. Stage four illustrates that as knowledge is gained and used cooperatively, the firm's structure is altered to accommodate and support new firm capabilities. Therefore, knowledge and the coordination of the resources are the focal drivers of business model transformation.

Value Chain Reconfiguration

Stage five proposes the introduction of new value creating activities to satisfy the identified desired benefits of the target market/s (see Figure 5). In line with market orientation theory, the challenge for firms during the introduction of web-based commerce, is to remain connected to customers and responsive to market opportunities (Day, 1999). Under conditions of technological change, there is a greater likelihood that the link between firm offerings and customer needs may become divergent (Slater & Naver, 1994; Enders & Jelassi, 2000). To develop value offerings that complement the business model, Timmers (1998) and Afuah and Tucci (2001) argue for the reconfiguration of the traditional value chain (Porter, 1985) to access to new sources of web-based value.

FIGURE 5
The Normative Web-based Commerce Adoption Model: Stage 5

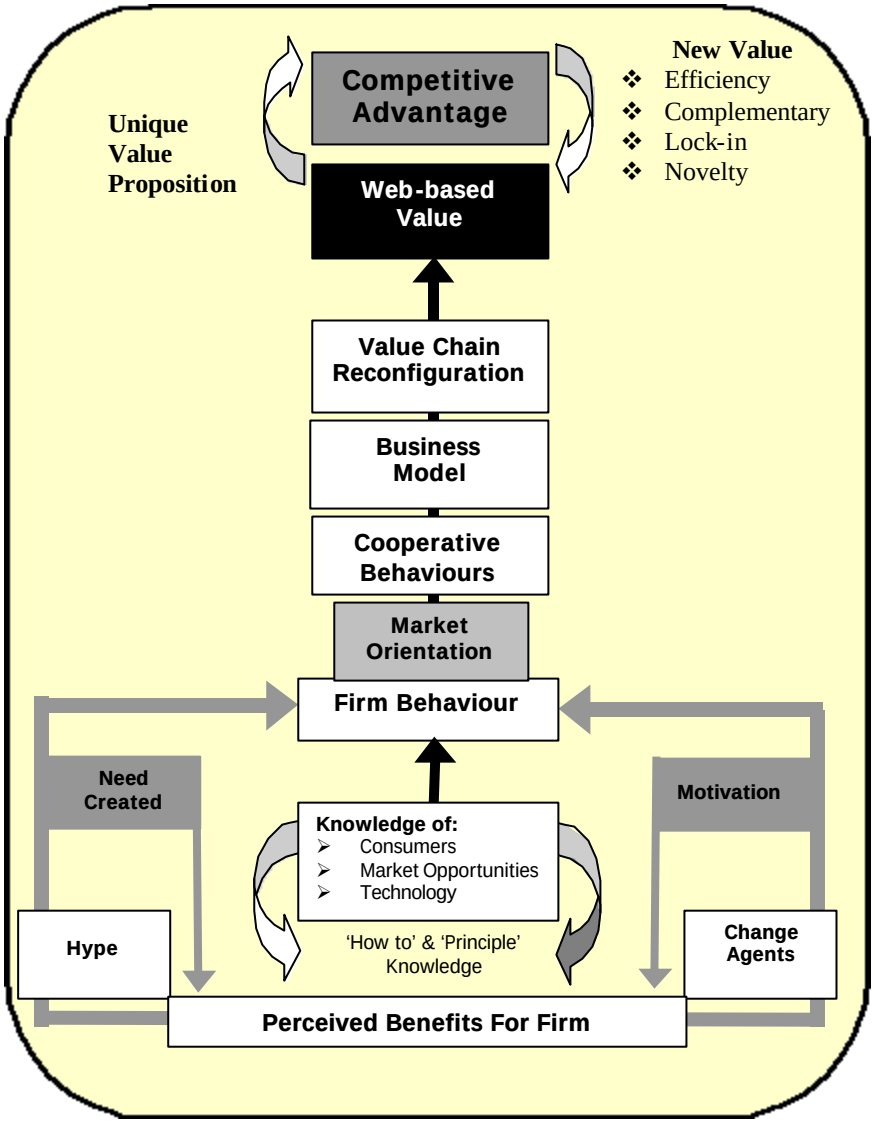


The model to date suggests that market orientated firms who reconstruct their value systems, may create value through the alignment of business strategy and structure with an explicit understanding of the buyers of their offerings (see Drucker, 1985; Slater & Naver, 1998). During such a process, business model development may liberate 'trapped value' i.e. value gained from market and value system efficiencies, and/or introduce 'new-to-the-world value' i.e. new value through customisation and personalisation (Rayport & Jaworski, 2001). In summary, the model assumes the firm has now acquired 'how to' and 'principle' knowledge through its market orientation, identifying desired customer benefits which require new firm capabilities, resulting in the need to reconfigure the value chain, to access new web-based value.

Web-based Value

Within the normative adoption models development thus far (see Figure 6), the firm's market orientated behaviours are posited to be central to developing a web-based value proposition. That is, in terms of the development of firm capabilities through cooperative actions and access to new value creating activities/architecture to supplement the 'traditional' activities of the value chain. Four sources of web-based value have been identified as efficiency, complementarities, lock-in and novelty (Amit & Zott, 2001). The value sources are dependent upon two important factors. Firstly, a synergistic relationship exists between the sources requiring a need to develop all four to enhance the value of each individual source. Secondly, their contributions to a competitive advantage are premised upon mutual gains between the firm and customer. Therefore, all are dependent on increased levels of strategic customer, market and technology knowledge.

FIGURE 6
The Normative Web-based Commerce Adoption Model



Due to the exploratory nature of the research, a multiple case study design (Yin, 1994) of in-depth interviews with five small firms to explore the adoption of web-base commerce within a real-life context. The research aims were to observe the degree of congruence between firm adoption of web-based commerce and the proposed model, and to identify difficulties experienced and value received. Given the proposed importance of market orientation to the adoption model's construction, Pelham and Wilson's (1996) small and medium firm specific market orientation scale was used to measure the degree of pre- (traditional commerce) and post-adoption (web-based commerce) market orientation. A judgemental sampling approach (Babbie, 1999) enabled the cases to be selected via a selection criteria that enhanced the research aim of observing the influence of an intangible firm resource (market orientation) during the adoption of web-based commerce and the development of new value creating activities. The firms met the following criteria:

all had served domestic, interstate and international markets in excess of five years, web-based commerce supplemented their existing operations, and their web site facilitated customer service, marketing communications and the exchange of a physical product.

THE FINDINGS

The findings of this preliminary research are that the five firms did not follow the normative adoption model arising from the synthesis of the literature review. There was however support for the theoretical contentions of some discrete stages within the model. Most notably, the influence of perceived benefits. The relative degree of market orientation measured (with the exception of one) was less for web-based commerce in contrast to 'traditional' commerce, ranging from –2.25% to –28%. However the actual presence of market oriented behaviours was not evident in any of the firm's web-based commerce behaviours. Not suprisingly, the firms did not access the 'how to' and 'principle' knowledge essential to the development of a web-based commerce competitive advantage. One firm did demonstrate delayed (three years post adoption) market orientated behaviours. They engaged in cooperative strategies and business model development and were able to clearly articulate the needs and wants of their web-based customers.

Across all the firms, resource constraints related to time and finances were offset through the acceptance of adoption incentives/assistance during their initial adoption of web-based commerce development. However, the most prevailing difficulty experienced across the firms was access to information sources through which 'how to' and 'principle' knowledge could be obtained and incorporated into the development of web-based commerce. The ability of local ISPs to act as 'technology linkers' was clearly beyond the scope of their capabilities, thereby providing tacit support for Plume (2001), who notes a significant challenge confronts web-based commerce in the form of knowledge integration. Specifically, this challenge is to the ability of firms (or external persons, such as ISPs) to successfully integrate traditional marketing practices with new technological opportunities to create value that is supportive of a sustainable competitive advantage. By and large, access to new value creating activities was not observed.

Despite the firms demonstrating the capability to develop a sustainable competitive advantage in 'traditional' commerce through the involvement of customers and channel members, such parties were reduced to mere spectators during their initial development of web-based commerce. It was observed in one case (which also demonstrated superior market-orientated behaviours) that when customers were transformed from spectators to participants, an increased understanding of the potential of web-based commerce did in fact occur. However, the web-based value observed (communication & research efficiencies), was internalised within the firms, not shared with customers or channel members. While web-based value received exceeded the perceived cost of adoption (time & effort), it was insufficient to lay the foundation to a future competitive advantage.

DISCUSSION

This research sought to identify possible reasons for the marked discrepancy between small firm implementation of web-based commerce and its ability to create incremental value for firms and their customers. The research findings identify several major

implications for academia and small firm practitioners engaged in web-based commerce. Firstly regarding academia, the application of a firm's market orientation, its nature, measurement, and value during web-based commerce adoption require further consideration. Secondly, the unsuccessful acquisition, and therefore conversion of adoption information into adoption knowledge by small firms represents a major hurdle to the optimal adoption of web-based commerce.

The Role of Market Orientation

As the central driver of the adoption model, market orientation was argued to be responsible for developing a rich knowledge base, reflective of customers needs (expressed and latent), marketplace opportunities, and the technologies that will connect the entities. Without such knowledge, firms may not sense the desired benefits of their present and future customers required to identify value-creating activities supportive of a competitive advantage. A clear discrepancy was obtained between recorded market orientation measurements using Pelham and Wilson's (1996) scale and observations of actual firm behaviours. The firms, while claiming to have developed strategies based upon an understanding of their web-based customers behaviours (surveys), demonstrated no strategic actions related to developing knowledge of the customers, technologies and markets associated with web-based commerce (observations). The first concern relates to the application of the firm's market orientation.

As a pre-existing intangible resource, a firm's market orientation must be maintained and applied to contribute value to the firm. Market orientation, intrinsically reflective of a firm's culture (Hunt and Morgan, 1995), is a source of value through application, rather than merely through possession (Prahalad & Hamel, 1990). The absence of observable market-oriented behaviours restricted the empirical testing of the normative adoption model's application. The apparent failure to transfer the observed market-oriented behaviours from 'traditional' commerce to web-based commerce would appear related to the firms lack of direction and knowledge developing web-based capabilities.

The very of nature of a firm's market orientation may well be challenged by new learning processes inherent to web-based commerce. Slater (2001) suggests that a firm's established market orientation must evolve to ensure greater market sensing in the face of significant market change. Slater notes that a future challenge for firms desirous of developing an e-market orientation is to stay connected to their customers. This echo's the literatures consistent 'listen to the customer, understand the customer, and provide a solution for the customer' proclamation for market-orientedness. The assumption being that market orientation is dependent upon a one-way linear relationship between customers, marketing, and the technologies employed to provide solutions.

However, the research findings lend support to the proposition of Wrenn (1997) that the construction and application of the market orientation construct may not be so straightforward. The firms found difficulty gaining access and understanding of their customers' needs and wants. As such, the traditional interpretational role of marketing simply did not occur. Consequently, technologies, be they products, processes, or a combination of both, did not eventuate to solve customer needs and wants. Wrenn further asserts that a non-linear relationship between the customer, marketing and technologies (Kotler, 1997) is required to translate technological attributes into customer benefits to

sustain a market orientation during times of complex technical change (i.e. the Internet). The suggestion is that a far more dynamic role for marketing may be required to maintain or establish market-orientated behaviours within an environment influenced by rapid technological change.

It appears the role of market orientation during stage two was negatively impacted by the exclusion of customer's needs, wants and consumer behaviour information from the adoption process. The absence of consideration for customer needs during the development process may produce sub-optimal outcomes, limiting internal efficiencies rather than the incremental long-term value.

However, the activities of one firm over the eight months preceding the data collection period provides evidence of the valuable role customers contribute to market orientated firms in their adoption of web-based commerce. The firm developed close relationships with web-based customers in the North American market. In addition to being the only firm to record an increased web-based market orientation, they were also the only firm to articulate a clear understanding of their web-based customers' preferences and buying behaviour, market opportunities and the application of technology for web-based commerce. Along with an increased web-based market orientation (the survey), obvious market-oriented behaviours were observed. For example, the firm developed a database through which valuable customer information of preferences was recorded and regularly updated, providing the firm with a longitudinal record for customer profiling. The firm also engaged in cooperative strategies to acquire 'how to' knowledge through sharing the cost of technical training. As such the firm's adoption behaviours (albeit three years post adoption) provide partial support for stages two and three. The firm is using market-oriented behaviours to acquire a greater understanding of their customers and using cooperative practices to enhance such behaviours.

Finally, the case method produced an inconsistency between measured and observed market oriented behaviours. The recorded levels of web-based market orientation appear to reflect 'anticipated' future actions, rather than 'actual' behaviours. The firms appeared unable to separate their beliefs concerning what they actually do in a traditional sense compared to what that actually do in a web-based sense. Given the prominence of quantitative methods that employ surveys to measure market orientation, the findings cast a shadow over the accuracy and reliability of such methods. The findings lend support to the contentions of Rouse and Daellenbach (1999) that a greater understanding of the actual contribution of such intangible firm resources should occur from within, rather than outside firms.

Knowledge acquisition and development difficulties

A recurrent process throughout the web-based adoption model is the acquisition of market intelligence related to target markets, marketplaces and technologies and its conversion into knowledge. With the exception of one firm's delayed behaviours, the firms have not acquired such information, and therefore lacked a sufficient knowledge base upon which to build a web-based commerce platform. As previously discussed, the firms did not utilise their observed traditional market oriented behaviours during adoption of web-based commerce.

Three interrelated factors appear to have contributed to the firm's insufficient knowledge base. Firstly, an inability to visualise new sources of value and alternative structures that would be complementary to their existing value chains. Secondly, an over reliance upon they're respective ISPs/advisors to perform a technology linking role, and therefore an apparent lack of enthusiasm to explore the new web-based landscape themselves. Lastly, the firm's individual lack of absorptive capacity appears to have hampered what little efforts have been made to learn about web-based commerce opportunities.

The lack of vision. Sawhney and Zabin (2001) posit that many firms may be constrained by assumptions, inherited from their past that restrict their view of the future. Despite the literature's expectation that market oriented firms will challenge past assumptions through generative learning processes, an e-vision was not visualised during adoption. As such, no consideration was given to visionary architectural change, but rather, reliance was upon modifying the past. The result reflects an ignorance as to the need for 'how to' and 'principle' knowledge. Overall the initial approach appears very much a case of "if you don't know where you're going, any road will take you there" (Sawhney & Zabin, 2001:11). The findings are consistent with the conclusions of Chaston, Badger, Mangles, and Salder-Smith, (2001) that perhaps small firms underestimate the need for planning prior to adopting web-based commerce.

The quasi-technology linker. The firms relied heavily on external ISPs/advisers to facilitate the development of web-based commerce at the expense of using their own knowledge of existing customers needs. Subsequent interviews with the relevant ISPs confirmed that they had neither the ability, nor the desire to provide 'how to' and 'principle' knowledge. Therefore, the opportunity to develop a value proposition derived from customer participation was lost, along with the value of the firm's pre-existing market orientation. The lesson to be learnt would seem to be to empower customers as co-architects of future value, and the systems that deliver that value. This would allow the ISPs to implement what is possible from an architectural perspective, rather than what is current thinking from an engineering perspective.

Individual absorptive capacity. Absorptive capacity can be defined as the "routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability" (Zahra & George, 2002), or simply, the ability to acquire and strategically use 'how to' and 'principle' knowledge. The firms lacked intensity, speed, and direction in their observed efforts to acquire external knowledge to the detriment of their ability to take possession of 'how to' and 'principle' knowledge. This appears to indicate the difficulty in transferring a market orientation from 'traditional' to web-based commerce without a guiding e-vision. It also perhaps reflects the difficulty of acquiring knowledge from such a novel and challenging domain.

CONCLUSION

In summary, the overall research findings support the research of Chau and Lawrence (1998) who found little evidence of enthusiasm to actively pursue literature, or advice, regarding web-based commerce by Tasmanian firms who had adopted web-based commerce. Without engaging in ongoing market oriented behaviours (gathering, dissemination and strategic use of information), the value of a market orientation is significantly decreased. Mere prior possession of the resource is not sufficient to

contribute future value, it must be engaged to ensure knowledge is first gathered and disseminated within the firm and it's strategic partners.

This research, through the development of a normative web-based adoption model sought to examine the influence of a firm's market orientation to assist in the development of a web-based competitive advantage. It was theorised that market-orientated firm behaviours were essential requirements to optimising the development of web-based commerce in small firms within which resource (time, finances and knowledge) constraints commonly occur. That only one firm was satisfied with their adoption of web-base commerce, and that they were the only firm to exhibit market-orientated behaviours (albeit three years post adoption), provides partial support for the role of market orientation during web-based commerce adoption. This research has highlighted the difficulties in maintaining and/or developing a market orientation in environments influenced by rapid technological change. Given the significant contribution of small firms to the Australian economy (Gare, 2001), it is imperative further research examine the learning processes that contribute to the development of specific intelligence upon which incremental growth and future web-based competitive advantages are dependent.

REFERENCES

Afuah, A., & Tucci, C. L. 2001. ***Internet business models and strategies.*** Sydney: McGraw-Hill Irwin.

Amit, R., & Zott, C. 2001. Value creation in e-business. ***Strategic Management Journal,*** v22 (6-7): 493-520.

Armstrong, L., & Hagel, J. 1996. The real value of on-line communities. ***Harvard Business Review,*** v74 (3): 134-141.

Australian Bureau of Statistics. 1999. ***Communications and information technology: Household use of information technology.*** http://www.abs.gov.au. Catalogue Number 81146.0. 21/10/2001.

Babbie, E. 1999. ***The basics of social research.*** Melbourne: Wadsworth Publishing Company.

Brandenburger, A. M., & Nalebuff, B. J. 1995. The right game: Use game theory to shape strategy. ***Harvard Business Review,*** v73 (4): 57-71.

Chappell, C., & Feindt, S. 1999. ***Analysis of e-commerce practice in SMEs.*** http://www.kite.tsa.de/. 12/9/2001.

Chaston, I., Badger, B., Mangles, T., & Sadler-Smith, E. 2001. The Internet and e-commerce: An opportunity to examine organisational learning in progress in small manufacturing firms. ***International Small Business Journal,*** v19 (2): 134-147.

Chau, S., & Lawrence, K.L. 1999. ***Electronic commerce knowledge, capabilities, and utilisation: The Tasmanian perspective.*** Proceeding of Collector' 98, University of New South Wales.

Cohen, W.M., & Levinthal, D.A. 1990. Absorptive capacity: A new perspective on learning and innovation. ***Administrative Science Quarterly,*** v35: 128-152.

Day, G.S. 1999. Creating a market-driven organisation. ***Sloan Management Review,*** v41 (1): 23-34.

Drucker, P.F. 1985. ***Innovation and entrepreneurship.*** New York: Harper and Row.

Enders, A., & Jelassi, T. 2000. The converging business models of Internet and bricks-and-mortar retailers. ***European Management Journal,*** v18 (5): 542-550.

Gare, S. 2001. Herded, bossed and cajoled, then milked. ***The Australian.*** 14/7/2001.

Glazer, R. 1991. Marketing in an information intensive environment: Strategic implications of knowledge as an asset. ***Journal of Marketing,*** v55: 1-19.

Hamill, J. 1997. The Internet and international marketing***. International Marketing Review,*** v14 (5): 300-323.

Hoffman, D. L., & Novak, T. P. 1997. A new marketing paradigm for electronic commerce. ***The Information Society,*** v13 (1): 43-55.

Hunt, S.H., & Morgan, R.M. 1995. The comparative advantage theory of competition. ***Journal of Marketing,*** v59 (April): 1-15.

Kotler, P. 1997. ***Marketing management: The Millennium edition.*** Sydney: Prentice Hall.

Lado, A.A., Boyd, N.G., & Hanlon, S.C. 1997. Competition, cooperation, and the search for economic rents: A syncretic model. ***Academy of Management Review,*** v22 (1): 110-141.

McLennan, W. 1999. ***Small business in Australia.*** ABS Catalogue No. 1321.0.

McWilliams, A., & Gray, S.R. 1995. Understanding quasi integration. ***Journal of Business Strategies,*** v11: 171-195.

Mintzberg, H. 1990. The Design School: Reconsidering the basic premises of strategic management. ***Strategic Management Journal,*** v11 (3): 175-195.

Morgan, R.E., Katsikeas, C.S., & Appuh-Adu, K. 1998. Market orientation and organisational learning. ***Journal of Marketing Management,*** v14: 353-381.

Pelham, A.M., & Wilson, D. 1996. A longitudinal study of the impact of market structure, and market orientation culture on dimensions of small-firm performance. ***Journal of the Academy of Marketing Science,*** v24 (1): 27-43.

Peterson, R.T. 1989. Small business adoption of the marketing concept vs. other business

strategies. ***Journal of Small Business Management,*** v27 (1): 38-46.

Plume, H. 2001. ***Survival of the e-fittest.*** http://www.capcollege.bc.ca/admin/Formedia/2001releases/ebiz.html. 5/8/2001.

Poon, S., & Strom, J. 1997. ***An Australia-UK study of small firm internet use.*** Proceedings of the 1997 International Management Development Association Conference. Seoul, Korea, pp. 316-323.

Poon, S., & Swatman, P.M.C. 1999. An exploratory study of small business Internet commerce issues. ***Information & Management,*** v35: 9-18.

Porter, M.E. 1985. ***Competitive advantage.*** New York: Free Press.

Prahalad, C.K., & Hamel, G. 1990. The core competence of the corporation. ***Harvard Business Review,*** v68 (3): 79-91.

Rayport, J. F., & Jaworski, B. J. 2001. ***e-Commerce.*** Sydney: McGraw-Hill/Irwin.

Rogers, E.M. 1995. ***Diffusion of innovations (4th ed.).*** New York: The Free Press.

Rouse, M.J., & Daellenbach, U.S., 1999. Rethinking research methods for the resource-based perspective: Isolating sources of sustainable competitive advantage. ***Strategic Management Journal,*** v20 (5): 487-494.

Sanchez, R. 1997. Preparing for an uncertain future: Managing for strategic flexibility ***International Studies of Management & Organisation,*** v27 (2): 71-95.

Slater, S.F. 2001. Market orientation at the beginning of a new millennium. ***Managing Service Quality,*** v11 (4): 230-232.

Slater, S.F., & Naver, J.C. 1994. Does competitive environment moderate the market orientation performance relationship? ***Journal of Marketing,*** v58 (January): 46-55.

Slater, S.F., & Naver, J.C. 1998. Customer-led and market-orientated: Let's not confuse the two. ***Strategic Management Journal,*** v19 (10); 1001-1006.

Sawhney, M., & Zabin, J. 2001. ***The seven steps to nirvana.*** Sydney: McGraw-Hill.

Timmers, P. 1998. Business models for electronic markets. ***Electronic Markets,*** v8 (2): 3-8. www.electronicmarkets.org. 2/6/2001.

Wrenn, B. 1997. ***Reality based market orientation.*** Proceeding of Marketing Management Association. Chicago, IL: Marketing Management Association and Department of Marketing, School of Business, Indiana State University.

Yellow Pages Business Index. 2001. ***E-commerce and computer technology.*** http://www.corporate.pacificaccess.com.au. 13/9/2001.

Yin, R.K. 1994. ***Case study research design and methods (2nd ed.).*** Thousand Oaks, California: Sage Publications.

Zahra, S.A., & George, G. 2002. Absorptive capacity: A review, reconceptualization, and extension. ***Academy of Management Review,*** v27 (2): 185-203.

INNOVATION, CAPABILITIES AND PERFORMANCE OF CANADIAN SMEs IN HIGH TECH INDUSTRIES

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ABSTRACT

The nature of high-tech industries necessitates a continuous improvement and innovation. Enterprises operating in these industries need to develop and build dynamic capabilities to be successful. The paper therefore argues that successful performance of small and medium enterprises in high tech industries is determined by its innovative ability, which in turn depends on its dynamic capabilities. The paper aims at examining the different dimension of capabilities and learning processes, which differentiate innovators from non-innovators and small firms from medium & large. Further, it explores the relationship between innovation, dynamic capabilities and performance. The result of the study shows that there are different sets of capabilities and learning processes, which characterize innovators and small firms. However, impact of innovation on economic performance is not clear.

INTRODUCTION

Innovation is fundamentally a learning process. Such learning- by 'doing', by 'using', by observing from, and sharing with, others- depends upon the accumulation and development of relevant knowledge of very wide variety. As the High-tech industries are characterized by rapid pace of innovation, successful enterprises require continuous learning to create, transfer and integrate knowledge to develop new products, process etc. All this requires that high tech firms should develop and build dynamic capabilities to respond to and shape changes in their environment. The ability of a firm to expand and develop its dynamic capabilities over time depends on its business processes (i.e. routines, current practice and learning) and market position(i.e. current assets, market share and profitability) (Teece and Pisano, 1994, and Teece et al.,1997).

Canada is economically advanced and geographically second largest country in the world. The emergence of globalization and formation of NAFTA has forced Canada to move faster towards a knowledge-based economy. In the Canadian economy, performance of high tech industries and SMEs in particular is becoming important. How innovative are the SMEs in Canada? What types of capabilities and competencies do they

possess? What is the relationship between innovation, capabilities and performance? The paper attempts to seek answers to these questions.

The paper has been structured in six sections. Section two focuses on competitive advantage and identify the role of innovation, knowledge and learning in the High-tech firms. Section three discusses relationships between innovation and internal capabilities. Section four outlines the research methodology followed in terms of sample, variables identification, data collection and analysis. Section five presents the result of the data analysis. Section six discusses the results and conclusion of the study.

HIGH TECH ENTERPRISES AND COMPETITIVE ADVANTAGE

Many advanced economies are shifting their economic activity out of the traditional industries where they have lost the comparative advantage, and entering into those industries where the comparative advantage is compatible with both high wages and high levels of employment. The emerging comparative advantage that is compatible with high wage levels is based on innovative activity. The global demand for innovative products in High-tech, knowledge-based industries is high and growing rapidly. Economic activity based on new knowledge generates higher wages and greater employment opportunities reflecting the exploding demand for new and improved products and services.

The rapid pace of innovation along with increasing return to scale and imperfect competition are key features of High tech enterprises. The competitive performance of these firms therefore depends on continuous improvement and innovation. Before discussing about the relationship between innovation, knowledge, and learning, let us examine the dominant paradigm of competitive advantage and their determinant.

There are two main approaches in the literature describing sources of competitive advantages. The first approach is based on industrial economics focusing on rent seeking by creating defensible position against competitive forces. Second approach is based on resource-based view of the firms and believes in generating rent, creating value or asset augmentation. The third approach of dynamic capabilities is an improvement of second one and more appropriate for high-tech firms which are facing a dynamic and complex environment.

The dominant paradigm in the field during the 1980s was the competitive forces approach developed by Porter (1980). This approach, rooted in the structure-conduct-performance paradigm of industrial organization, emphasizes the actions a firm can take to create defensible positions against competitive forces. It says that rents flow from privileged product market positions. Here, the focus is more on rent seeking and value appropriation than rent augmentation and value creation.

Strategic positioning as advocated by the first approach is unlikely to provide competitive advantage on sustainable basis, as competitor learn and imitate. A strategy of creating and leveraging core competence (Prahlad and Hamel,1990) may provide the basis for sustainable competitive advantage. This approach focuses on capturing entrepreneurial rents stemming from fundamental firm level efficiency advantages. This, the second

approach often referred as the 'resource based perspective', emphasizes firm specific capabilities and assets and the existence of isolating mechanism as the fundamental determinant of firms performance. The resources, skills and competences that give firms their uniqueness are often intangible and organizational embedded which create causal ambiguity and barriers to imitation by competitors. This perspective recognizes but does not attempt to explain the nature of the isolating mechanism that enables entrepreneurial rents and competitive advantage to be sustained.

Firms can acquire valuable technology assets and skill without developing the capabilities to gain and maintain their competitive advantage in a changing environment. Recent research reveals a dynamic interplay between the firm's internal capabilities and the changing external conditions, recognising that learning is the main way in which organisation interact with, and are changed by, their environment. To be successful in global markets firms have to develop the strategic or dynamic capabilities to respond to and shape change in their environments, such as new technologies or market opportunities. Radical changes in the environment can force a firm into totally renewing its capabilities and organisation. The 'dynamic capabilities' approach stress exploiting existing internal and external firm specific competences to address changing environment (Teece and Pisano,1994 and Teece et al.,1997). This approach emphasizes the development of management capabilities, and difficult to imitate combinations of organizational, functional and technological skills.

INNOVATION, DYNAMIC CAPABILITIES AND PERFORMANCE

Innovation is an evolutionary, non-linear and interactive activity. It is determined by the capabilities and competences of the organisations. The basis of competences is knowledge organisations hold that is embodied in their routines and procedures. Learning serves to incorporate new information into the knowledge base by which the competences of the organisations are improved and new ones developed. The innovation therefore is a result of dynamic and evolving interplay between information, codifiable and tacit knowledge and competence (Amin and Wilkinson, 1999), which is a result of learning

Dynamic Capabilities

To understand the origins of innovation, an evolution of a firm can be viewed as a process of accumulating useful organizational knowledge with the help of dynamic competencies. Dynamic competencies refer to the abilities to learn, to solve problems, and in particular, to find new problems to solve (Dosi and Marenge, 1994). The dynamic capabilities framework (Teece, Pisano and Shuen, 1997) provides a more systematic approach to knowledge accumulation in firms. Dynamic capabilities mean the collective capacities to learn and adapt with the help of dynamic competencies, i.e., individuals' abilities to learn and solve problems, collective capabilities are built and maintained. The framework holds that a firm's profitability and market share are determined by its position, compared to competitors, with respect to strategic assets (capabilities). Strategic assets include technological assets, complementary assets like distribution channels and manufacturing capabilities, and financial and institutional assets. Because

strategic assets are organizational and thus largely firm-specific, there are usually no markets for them. Therefore they need to be developed internally, which involves the internal processes of learning, integration of knowledge sources, and reconfiguration of the organization.

The problem with using the dynamic capabilities approach in a more general empirical analysis in that capabilities are defined in a firm-specific way, which easily gives rise to ex-post rationalization. To overcome this, Leiponen(2000) studied learning abilities and innovation, which underlie the creation of strategic assets. Organizational learning follows from the operation and interaction within the organization and with outside parties. It can be facilitated for instance by investing in education, training, and organization design. Innovation is also an interactive process of knowledge accumulation, which integrates skills, learning abilities, R & D, and external knowledge sources.

Accumulation of knowledge is by no means automatic. Initially, the firm's management has to be "visionary" enough to perceive opportunities, which necessitate investment in knowledge. Then the firm takes on an innovative and knowledge-intensive strategy. It invests in R & D, which enables it to develop knowledge internally, and to absorb it from the outside. Simultaneously, it has to make sure that the employees are capable of using, applying, producing and marketing the firm's products and technologies. Technology and competencies thus complement each other in different stages of the production process, as well in product development, manufacturing as in marketing. This is related to Teece's (1986) idea that profiting from innovation necessitates that the firm have complementary assets in place. In a dynamic perspective, products, technology and competencies co-evolve, because their coherence has to be maintained. Competencies hence affect profitability directly through enhanced learning and adaptation, and indirectly through the process of innovation.

Leiponen(2000) investigated the impact of competences on firm's economic performance. The results of the study indicate that educational measures of competences are significantly associated with profitability. First, interactions between different levels and fields of education have the most important effects. Second, profitability of innovating firms is determined differently from that of non-innovating firms, in particular, educational competencies are more important for innovators. Finally, the determinants of profitability of product innovators differ from those of process innovators, i.e. different competencies complement different type of innovation.

Innovation, Capabilities and Small Enterprises

Small enterprises have emerged significant players in innovation. Traditionally, innovation is linked with large enterprises. It is now recognized that the relationship between size and innovation depends on how innovation itself is measured, whether by innovation inputs (e.g. R&D expenditure or personnel) or by innovation output(e.g. new products, processes, patents and so on). If innovation is measured by the intensity of R&D expenditure and R&D personnel, then empirical evidence suggests that large firms tend to be responsible for most R&D investment (Soete 1979; Freeman 1982; Bound et

al. 1984; Pavit et al. 1987; Asc and Audretsch 1991; Cohen and Klepper 1994). However, the positive relationship between size and R&D spending provides only a confirmation that large firms have an advantage over smaller firms in undertaking R&D in the first place (Cohen, 1995); and, this does not mean a positive outcome.

If innovation is measured in terms of performance, a different picture emerges, Kamien and Schwarts(1975) suggest that research output intensity is expected to peak at a smaller size than innovation input intensity, and that size does not appear to be conducive to innovation. In other words, the largest investors in R&D are not necessarily the best innovators.

The emergence of small enterprises as an active innovator is linked with the measurement of innovation in terms of outputs (Pavitt et al. 1987; Geroski 1990,1995; Patel and Pavitt, 1995). The recognition that standard innovation inputs such as R&D expenditure and personnel are insufficient to explain the innovation performance of small firms has led to a re-assessment of the role of such inputs with respect to innovation. In fact, it has become clear that small firms are surprisingly innovative although their effort on innovation- in terms of R&D expenditure- is minimal. This revelation has paved the way to explore alternative sources of innovation.

Many scholars have tried to investigate the innovative behaviour of small firms. Some studies have looked at possible sources internal to the firm. Freeman(1982) argues that the greatest advantages of small firms rest with their flexibility, concentration and internal communication, motivation and low costs. Scherer(1988) points to two main advantages for small firms: less bureaucratic internal structures and enthusiasm. In addition to these, it has become increasingly clear that for small firms what is most important is the environment in which they operate. So the crucial steps forward in the literature has been to conceptualize firms by looking at the environmental factors that can engender innovative behaviour. The analysis of firms' embedded ness implies that other firms, local and regional organization as well as national institutions have to be taken into consideration, in order to ascertain how these, and the relationships between them and the firm, can be conducive to innovation. Firms and especially small firms hardly operate in isolation; they are likely to have a thick net of relationships with customer firms or suppliers, with competitors, with business support organization, trade bodies and public institutions. This net of relationships, it is argued, influences the capacity of single firms to be innovative. In other words, the capacity of small firms to be innovative depends on whether they are placed in a stimulating environment that encourages firms to network and co-operate with each other over innovation.

A Framework

Internal dynamic capabilities have emerged as crucial factor determining innovative performance of the enterprises. Few studies have been conducted to examine innovation and few dimensions of capabilities. However, no study has been found to examine a wider range of capabilities and learning processes and investigate their impact on innovation and performance. The present study aims to fill that gap. Cooperation has also

emerged as significant variable explaining innovation performance. In the present study, an attempt has been made to integrate a wide range of capabilities and internal operational and learning process variables along with cooperation variables to investigate their relationship with innovation. On the basis of the discussion, the following hypotheses have been formulated:

1. Innovation improves economic performance of enterprises, provided that certain capabilities, and operating and learning process system are available.

2. Innovators are different from non-innovator in terms of capabilities, operating and learning system, and cooperation level.

3. Small enterprises are different from the medium and large in terms of capabilities and operating and learning system.

METHODOLOGY

In order to investigate into innovative behavior of High tech small and medium size enterprises, first the high-tech industries were selected, number of firms to be approached were identified, a questionnaire was designed to collect data from the respondent, a web based survey was conducted, and lastly the data was analysed.

Data and Variables

A questionnaire was developed to collect information relating to the innovation activities, constraints in innovation and reasons for not doing any innovation, competitive advantage factors, operational and management process variable, Cooperation with others for innovation, R&D expenditure, number of employees, of the firms. The detail about the selected variables, their mean, standard deviation and scale used are given in table 1.

1. Capabilities Variables: Sample firms were asked to rate the importance of factors on a scale of 0 to 10 which have contributed to their competitive edge on 20 items representing technological and other functional level dimensions. A factor analysis was performed to see the underlying pattern and groups emerging out of these items. Using the factors result and logical connection in the items, the responses have been grouped and average in to 8 factors which have been designated as Collaboration capability, Customer relation capability, Human Resource capability, Information system capability, Marketing capability, New Product Introduction capability, Operational capability, and Specialised expertise capability. The mean and standard deviation and items averaged in each of the variable are given in Table 1.

2. Learning Process and Structural Variables: Internal management process linked with learning and innovation was measured on 14 items 7 point scale. A factor analysis was performed to see the underlying pattern and groups emerging out of these items. Again using the factors result and logical connection in the items, the responses have been grouped and average in to 6 factors which have been designated as Process of capability building, External Information seeking, Internal knowledge dissemination,

skill outsourcing, performance measurement, reward system. The mean and standard deviation and items averaged in each of the variable is given in Table 1.

3. Cooperation Variable : This measures the cooperation firms have with others in their innovative activities.

4. Research and Development Expenditure : R& D expenditure as a percentage of sales

5.Organisational size : This has been measured on the basis of number of employees.

6. Constraints in Innovation: Three items were used to explore the reasons for not doing any innovative activity (NIN). Further, three items were used to explore the reasons for discontinuing or abolishing innovative activities (IR).

7. Performance: Performance has been measured on 5 different dimensions, profitability, growth of sales, financial strength, introduction of product innovation and introduction of process innovation. An 11-point scale has been used for this purpose.

8 Innovation: It has been measured by asking questions on innovative activities performed by the companies first, in terms of introducing new products and improvement in existing products, second, in terms of introducing new processes and improvement in existing processes. Third, questions relating to number of new product or processes introduced by the companies during the last 5 years have been included.

Sample and Web Based Survey

The survey is confined to high-tech enterprises in four sectors: Biotech (Health, Environment, Agriculture, Services), Information and Communication Technologies (Telecommunication, software, intelligent system, Microelectronics), Aerospace, and Pharmaceuticals. These sectors are knowledge intensive and innovation is critical for them. The unit of analysis chosen is firms both small and large. The firms having e-mail addresses and located in major cities of Canada were identified from the following sources: Strategis web site, Biotech Canada Directories, Western Diversification website(Aerospace companies). Around 700 such firms were identified and approached.

To collect data from the company, a questionnaire was designed. Initially, a pilot study was conducted to examine the feasibility of questionnaire. The questionnaire was put up on the web and selected firms were requested to give their responses. A Questionnaire was also e-mailed to all the sample companies. Some responses were received through Fax and E-mail. All the firms forming the sample were requested to fill in their responses on website. One hundred and seventeen firms responded positively. However, after eliminating incomplete response, only 105 responses could be used for the analysis.

As the purpose of the paper is to identify the determinants of innovative behaviour of firms, a question was asked as to how many new products and the processes respondents have developed during the last five years. It was found that there are 33 enterprises,

which have not introduced any product or process innovation. There are 30 enterprises, which have introduced both product and process innovation (see table 6). Due to incomplete information in case of one firm, it was eliminated from the analysis. Finally, these two groups consisting of 62 enterprises are used for in-depth study in this paper.

Table 1 Description of Variables

Variables	Mean	Standard Deviation	Definition and Measurement Scale
CPBCOLL	4.492	2.784	Collaboration capability 1.Capability of entering and managing technological alliance 2.Use of joint ventures for R&D Scale 0-10
CPBCUST	7.957	1.545	Customer relation capability 1.Personal attention to customer/client needs 2.Established reputation and image 3.Ability to quickly adapt to client needs Scale 0-10
CPBHR	6.605	1.927	Human Resources Capability 1.Skilled and Capable Employees 2.Reward system/compensation package Scale 0-10
CPBISYS	5.419	2.275	Information system capability 1.Information system and networking 2.Knowledge about regulations Scale 0-10
CPBMKT	4.976	2.241	Marketing capability 1. Aggressive Promotion and Marketing 2.Established marketing channel for distribution Scale 0-10
CPBNRD	5.286	2.330	New product capability 1. Regularly introducing New and unique product/service in the market 2.Capability of combining different technologies 3.Regularly modernizing and replacement of capital equipment 4.Regular Purchase of latest technology, designs, or patents etc Scale 0-10
CPBOPR	6.032	1.762	Operational capability 1.Price of products/services 2.Improving continuously operational efficiency Scale 0-10
CPBSPEXP	7.769	1.241	Specialized expertise capability 1.Specialized expertise or products 2.Range and variety of expertise or products 3.Product/service quality or design Scale 0-10
PRCAPBD	5.232	1.262	Process of capability building 1.Inputs and ideas invited form employees for strategic decision making 2.Employees informed and taken into confidence 3.Employees informed of the work expected from them 4.For specific skills requirement etc. train a current employee 5.Project manager final decision maker for design/features requirements Scale 1-7 (Rarely - to very frequently)
PREXINF	5.194	1.561	Process of external information 1.Discussion with customer as a source of idea for product development 2.Use customer preference in product cost reduction target Scale 1-7 (Rarely - to very frequently)
PRKNDISS	4.065	1.644	Process of internal knowledge dissemination 1.Employees from different function attached to project

			2.Rotate product development engineer into other functional areas 3.Employee training and education Scale 1-7 (Rarely - to very frequently)
PROUTSRC	4.710	1.740	Process of skill outsourcing 1.For specific skills requirement, a new employee with the required skills Scale 1-7 (Rarely - to very frequently)
PRPERMS	4.129	1.498	Process of performance measurement 1.Performance measurement designed to encourage development of new ideas etc 2.Measure the quality and its effectiveness of its innovative practices Scale 1-7 (Rarely - to very frequently)
PRREWARD	3.919	2.067	Process of reward system 1.The product/ market success a basis for awards to development personnel Scale 1-7 (Rarely - to very frequently)
CP	.790	.410	Cooperation for Innovation and operation 0 for no Cooperation and 1 for Cooperation
IR1	2.677	2.844	Innovation Hampered-Problem linked to financing Scale 1-7 (Not al all – Great Extent)
IR2	2.371	2.693	Innovation Hampered-Excessive risk of innovation Scale 1-7 (Not al all – Great Extent)
IR3	1.968	2.254	Innovation Hampered-shortage of scientific and technical knowledge Scale 1-7 (Not al all – Great Extent)
INNTR	.468	.503	Non-innovator=0, Innovator=1
NIN1	.581	1.488	No innovation- innovation introduced 5 year back Scale 1-7 (Not al all – Great Extent)
NIN2	.774	1.815	No innovation–production system does not require innovation Scale 1-7 (Not al all – Great Extent)
NIN3	.629	1.474	No innovation–industry sector does not require innovation Scale 1-7 (Not al all – Great Extent)
RD	21.392	25.384	R and D Expenditure % of Sales
SIZE	.387	.491	Employee >50=0, Else 1
PER1	5.629	2.638	Profitability Scale 0-10
PER2	5.758	2.792	Growth of sales Scale 0-10
PER3	5.629	2.977	Financial Strength Scale 0-10
PER4	6.177	2.984	Product innovation Scale 0-10
PER5	5.210	3.052	Process Innovation Scale 0-10

Data Analysis:

The data has being analyzed with the help of bivariate and Multivariate statistical techniques, such as ANOVA, factor analysis, multiple regression and Logistic Regression. Factor analysis has been used to see the underlying pattern among the Capability variables and Learning process variable. ANOVA has been used to examine the variation in Innovator versus Non-innovator group, and small versus medium and large firms. Logistic and OLS regression model has been used to examine predictable variable for innovator. OLS regression has been applied to identify relationship between innovation and performance.

EMPIRICAL ANALYSIS AND RESULTS

Innovative Activities of the Firms

By and large it is found that majority of high tech firms in Canada are engaged in innovative activities. Over 80 percent firms says that they are engaged in improving existing products and also introducing new or technological innovative products (see Table 2). However, further exploration reveals that approximately 60 per cent firms have introduced and developed new products during the last 5 years which are unique in their respective province, in Canada or in world (see Table 3).

The similar result is found in case of process innovation activities. Table 4 and 5 shows that over 90 per cent firms have improved and introduced new processes. However, only around 60 per cent have introduced new productive processes during last five years.

Table 2 Enterprises in Innovative Product Related Activities

Improved Existing Product	**Introduced New or technologically innovative Products**		**Total Number of Firms**
	Yes	**No**	
Yes	82	12	**94**
No	2	9	**11**
Total Number of Firms	**84**	**21**	**105**

Table 3 Enterprises in Introducing New and Unique Products

Unique in the Province	Unique in Canada		Unique in the World		**Total**
	No product development	One and More	No product development	One and More	
No product development	39	1	35	5	**40**
One and More	4	61	10	55	**65**
Total	**43**	**62**	**45**	**60**	**105**

Table 4 Enterprises in Innovative Processes Related Activities

Improved Existing Productive processes	Introduced New Productive processes		Total Number of Firms
	Yes	No	
Yes	81	8	**89**
No	4	12	**16**
Total Number of Firms	**85**	**20**	**105**

Further exploration of the data using cross tabulation reveals that around 30 per cent of the firms have not introduced any new products or processes during the last 5 years. Equally the same percentage of firms has introduced both product and process innovation (Table 6). It was decided to examine these two sets of firms for further analysis to identify the determinant of innovators, and to investigate the relationship between innovation, capabilities and performance.

Table 5 Enterprises in Introducing New and Unique Processes

Unique in the Province	Unique in Canada		Unique in the World		**Total**
	No product development	One and More	No product development	One and More	
No product development	67	1	65	3	**68**
One and More	6	31	10	27	**37**
Total	**73**	**32**	**75**	**30**	**105**

Table 6a to 6e shows the innovator and non–innovator firms and their characteristics in terms of industry, primary activities, age, sales and size. In terms of industry, the number of firms engaged in ICT sector is approximately half of the same. ICT sector consist of number of other equally important and large sub sector like IT, telecom, etc. Further analyses of the sample firm shows that approximately one-third of the firms are in the manufacturing sector. And equally the same numbers of firms are engaged in multiple activities. The innovators and non-innovators are equally divided among the different categories of industry and primary activities.

Size of the firms measured in term of number of employees. The firms having less than 50 employees are treated as small firms and other as medium to large. The firms are equally divided among the small, and medium & large (See Table 6c). Age wise categorization of the firms shows that majority of the firm are below the age of 20. Over one third firms fall in the category of 11 to 19 years of age (See Table 6d). Sales wise classification of the firms shows that two third of the firms are small and having turnover below $ 5 million.

In brief, it can be said that the majority of the firms in the sample belongs to young and small and medium by size.

Innovators versus Non Innovators

A descriptive statistics of all the variables for all the firms is given in Table 1. It is found that all the firms have a very high customer relation capability, and specialized expertise capability. In case of Human resources capabilities and operational efficiency capabilities is also above average with high standard deviation. All the firms have just average capability score in terms of new product development capability and information system capability with high standard deviation. Similarly, in case of marketing capability and collaborative capability the average score is slightly below average with a very high standard deviation. This implies that most of the firms in the sample are more and less similar with each other in terms of customer relation capability, specialized expertise capability, operational efficiency capability and human resource capability. The firms vary with each other in terms of collaborative capability, new product development capability, information system capability and marketing capabilities. Further, they are also different in terms of learning and managerial processes also. Only in case of capability building process and external information seeking process the score is above average with high standard deviation. In case of all the other four process related variable the score is just around average with high standard deviation.

Table 6
Enterprises Engaged in Developing New Product and New Productive Processes

Introduced New Products	Introduced New Productive Processes		Total
	None	One and More	
None	33	7	**40**
One and More	35	30	**65**
	68	**37**	**105**

Table 6a Industry wise Classification of Enterprises

Industry	Non-Innovators	Innovators	Total
Aerospace	6	4	10
Biotech	5	5	10
ICT	19	16	35
Pharma	3	4	7

Table 6b Primary Activities wise Classification of Enterprises

Primary Activities	Non-Innovators	Innovators	Total
Research	3	3	6
Manufacturing	12	10	22
Services	12	3	15
Combination of these	6	13	19
Total	**33**	**29**	**62**

Table6c
Size wise Classification of Enterprises

Size	Non-Innovators	Innovators	Total
Employees <50	21	17	38
Employees >50	12	12	24

Table 6d Age wise Classification of Enterprises

Years	Non-Innovators	Innovators	Total
1-5	7	6	13
6-10	9	5	14
11-19	13	10	23
20>	4	8	12

Table 6e Sales wise Classification of Enterprises

Sales (in $million)	Non-Innovators	Innovators	Total
< 1	13	10	23
1-5	11	8	19
5-10	3	2	5
11-25	4	5	9
25-50	-	3	3
50>	2	1	3
Total	**33**	**29**	**62**

To get more insight into the capabilities and process variables related to innovators, an analysis of variance was applied on different variables. Table 7 gives the result of the ANOVA. The table shows that the innovators are having a high scores on collaborative capability, human resource capability and new product development capability than the non-innovators. These score are significant as the F values are high. The differences in case of New product development capability are significantly high as the F values is 10.59. In case of customer relation, information systems, marketing and operational efficiency capability, the mean score is higher in case of innovators, but it is not

significant. In case of specialized expertise capability the mean score in both the cases is high.

In case of learning and managerial process variables, it is interesting to found that the innovators have a high and significant mean score on all the variables. It shows that the innovators focus more on capability building, external information seeking, skill outsourcing, performance measurement and reward system processes.

Innovators are allocating higher and significant proportion of their sales on research as it appears from RD Expenditure. Innovators are more for cooperation in order to carryout innovative activities. It is found to be significant at 1 per cent level. The size wise the difference between the two groups is not significant.

There have been some cases where the innovative activities have been hampered or abolished. The reason may be finance problem, risk involved, and shortage of knowledge and technical skill. In all the cases the score is below average in both the groups and the difference is also not significant except in the case of the last one. That is, in case of innovators the shortage of knowledge and skill has hampered their innovative activities in some cases.

In order to explore the reasons for not undertaking any innovative activities by the non-innovators three more questions were asked. One question is that innovation was not undertaken because the company has introduced innovation five years back. In this case the mean score is very low and significant. Second question is that the production system does not require any technological innovation. And third question is that industrial sector does not require technological innovation. In these two cases the mean score is very low in both the sample. It shows that few firms in the category of non-innovators believe that they do not require any innovations.

The economic performance of the two groups was measured on three dimensions: profitability, growth rate of sales, financial strength. In all the three dimensions, the firms have score slightly above average score with a very high standard deviation. However, the difference between the two groups is not significant at all. It shows that both innovators and non-innovators are equally good performer in terms on financial parameters.

In brief, one-way ANOVA has revealed that the innovators are different from non-innovators in terms of collaborative capability, human resources capability, and new product development capability. In terms of learning and managerial process they are different from non-innovator on all the six dimension identified in the study, namely capability building, external information seeking, skill outsourcing, performance measurement and reward system processes. They cooperate with other in innovative activities and spend more money on R&D. However, performance wise it is found that they are not different from the non-innovators.

A further analysis of the data reveals that non-innovators have an equally higher customer relation capability, specialized expertise capability and operational efficiency.

As most of the sample firms belong to small and medium size enterprises and operating in high tech sector, their work is related to of customized nature. By looking at the customers and their need and providing them services with their expertise skill and equally good human resource, they are able to perform better. It means to be good performers in the high tech sector, there are some niche segments in those sector, one can be better financial performer by focusing on certain capability areas without being innovative.

Multivariate Results and Predictive Models

In reality, different factors affect the performance and behaviour in an interactive manner. There are some multivariate methods which can be used to examine the factors determine innovative behaviour. To identify the factors that distinguishes innovators

Table 7 Analysis of Variance on Innovators and Non –innovators Enterprises

Variables	Non-innovators		Innovators		F	Significance Level
	Mean	S.D.	Mean	S.D.		
CPBCOLL	3.7879	2.5618	5.2931	2.8521	4.7932	.0325**
CPBCUST	7.8788	1.7377	8.0460	1.3175	.1782	.6744
CPBHR	6.1061	1.9556	7.1724	1.7590	5.0384	.0285**
CPBISYS	5.0455	2.0893	5.8448	5.8448	1.9357	.1693
CPBMKT	4.6212	2.4813	5.3793	1.8929	1.7900	.1860
CPBNRD	4.4470	2.4652	6.2414	1.7633	10.5923	.0019***
CPBOPR	5.8636	1.8468	6.2241	1.6722	.6422	.4261
CPBSPEXP	7.6566	1.2346	7.8966	1.2571	.5734	.4519
PRCAPBD	4.9030	1.4808	5.6069	.8324	5.1	.0272**
PREXINF	4.7576	1.7236	5.6897	1.1983	5.9482	.0177**
PRKNDISS	3.4141	3.4141	4.8046	1.3759	13.2623	.0006***
PROUTSRC	4.2727	1.9569	5.2069	1.3196	4.7180	.0338**
PRPERMS	3.5303	1.4681	4.8103	1.2350	13.5881	.0005***
PRREWARD	3.1515	2.0785	4.7931	1.6983	11.3960	.0013***
RD	12.2515	21.0614	31.7931	26.1962	10.5858	.0019***
SIZE	.3636	.4885	.4138	.5012	.1588	.6917
Cooperation	.6667	.4787	.9310	.2579	7.0391	.0102***
IR1	2.1515	.5059	3.2759	2.6978	2.4698	.1213
IR2	1.9091	1.9091	2.8966	2.6504	2.1128	.1513
IR3	1.3636	2.0889	2.6552	2.2721	5.436	.0231**
NIN1	.9091	1.9099	.2069	.6199	3.5820	.0632**
NIN2	1.1212	2.1903	.3793	1.1776	2.6503	.1088
NIN3	.8788	1.7457	.3448	1.0446	2.0618	.1562
PER1	5.5455	2.7282	5.7241	2.5759	.0697	.7926
PER2	5.6970	2.8005	5.8276	2.8293	.0333	.8559
PER3	5.3636	3.0395	5.9310	2.9269	.5568	.4585

from non-innovators, a model was constructed that could predict the innovation performance of small and medium size firms on the basis of a few factors. In order to find

the best model specification, two were tested: a) a LOGISTIC regression model; and b) a OLS regression model.

The first model is for the identification of those variables that best characterize the innovation behaviour, that is, the decision whether to innovate or not. The dependent variable is binary (group members of each firm: 0 for non-innovators and 1 for innovators) and therefore the appropriate statistical technique is Logistic regression. The second model(OLS regression) is to test whether the variable affecting the performance of product innovation and process innovation. In this case two separate equations have been estimated using dependent variable as the performance on product innovation and performance on process innovation.

The result of the analysis are reported in Table 8 which shows the beta coefficients, the significance of each independent variable and the overall significance of the two models. In addition to all the variables given in Table 7, a variable PER3 i.e. performance on financial strength has also been used in the model to predict its relationship with the innovation.

The logistic regression and its results are given in first part of the table. The model has classified the cases correctly to the extent 88.71%. The Log likelihood value is 39.29, and the chi square value is 36.3 and significant at 1% level. This suggests that the model is a good fit. Only eight variables have emerged as significant which can predict the innovator. Variables which have emerged on the equation are new product development capability, internal knowledge dissemination process, performance measurement process, R & D expenditure, cooperation, financial constraints(IR1), past innovation activity(NIN1), non innovative industrial sector(NIN3). Financial strength as a variable has not emerged as significant in this model.

The inference one can draw is that innovators in high sectors are having a better new product development capability. They focus on the internal knowledge dissemination process to improve the learning capability of the employees. Innovators firms also have performance measurement system which focuses on the measurement and encouragement of new ideas. Further, in order to be more innovative they allocate more resources for in house research and development and they cooperate with outsiders in innovative activities. However, they find financial constraints which hamper their innovative activities. As the past innovation (NIN1) variable has negative sign, it shows that the reason for no innovation in case of non-innovator is innovation introduced in the past. However, looking at the Table 7 shows the mean score in this case is very low in both the cases.

An OLS regression model was used to identify the determinant of innovative performance of the firms. The dependent variable in this case is PER4 and PER5 which represent the performance in terms of introducing innovative product in the market and innovative process in the market respectively. Both have been measured on 11point 0 to 10 scale. The variable used in Logistic regression have been applied here also. Both the

equations have a very high R square and F values. The F values are significant at a level of .0000. This shows the models are good fit.

In both the equations, human resources capability has emerged as significant variable with negative sign. It suggests that it is not positively correlated with innovation performance of the firms. In case of logistic regression, it has not emerged as the significant. It suggests that non-innovators are focusing more on higher human resource capability. New product development capability has emerged as a significant variable affecting both product and process innovation performance. This is logical and consistent with the result of logistic regression also. In case of process innovation performance, capability-building process has emerged as determining factor at 10 per cent level. It has a negative sign. It shows that it is negatively correlated with innovation performance. Whereas in logistic model internal knowledge dissemination has emerged as significant variable predicting innovators, in case of OLS regression, it is not significant. Further, skill outsourcing variable has emerged as negative and significant variable in the product innovation performance. It shows that the firms having high product innovation do not outsource human skill. They develop and use in-house skill. This factor has not emerged as significant either in logistic regression or in process innovation performance equation.

Performance measurement process has emerged as a significant variable affecting the process innovation performance. However, in case of product innovation performance, it is not significant. Product success based award system has emerged a significant factor in product innovation performance equation. It has not emerged as significant in other two cases. The cooperation variable has emerged as significant determinant of product innovation performance similar to the case in logistic regression. However, in case of process innovation it is not significant. R& D has not emerged as significant variable in case of both the equations. In addition to these, financial constraint variable (IR1), knowledge and skill constraint variable(IR3), non innovative productive technology variable (NIN2) and financial strength variables have emerged as significant in both the regression equations.

These results seem consistent with the logistic regression results except in case of financial strength performance variable.

Table 8 Result of Regression for Innovator and Non-innovators

	Logistic Regression	**OLS Regression**	
Variables		**Dependent Variable**	
	Dependent Variable (Y=0 for non-innovators Y=1 for Innovators)	***Introducing innovative products/services*** *PER4*	***Introducing innovative processes PER5***
	Coef. Std.Err. Wald test	**Coef. (t values)**	Coef. (t values)
CONSTANT	**-16.3839*** 4.8977 11.1907**	**3.029166 (2.508)****	3.999 (2.581)**
CPBCOLL		*.048763 (.414)*	*-.1582 (-1.217)*
CPBCUST		*.075846 (.781)*	.0980 (.946)
CPBHR		**-.4606 (-2.673)*****	**-.5094 (-2.823)*****
CPBISYS		*-.014120(-.135)*	.005861 (.052)
CPBMKT		*.030973(.301)*	*-.154639 (-1.355)*
CPBNRD	**.7922** .3248 5.9493**	**.4639(3.607)*****	**.3361 (2.193)****
CPBOPR		*-.02351(-.243)*	.092912 (.854)
CPBSPEXP		*.068173(.696)*	.067339 (.596)
PRCAPBD		*-.155131(-1.436)*	**-.520749 (-1.897)***
PREXINF		*.090059(.950)*	*-.093250 (-.853)*
PRKNDISS	**.7066* .3840 3.3856**	*-.089678(-.792)*	-.0375 (-.269)
PROUTSRC		**-.346919(-1.966)****	*.021805 (.185)*
PRPERMS	**.9575** .4679 4.1878**	*.112501(.966)*	**.7262(3.061)*****
PRREWARD		**.303596 (2.006)****	.1521 (1.096)
INNTR		*.279345 (.666)*	
RD	**.0327* .0183 3.1828**	*.003103 (.029)*	*.10074 (.881)*
SIZE		*-.027208(-.290)*	-.0181(-.167)
Cooperation	**3.4674** 1.5612 4.9325**	**1.387116 (1.886)***	*.024078 (.213)*
IR1	**.3717* .1916 3.7632**	**.372781 (3.264)*****	**.613401 (4.696)*****
IR2		*.279345 (1.666)*	*-.1041*(-.549)
IR3		**-.2985 (-2.053)****	**-.56888 (-3.466)*****
NIN1	**-2.3402** 1.1530 4.1199**	*-.1036(-.984)*	*-.013200(-.105)*
NIN2		**-.4095 (-2.444)****	**-.3354 (-1.834)***
NIN3	**2.0131** .8416 5.7219**	*.100623 (.488)*	*-.1811 (-.814)*
Financial Strength(PER3)		**.5316(5.297)*****	**.4016(3.648)*****
-2 Log Likelihood	**39.269**	**Multiple R .79131**	**Multiple R .71200**
Model Chi-Square	**36.349*****	**R square .62617**	**R square.50695**
% of rightly forecast	**88.71%**	**Adjusted R Square .56147** **St. Error 1.975**	**Adjusted R Square.43253** St. Error 2.299
No. of Observation	**62**	**F 9.678 (.0000)**	**F 6.812 (.0000)**

1) *** p<0 .01 **p<0 .05 * p<0 .10
2) Figures in bold are in the final selected Equations
3) Figures in ilatics and not bold are not in the equations

Small Firms Versus Medium & Large firms

Looking at the sample firms and their characteristics, it appears most of the firms are small and medium size. On the basis of number of employees these firms are divided in to two groups, one having less than 50 employee and another having 50 and above employees. An attempt has been made to see to what extent they are different in terms of their innovative capabilities, processes and performance. One variable INNTR representing '1 for innovator and 0 for non-innovator' has also been introduced in the analysis.

First an ANOVA method was used to examine the variance on different variables. The result is given in table 9. It is found that there is no difference between the small and medium size enterprises in terms of capabilities and learning processes. Both are equally good in both these dimensions. A major and significant difference in these two groups is on research and development dimension. Small firms are found to be a higher spender. Another major difference is in terms of performance. Medium and large firms are having a better financial performance than the smaller firms. It is interesting to examine the difference between the two groups using logistic regression.

The result of the logistic regression is given in table 10. Eleven variables have emerged as significant and are in the equations. The predictive power of the model is very high. It has correctly classified the firms with 83.87 per cent accuracy. The chi-square has 33.734 values and is significant at 1 per cent level.

Customer relation capability, R and D variable, and capability building process variable have emerged as significant predictor and differentiator. All these variable have negative sign that shows that small enterprises focus more on higher customer relation capability, spending higher on R&D and are focusing more on capability building process. The small enterprises also face constraints in terms of risk in innovation (NIN3) and find their industry does not require innovation (IR3).

In addition to these, external information seeking process, internal knowledge dissemination, skill outsourcing and innovators are positively linked with the medium and large enterprises.

In other words, the result shows that the medium sized firms are positively associated with innovation that is introducing new product and processes. They focus more on process of seeking external information from customer etc., internal knowledge dissemination process and keep on outsourcing skill whenever they need it. However, they spend less on R&D, and less focus on capability building and customer relation process in comparison to smaller firm.

Table:9 Analysis of Variance on among Small and Medium Firms

Variables	Small firms (Employees <50)		Medium and Large (Employees >50)		F	Significance Level
	Mean	S.D.	Mean	S.D.		
CPBCOLL	4.4211	2.8747	4.6042	2.6905	.0627	.8032
CPBCUST	8.0614	1.3686	7.7917	1.8093	.4441	.5077
CPBHR	6.7763	1.7771	6.3333	2.1552	.7743	.3824
CPBISYS	5.4211	2.2943	5.4167	2.2921	.0001	.9942
CPBMKT	4.8816	2.3637	5.1250	2.0708	.1713	.6805
CPBNRD	5.3158	2.3284	5.2396	2.3825	.0155	.9014
CPBOPR	6.0000	2.0067	6.0833	1.3242	.0324	.8578
CPBSPEXP	7.7456	1.2885	7.8056	1.1874	.0338	.8548
PRCAPBD	5.4211	1.4361	4.9333	.8701	2.2402	.1397
PREXINF	4.9868	1.7261	5.5208	1.2201	1.7418	.1919
PRKNDISS	3.9474	1.6775	4.2500	1.6069	.4944	.4847
PROUTSRC	4.5789	1.8252	4.9167	1.6129	.5498	.4613
PRPERMS	4.0526	1.5369	4.2500	1.4596	.2521	.6175
PRREWARD	4.2368	1.8950	3.4167	2.2634	2.3682	.1291
RD	26.4421	29.0003	13.3958	15.7183	4.0820	.0478**
INNTR2	.4474	.5039	.5000	.5108	.1588	.6917
Cooperation	.7895	.4132	.7917	.4149	.0004	.9839
IR1	2.9737	3.0535	2.2083	2.4668	1.0661	.3060
IR2	2.5526	2.7381	2.0833	2.6526	.4425	.5084
IR3	1.8947	2.1408	2.0833	2.4657	.1015	.7512
NIN1	.6316	1.5841	.5000	1.3513	.1133	.7376
NIN2	.7105	1.7384	.8750	1.9630	.1191	.7312
NIN3	.6316	1.5496	.6250	1.3772	.0003	.9865
PER1	5.1579	2.7854	6.3750	2.2421	3.2468	.0766*
PER2	5.2368	2.8038	6.5833	2.6196	3.5662	.0638*
PER3	5.0526	3.1789	6.5417	2.4134	3.8532	.0543*

Innovation, Capabilities and Performance

The analysis of the data has not given a clear picture about the relationship between innovation and performance variable. Rather it is found the innovation is not linked with the financial performance. An OLS regression method was used to examine the factors determining financial performance using capability, process and other variables. The result of the regression is given in table 11. All the three equations have high R square value and significant F value(.0000) which show that the models are good fit.

Table 10 Result of Logistic Regression for Innovative behaviour of Small and Medium and Large Enterprises

	Dependent Variable (Y=0 for Small Enterprises Y=1 for medium Enterprises)			
	Coef.	Std.Err.	Wald test	Sig
RD	-.1135	.0374	9.2104	.0024
PRCAPBD	-1.3338	.4834	7.6112	.0058
PREXINF	.5254	.3010	3.0468	.0809
PRKNDISS	.5556	.3157	3.0971	.0784
PROUTSRC	.6502	.2803	5.3814	.0204
NIN2	1.3322	.6342	4.4115	.0357
NIN3	-1.3917	.7746	3.2277	.0724
IR2	-.5767	.2558	5.0826	.0242
IR3	.4907	.2837	2.9924	.0837
INNTR2	1.8380	1.0237	3.2240	.0726
CPBCUST	-.7512	.3683	4.1589	.0414
Constant	5.7838	3.5581	2.6424	.1040
-2 Log Likelihood	49.027			
Goodness of Fit	48.468			
Model Chi-Square	33.734***			
% of rightly forecast	83.87%			
No. of Observation	62			

Economic performance has been measured on three different dimensions: profitability, growth of sales, financial strength. All the capability variables, process variables, R&D, cooperation and other variables were used in examining their relationship with performance. Innovation has been used as dummy variable (INNTR) with 1 for innovator and 0 for non-innovators.

The first equation is regression on overall profitability of the firm. Results of the regression show that collaboration capability and R& D spending variables are significantly but negatively related with the profitability of the firm. On the other hand, customer relation capability, human resource capability, external information seeking process, size of the firm and cooperation are positively related with the profitability. Risk in innovation and past innovation is also positively related with this. Innovation is positively related with the profitability, but it has not emerged as a significant variable.

In second equation, the growth of rate and its determinants are examined. It shows that human resource capability, operational efficiency capability, external information seeking process, size, co-operation are positively associated with the growth in sales. However, the new product development capability is negatively associated with it.

Table 11 Result of Regression on Performance

Variables	***Dependent Variable***		
	Overall Profitabilty (Return on Investment)	***Growth rate of sales Or Revenue***	***Financial strength***
	PER1	***PER2***	***PER3***
CONSTANT	**-3.9745 (-2.312)****	**-1.1714 (-.783)**	**-.4988 (-.348)**
CPBCOLL	**-.147690 (1.512)**	*-.0151 (-.130)*	**-.2615 (-2.155)****
CPBCUST	**.64427 (3.598)*****	.16356(1.441)	*.1011 (.915)*
CPBHR	**.37486 (2.635)****	**.38405 (2.474)****	**.6545 (3.982)*****
CPBISYS	-.0331 (-.321)	-.0920(-.845)	**-.3483 (-2.389)****
CPBMKT	*.066031 (.552)*	.0553 (.504)	*.0500 (.398)*
CPBNRD	*-.01153 (-.098)*	**-.32063 (-2.468)****	*.1382 (1.152)*
CPBOPR	*.11271 (1.094)*	**.4644 (2.885)*****	**.4273 (2.375)****
CPBSPEXP	*-.0621 (-.597)*	.05534(.540)	*-.0591 (-.564)*
PRCAPBD	*.1401 (1.270)*	-.0199(-.170)	*.1387 (1.181)*
PREXINF	**.3715 (2.096)****	**.42293 (2.340)****	*.0774 (.715)*
PRKNDISS	*-.0743 (-.658)*	*-.1671* (-1.504)	*.0079 (.067)*
PROUTSRC	*.0488 (.424)*	-.0505(-.424)	*.071692 (.611)*
PRPERMS	*.1057 (.939)*	-.0112(-.097)	*.086276 (.782)*
PRREWARD	*.0459 (.386)*	*-.08172 (-.653)*	.0688 (.534)
INNTR	*.0896 (.799)*	*.0809 (.685)*	*.07702 (.677)*
RD	**-.02548 (-2.234)****	**-.0364(-3.129)*****	-.1468 (-1.296)
SIZE	**1.3221 (2.484)****	**1.0621 (1.877)***	**1.8916 (3.208)*****
Cooperation	**1.2071 (1.979)****	**2.4482 (3.744)*****	**2.3083 (3.223)*****
IR1	*-.0515 (-.368)*	*.1477 (1.049)*	*-.0504 (-.403)*
IR2	**.27324 (1.871)***	**.3883 (2.409)****	*.064752 (.405)*
IR3	**-.523 (2.946)*****	**-.7095(-3.618)*****	**-.26411 (-1.977)***
NIN1	**.339766 (1.849)***	*.0843 (.813)*	**.434419 (2.132)****
NIN2	*-.1752 (-1.171)*	*.1562 (1.460)*	*-.0670(-.503)*
NIN3	*-.0468 (-.295)*	*.1692 (1.504)*	.0163 (.113)
Multiple R	**.76573**	**.74262**	**.71452**
R Square	**.58634**	**.55149**	**.51053**
Adjusted R Square (S. Error)	**.50523 (1.85549)**	**.47386 (2.02490)**	**.43665** (2.23413)
F (Signif)	**7.22901 (.0000)**	**7.10427 (.0000)**	**6.91019 (.0000)**

In case of third performance variable financial strength, collaboration capability and information system capability are negatively associated. Human resource capability, operational efficiency capability, size and past innovation are positively associated with the financial strength performance.

DISCUSSIONS AND CONCLUSION

The paper aimed at examining the innovative behaviour of small and medium sized firms operating in High-tech sector. Innovation was measured in terms of new and unique products and processes introduced in the market. It was argued that the innovation requires specific types of capabilities and operational and learning processes. Higher research and development expenditure and large size of the firm is generally associated with innovation. Cooperation with others in the industry and with outsiders in innovative activities has also emerged as important variable in the literature.

First, the capabilities were identified using variety of technological and functional dimensions of enterprises. Use of factor analysis and logic led to the development of eight different set of capabilities, namely, collaborative capability, customer relation capability, human resources capability, information system capability, marketing capability, new product development capability, operational efficiency capability and specialized expertise capabilities. These eight capabilities were used in the analysis. Secondly, learning process and organizational design related dimensions were used to identify the process related variables. Six different process variables were extracted and used in the study.

It is expected that innovators are different from non-innovators in terms of their focus on certain capabilities and learning processes. They spend more on R&D and engaged with other in cooperating in innovative activities. The result of the study has corroborated with the hypotheses. However, it is found that the innovators focus more on new product development capability. It means that the innovators are not significantly different from non-innovators in terms of all other capabilities, namely collaborative capability, customer relation capability, human resource capability, information system capability, marketing capability, specialized capability and operational efficiency capability. It was expected that innovators would focus more on other capabilities also to be successful in the market place and be more profitable. However, it is not so. This becomes clear when we combine these findings with the economic performance of the firms.

The new product development capability means that firms regularly introduce new and unique products/services in the market. They have a competence in combining different technologies. They keep on regularly modernizing and replacing their capital equipment and also purchase latest technology, designs or patents etc. This capability along with a high focus on customer relation, human resources and specialized expertise make them more innovative(see Table 7, a high score on all these capabilities).

In terms of different operational and learning processes innovators are giving more emphasis on all the variables as it is revealed in the Table 7. However, in case of internal knowledge dissemination process and performance measurement process they are significantly different from the innovators. Further, They are spending higher on R&D and are also involved in cooperation with others. They find financial constraints also in their innovative activities.

The process of internal knowledge dissemination means that the employees from different functions attached to project, they are rotated in to other functional areas and are also provided training and education. This helps in internal knowledge dissemination and result in creating new products and processes. In addition to this, performance measurement system is also important for innovation. It should be designed to promote and encourage the development of new ideas. There should be a system of measuring the quality and its effectiveness of different innovative practices also.

Innovators are cooperating with others in their innovative pursuits. They are also spending more on R&D. It helps in absorbing the innovation and further developing new things. In terms of economic performance, innovators are not different or better performer. In ANOVA analysis and Logistic regression, the performance in terms of financial strength has not emerged as significant factor. In the OLS regression, the financial strength is positively and significantly related with innovation performance. It shows that a better innovation performance needs good financial strength. But a good innovation performance may lead to better economic performance has not been clear. This is further explored in subsequent paragraphs.

It is also expected that the small firms are different from the medium and large firms in terms of capabilities and processes. In the present study, it is found that they are not different in terms of capabilities and process related variable. Both are equally good in cooperating with others in innovation activities. However, in the case R & D spending and economic performance these two groups of firms vary.

Logistic regression model makes the picture clearer. It shows that the small firms are spending more on R& D. They focus more on capability building or employees empowerment process. They further place more emphasis on customer relation capabilities. Their focus is significantly less on external information seeking process, skill outsourcing process and internal knowledge dissemination process. All these lead them to be comparatively less effective in introducing new products and process.

Medium and Large firms are found to be more innovative. They spend comparatively less on R&D. They emphasize significantly less on capability building by involving employees in decision-making etc. and have less focus on customer relation activity. They seek more information from external sources to get idea about the new products etc. and focus more internal knowledge dissemination process. In case they require skill, they can outsource it also. All these make them more innovative.

Both the small, and medium & large enterprises are emphasizing equally well on collaborative capability, human resource capability, information system capability, marketing capability, new product development capability and specialized expertise capability. They are equally focusing on performance measurement process and reward system process. Both these groups are not different from each other in terms of cooperation with other for innovative activities.

The discussion clearly shows that the innovators are different from non-innovators. Innovators are largely medium size enterprises. They focus more on certain capability and processes. They cooperate with other and spend high on R&D. However, in terms of economic performance their role is not very clear. Rather, it appears that the innovators are not performing economically better.

To examine the relationship between innovation, capability and performance, OLS regression model was used. Economic performance has been measured on three different dimensions: profitability, growth of sales, financial strength. All the capability variables, process variables, R&D, cooperation and other variables were used in examining their relationship with performance. Innovation has been used as dummy variable with 1 for innovator and 0 for non-innovators.

The result of the study shows that collaboration capability and R& D spending are significantly but negatively related with the profitability of the firm. On the other hand, customer relation capability, human resource capability, external information seeking process, size of the firm and cooperation are positively related with the profitability. Risk in innovation and past innovation is also positively related with this. The most surprising result is that Innovation is positively related with the profitability, but it has not emerged as a significant variable. It suggests that just innovation is not sufficient for a firm to be profitable. With right type of capability and learning process, they can be equally profitable. One more implication of the result is that innovation along with right combination of capabilities and processes may lead to higher profitability.

The result of regression on second performance variable growth of sales is also interesting. It shows that human resource capability, operational efficiency capability, external information seeking process, size, co-operation are positively associated with the growth in sales. However, the new product development capability is negatively associated with it. In case of third performance variable financial strength, collaboration capability and information system capability are negatively associated. Human resource capability, operational efficiency capability, size and past innovation are positively associated with the financial strength performance.

When we combine the result of all the three economic performance measures and their determinant, it is found the human resource capability and operational efficiency capability are positively and significantly associated with them. New product development capability has a negative sign and it is significant in case of growth of sales. The process of seeking external information has emerged as significant variable influencing performance positively and significantly except in the case of financial strength. R& D is negatively associated with the economic performance in the study. Size is positively associated. Cooperation has clearly emerged as the most important and significant determinant of economic performance. Abolishing innovation because of high risk involved is emerging as positive and significant variable on performance. Abolishing innovation because of lack of knowledge is negatively and significantly associated with the economic performance. It shows that the firms abolishing innovation have done so because of risk involved and thereby they have improved their performance.

On the other hand, firms doing so because of lack of knowledge and skill have not improved their performance. Past innovation variable (NIN1) is also positively and significantly related to the performance. It suggests that the firms not undertaking innovation because they have innovation in the past are also having positive economic performance.

The implication of the study is that innovation is not always linked with better economic performance. The firms not having innovation, but having right mix of capability and process to serve customer may have better economic performance. To have high economic performance with innovation, some more capabilities and process related variables are needed. However, it needs to be explored further.

The high rate of innovation is certainly linked with the right type of capabilities and processes. This has been highlighted by the result. Higher spending on R&D is associated with the innovation, but it has not resulted in higher profitability. It clearly shows that higher spending has its impact on the profitability. This may be possible in case of young and small firms. As these firms grow big, their spending in terms of sales will come down and the profitability will increase. The result of the study is to be explored further by focusing on the industry and product segments of the respective firms.

The small firms are different from large one in terms of certain capabilities and processes. Medium and large firms are certainly better performers in terms of innovation and economic performance. The division between the small and large firms is on the basis of the number of employee. Looking at the size of the firm in terms of sales and then differentiating variable need to be done.

The result of the study has the limitation of small sample. A larger and detailed study is required to examine the validity of these results. However, this exploratory nature of study has certainly added to the existing knowledge on innovation and innovative behaviour of small and medium size firms.

REFERENCES

Acs, Z.J. and Audretsch, D.B. R & D, Firms Size and Innovative Activities, in Acs, Z.J. and D.B. Audretsch, *Innovation and Technological Change*, pp. 39-59, London: Harvester Weatsheaf., 1991.

Bound, J. *et al.* , Who does R & D and Who Patents?, in Grilliches, Z. (ed.) *R & D, Patents and Productivity*, University of Chicago Press. 1984.

Cohen, W.M. , Empirical Studies of Innovative Activities, in Stoneman, P. (ed.), *Handbook of the Economics of Innovation and Technological Change*, pp. 182-264, Oxford UK: Blackwell. 1995.

Cohen, W.M. and Klepper, S., *A Reprise of Size and R & D*, mimeo, Carnegic Mellon University. 1994.

Dosi, G. and L. Marengo, Some Elements of an Evolutionary Theory of Organizational Competences pp. 157-178 in *Evolutionary Concepts in Contemporary Economics*, edited by R.W. England: University of Michigan Press. 1994.

Freeman, C. , *The Economics of Industrial Innovation*, London: Pinter. 1982.

Geroski, P. , Encouraging Investment in Science and Technology, in Cowling K. and Sugden, R. (eds.), *A New Economic Policy for Britain, Essays on the Development of Industry*, Manchester: Manchester University Press. 1990.

Geroski, P. , Markets for Technology: Knowledge, Innovation and Appropriability, in Stoneman, P. (ed.), *Handbook of the Economics of Innovation and Technological Change*, Oxford: Blackwell. 1995.

Geroski, P., S. Machin, and J. Van Reenen, The profitability of Innovating firms, *RAND Journal of Economics*,24(2): 198-211, 1993.

Geroski. P., and S. Machin, Innovation, Profitability, and Growth over the Business Cycle, *Emprica*, 20, 35-50, 1993.

Kamien, M.I. and Schwartz, N.L., Market Structure and Innovation: A Survey; *Journal of Economic Literature*, **13**, 3-37. 1975.

Leiponen, Aija, Competencies, Innovation and Profitability of Firms, *Economics of Innovation and New Technology*, Vol 9. Pp 1-24, 2000.

Lisa De Propris, Innovation and Inter-firm Co-operation: the Case of the West Midlands, *Economics of Innovation and New Technology*, vol 9, pp. 421-446, 2000 ,pp421.

Mendelson, Haim and Pillai, Ravindran R., Information Age Organisations, dynamics and performance, *Journal of Economic behaviour & Organisation*, Vol.38, 253-281, 1999.

Patel, P. and Pavit, K. , Patterns of Technological Activity: Their Measurement and Interpretation, in Stoneman P. (ed.) *Handbook of the Economics of Innovation and Technological Change*, Oxford, Blackwell.1995.

Pavit, K. , R & D, Patenting and Innovative Activities: A Statistical Exploration, *Research Policy*, **11** (1), 35-51.1982.

Pavit, K. *et al* The Size Distribution of Innovating Firms in the UK: 1945-83, *Journal of Industrial Economics*, **35**, 297-316. 1987.

Penrose, E. *The Theory of the Growth of the Firm*, London: Basil Blackwell. 1959.

Porter, Michael E., Competitive Strategy : Techniques for Analyzing Industries and Competitors, New York : Free Press, 1980.

Prahalad, C.K. and Hamel, The Core Competency of the Corporation, *Harvard Business Review, 1990.*

Prahalad, C.K. and Hamel, *The Competing for The Future*, Harvard Press, 1994.

Rothwell, R. and Zegveli, W. *Innovation and the Small and Medium-sized Firm*, London, Frances Pinter.1982.

Scherer, F.M. , *Innovation and Small Firms*; Testimony before the Subcommittee on Monopolies and Commercial Law, Committee on the Judiciary, US House of Representatives, 24 February 1988.

Soete, L.L.G. Firm Size and Inventive Activity: The Evidence Reconsidered, *European Economic Review*: **12**, 319-340. 1979.

Teece, D.J. Profiting from Technological Innovation, *Research Policy* 15 (6): 285-306.1986.

Teece, D.J., G. Pisano, and A.Shuen, Dynamic Capabilities and Strategic Management, Strategic Management, 18,(7): 509-533,1997.

REVIVING SMALL ENTEPRISES IN A GLOBALISED ENVIRONMENT: A CASE STUDY OF PUNJAB STATE IN INDIA

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ABSTRACT

In a globalised and liberalised environment, the problems of small enterprises have multiplied as both domestic and international competition has increased. Environmental regulations are forcing them to relocate and be environmental friendly. The promotion and protection policy of the Government via reserving products and providing subsidy etc. have lost their relevance. All this raises a question about the survival and competitiveness of small enterprises. The paper argues that the emergence of small enterprises in developing countries has an inherent logic. They emerge in certain localities and in certain sectors, use local resources, collaborate and cooperate in sharing resources and compete with each other in the market. There is a need to reinvent the logic of emergence of small enterprises in specific region and specific sector to face WTO induced problems. Regional and cluster focused approach is essential to make small enterprises competitive and innovative.

INTRODUCTION

In an increasingly globalized and liberalised environment, small enterprises in India are facing intense competition and problem of survival. First, it was the introduction of economic reforms aimed at injecting new forces of competition in order to induce greater industrial efficiency, which threw up new challenges to the small enterprises. Then, on account of WTO (earlier General Agreement on Trade and Tariff) the trade related reforms such as the removal of quantitative restrictions and substantial reduction in tariffs have increased international competition. Exports of small enterprises are facing problems on account of stringent technical and quality standards, anti dumping measures and tough competition from other emerging countries. Emergence of stringent environmental regulations at home has also forced relocation or closure of many small enterprises. Further, the programs and policies formulated by the Government of India to protect and promote small enterprises need to the changed because of WTO stipulations. This has raised some issues, which need detailed investigation: *Are small enterprises in*

India competitive enough to survive in the new WTO induced regime? Can they be competitive and survive without any support and incentives? If not, what type of support can be provided in the new environment? The present paper aims at examining these issues.

The paper argues that the only solution to the problems of small enterprises is to think in terms of innovation by moving upward on the learning curve and start creating new, different or better products, processes and service and looking for new markets. All this needs a systemic thinking and a holistic view of the whole situation. Examining small enterprises in a regional context will be helpful to understand their problems and providing solutions. The analysis of an enterprise in the regional context shows how prevailing opportunities may be tapped as different regions vary in terms of institutional and resources capabilities. Policy needs to be devised as per the strength of respective districts/region to support small enterprises. This requires an understanding of the linkages in industry, institutional support, physical infrastructure available, and the existence of social capital. This in turn will help individual entrepreneurs and firms to tap existing strengths in the regional network and reap advantages in terms of collective learning and clustering.

The paper has been divided into three sections. First section examines the impact of globalisation and WTO on industries and discusses the cluster approach to make small industries competitive. Section two discusses a case study of Punjab state in India wherein an analysis of the impact of WTO on four different industries, namely, textile, cycles and parts, hand-tools, and sports goods, in two major districts of Punjab is undertaken. Final section presents the conclusion and implication of the study.

INNOVATION, CLUSTER APPROACH AND SMALL ENTERPRISES

The overall impact of WTO on small enterprises[1] in India is either in the form of import of cheap goods in the country thereby increasing competition in the domestic market or increased restrictions and competition in the export markets. Measures suggested to overcome these problems fall in the categories of increase or decrease in custom duties, more subsidy, imposition of anti-dumping and other safeguards such as technical and quality standards, rationalization of tax structure, better provision of infrastructure and availability of finances and technology. Some of these measures are of short-term by nature and require immediate action. In the long term, all the entrepreneurs need to be more competitive by focusing on technology, quality of product and competitive price. They need to be innovative in their products, services and functioning (Kaul, 2001).

[1] The definition of small enterprises varies from country to country. In India, Small Scale Enterprises(SSEs) comprise of different segments such as small scale industries(SSIs), ancillary undertakings(ANC), tiny units(Tiny), export oriented units(EOU), women enterprises(WE) and small scale service business oriented enterprises(SSSBE). The criteria adopted for defining these enterprises is the single criterion based on the historical value of investment in plant and machinery. The definition is revised from time to time. As per the definitions announced in 1997, investment in plant and machinery was limited to Rs30 million for SSI, AMNC, EOU and WE, Rs. 2.5 million for Tiny units and Rs. 0.5 million for SSSBE. The definition has been revised again on 24th December 1999 and the investment ceiling reduced from Rs. 30 million to Rs 10 million. For Tiny enterprises investment limit has been retained at Rs 2.5 million and also no change has been announced for SSSBEs as this segment is considered for attention through a special package of incentives for development.

But how can small enterprises with their inherent weaknesses in the form of small size and paucity of resources be more competitive and innovative. There are two mechanisms by which small enterprises can succeed. First, they can become a part of the value chain of an industry. Second, they can become part of a larger social community like the Third Italy or Silicon Valley. In the later case, small enterprises overcome the problem of their limited resources by turning to community and localized knowledge networks. They obtain size advantages through new form of economic association such as: formal and /or informal networks, clusters, or joint ventures and strategic alliances.

Even in the studies on Innovation, it is found that innovation is an evolutionary, non-linear and interactive process between the firm and its environment (Kline and Rosenberg,1986; Dosi, 1988). The concept of non-linearity implies that innovation is stimulated and influenced by many actors and sources of information, both inside and outside the firm. It is not only determined by scientists and engineers working in R&D or the top-management, in addition, there are interactions feeding back the experience of production, marketing and of customers into earlier phases of the innovation process. The interactivity of the innovation process refers to the internal collaboration between several departments of a company(R&D, production, marketing, distribution etc.) as well as to external co-operations with other firms(especially with customers and suppliers), knowledge providers(like universities and technology centres), finance, training and public administration. These are all contributing to a firm's capacity to innovate.

This led to the introduction of the concept of 'innovation systems' (Lundvall, 1992; Edquist, 1997). Much of the recent literature on innovation systems (Nelson,1993 and Lundvall,1992) stress the fact that national(regional) specificities of patterns of interaction between users and producers of innovations are at the very core of what defines a national(regional)innovations systems(Freeman, 1995, Lundvall,1988; 1992, Nelson, 1993, Edquist, 1997). Being important constitutive elements of national systems of innovation, these patterns of interaction are regulated by institutions in terms of rules, norms and habits. The crucial relationships in a national system of innovation are reflected in structures discernible in production and trade specialisation patterns. However, it has to be kept in mind that the national system of innovation is an open system. Increasingly, interaction in connection with innovation can be expected to take place across national borders.

This concept initially applied to the national level[2] is being used at regional level (Braczyk et al., 1997). At the regional level studies on innovative regions and milieux have shown that under certain conditions the innovation process becomes embedded in the region, leading to the formation of regional innovation systems[3]. The regional

[2] The studies have shown that innovation systems differ significantly between countries, depending on their economic structure, knowledge based and institutional specificities(Nelson,1993).

[3] The following factors and mechanisms have been identified: 1.Regions differ in their preconditions for innovation such as qualification of the labour force, education, research institutions, knowledge externalities and spillovers. Many of these factors are immobile, giving some regions advantages over others. 2. Industrial clusters often are localised, giving rise to networks and specific innovation patterns in regions. 3.A common technical culture may develop in a local production system through collective

innovation system recognises a growing perception that the regional level of economic coordination has an important role to play as a functional correlate to the increasing power of globalisation as a general economic force, especially with respect to innovation. The regional innovation system is primarily an integrated network of University, Government and Industry from the regional level (agglomeration of states or districts amongst states) down to the state and local district level. The objective of the regional innovation system is to undertake a holistic perspective of the existing resources available in the region to boost the performance of different enterprises. The concept of regional/national innovation systems directs the attention of policy makers to possible systemic failures that may impede the innovation performance of industry. The lack of interaction between the actors in the system, mismatches between basic research in the public sector and more applied research in industry, malfunctioning of technology transfer institutions, and information and absorptive deficiencies on the part of enterprises may all contribute to poor innovative performance in a region/country (OECD,1998). The Regional Innovation System would, thus, provide societal development through focus on enhanced co-ordination between university, industry and government for sustainable innovation generation at the cluster level.

In the developing countries, the emergence of small enterprises has an inherent logic. They have emerged in specific regions and are sectoral specific. Overtime, there has been agglomeration of firms in some regions, which evolve, in the form of industrial clusters. This results in regions becoming known for specific sectors and activities. Firms are specialized in one industry. Specialized and sector specific factor markets, as well as an assortment of ancillary services also locate within the region. In many cases such clusters have a local historical tradition rooted in peasant farming or craft production and a custom of self-employment. Where backward and forward linkages are extensive within the locale, and have taken shape over a prolonged period, such sectoral clusters acquired depth. This adds to the competitive advantage of the region.

In India, the government has initiated several measures overtime such as reserving some product exclusively for small enterprises to produce, providing subsidy in inputs, provision of finances at lower rate of interest, and filling of infrastructure gaps through the setting up of Industrial Estates, District Industrial centres, Software Technology Park etc to solve the problem of small enterprise and make them competitive. There have been several problems and weaknesses of these programs because of that the full benefits of these have not been realized by small enterprises. However, they resulted in agglomeration of small and medium sized enterprises in certain localities. There are numbers of clusters of small and medium size enterprises all over the country. Some of these clusters are in the traditional sector and products; others are emerging in the new technology areas. To face WTO related problems and making small enterprises more efficient and competitive, the resources and institutions and their effectiveness in supporting the small enterprises needs to be examined. The institutional gaps need to be

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learning, leading to an innovative milieu. 4. University-industry links and knowledge spillover often lead to regional high-tech development. 5.Regional policy is taking a more active role in the process and is providing innovation support through specific institutions and agencies.

filled. Further, there is need to develop policies to bring integration and generate and strengthen the culture of collective learning.

The presence of a local or regional cluster/ network holds several advantages in resource acquisition for small enterprises. One of the advantages of regional networks for small firms is that locational proximity reduces the cost and increases the frequency of personal contacts and serves to build social relations. Professional relationships are often embedded in these social networks. These professional and social networks are especially important in the process of innovation. An idea for a new product or process may originate from individual or small groups within or outside an enterprise. The development of ideas into a usable product or process requires the combination of knowledge from several perspectives. Face-to-face discussion and knowledge sharing either within an enterprise or across it facilitate this development of ideas. The commercial exploitation of a new product (or process) also requires interaction between and the involvement of employees of an enterprise and members of the community at large—buyers, suppliers, and even engineers and scientists from rival enterprises. *Thus the participation of small enterprises in regional social networks provides an important opportunity for knowledge acquisition and sharing.* Regional networks also aid the transmission of job-related information and thereby facilitate the movement of people across enterprises. Besides rich communication across enterprises, inter-enterprise mobility of engineers aids the exploitations of new innovations and the sharing of knowledge between enterprises. Mobility within a region is also enhanced by personal costs of job switching within a region that are lower than those for interregional mobility.

In India, most of the clusters are at the initial stages of development. Except a few clusters like, Ludhiana, Tirupur, Banglore etc, others are stagnating and declining. With these clusters the fate of small and medium size enterprises is also declining. In order to promote the small enterprises, it is essential to strengthen the clusters. Cluster helps the weak region in three crucial ways (Lundvall and Borras, 1998). First, it builds up the 'social capital' in the region, exploiting the learning potential of individual and human resources. Second, it expands the (generally very weak) institutional capacities of the regions. Third, it enhances partnerships between government and private sector players in the region, and devising collective strategies. Making small enterprises more competitive by strengthening infrastructure and providing institutional support in the clusters is all WTO compatible.

To summarize, the emergence of small enterprises in developing countries like India has an inherent logic. They emerge in certain localities, use local resources, collaborate and cooperate in sharing resources and compete with each other in the market. There is a need to reinvent the logic of emergence of small enterprises in specific region and specific sector to face WTO induced problems. Regional and cluster focused approach is essential to make small enterprises competitive and innovative.

CASE STUDY OF PUNJAB STATE

Status of Industrial Units and their Concentration: An Overview

Punjab has been one of the most dynamic States in India. It is an agriculture dominated state. Manufacturing contributes around 22 percent of the Gross output of the state. Small scale industries dominate the industrial scene of the State. Its contribution to the export of Punjab has been more than the large scale and medium scale units.[4] Table 1 shows the growth pattern of small-scale units since 1985-86. There are around 200,000 SSI(Small Scale Industrial)units, which provide employment to around 900,000 workers. This is more than 75% of the total workers employed in the industrial sector in Punjab. With an investment of Rs. 42.50 billion, it is producing around 35% of the industrial production in the state.

There is a steady decline in the share of SSI in total production of the state. During the decade of the 90s, the growth of the SSI units has been steady but large units have experienced higher growth. The employment growth in this sector was higher than in the large sector in most years except during the period 1993-94 to 1995-96 and in 2000. Growth in fixed investment and exports has been lower in the small-scale sector.

Table 2 presents the regional distribution of SSI and Large and Medium units in the state. It is interesting to note that the four districts of Ludhiana, Amritsar, Jalandhar and Patiala account for more than 50% of total SSIs, 56.08% of employment, 60% of production and 50.45% of total fixed investment. Similarly, these four districts along with Ropar district are contributing more than 65% of units, 70% of employment and 60% of production. Sangrur and Kapurthala are also contributing in a big way to the total production through large and medium sized enterprises. A further study reveals that the role of SSI sector in an overall production is higher than the large scale in district like Amritsar (66%), Jalandhar (80%), Gurdaspur (60%), Faridkot (80%), Fatehgarh Sahib (60%) etc. In Ludhiana, Firojpur and Mukteshar, the share of large and small sector is more or less equal. In rest of the district, namely Patiala, Ropar, Hoshiarpur, Sangrur, Kapurthala etc the share of large-scale industries is higher than small scale. Majority of exports in the state is contributed by Amritsar, Jalandhar and Ludhiana where the presence of SSI is dominating. Employment generated by these districts through, SSI is very large. This speaks of the importance of SSI (small scale industries) for the state.

Cluster Studies of Four Industrial sectors

In the following paragraphs four industrial sectors in Punjab have been studied for a detailed analysis. The performance of the industries has been examined in terms of growth in the production, employment, number of units, and exports. Examining the competitiveness of small-scale industries is difficult because of non-availability of reliable data. To overcome this problem, an attempt is made to examine the

[4] In 1966, Punjab state was reorganised. Major large scale industrial centres like, Faridabad, Yammunanagar, and Sonepat went to Haryana. Reorganised Punjab was left with only small-scale industries .

competitiveness of the selected industries with the help of two different types of data sets. First, data provided by the Directorate of Industries, Punjab has been used. The data is related to number of large and medium-scale and small-scale units, employment, fixed investment, production, and export. The second data set is collected with the help of General Manager, District Industrial Centre, through a questionnaire about the perception of industry and their problems.

Table 1
Status of Industrial Sector in Punjab

A. SMALL SCALE SECTOR							
S. No.	Description	1985-86	1991-92	1995-96	1998-99	1999-2000(P)	2000-2001(P)
1	Units (Working)	97517	176378	191025	197344	199035	201235
2	Employment (Nos.)	464809	711417	802320	864592	879788	900789
3	Fixed Investment (Rs. billion)	7.39	14.99	22.16	33.61	37.50	42.50
4	Production (Rs.billion)	21.51	44.37	97.14	144.44	177.50	195.25
5	Export (Rs. billion)	1.57	5.45	13.50			
B. LARGE/MEDIUM SECTOR							
1	Units (Working)	292	395	526	602	626	658
2	Employment (Nos.)	132174	193789	210448	227929	238000	251890
3	Fixed Investment (Rs. billion)	14.90	45.52	87.44	140.39	155.00	170.00
4	Production (Rs.bilion)	25.35	77.09	166.56	253.76	324.50	356.00
5	Export (Rs. billion)	0.88	3.56	12.15			
C. TOTAL INDUSTRIAL SECTOR							
1	Units (Working)	97809	176773	191551	197946	199661	201893
2	Employment (Nos.)	596983	905206	1012768	1092521	1117788	1152679
3	Fixed Investment (Rs. billion)	22.29	60.51	109.60	174.00	192.50	212.50
4	Production (Rs.billion	46.86	121.46	263.70	398.20	502.00	551.25
5	Export (Rs. billion)	2.45	9.01	25.65	0	0	0

- Source - Punjab National Bank, Feroze Gandhi Market, Ludhiana
- Adapted from Kaul, 2001

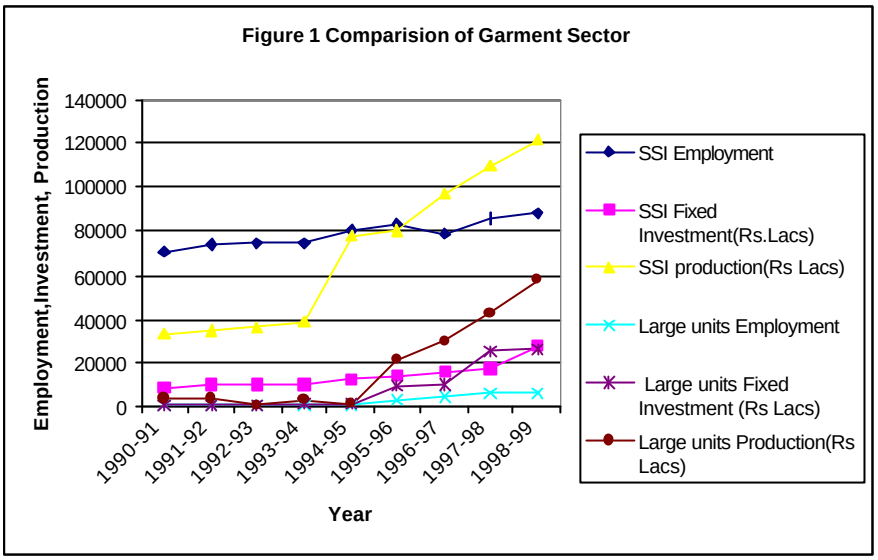
Textile Sector

Several districts in Punjab have units engaged in textile and textile products. Ludhiana and Amritsar are the major centres of Hosiery and Garments. Both SSI and large and medium sized enterprises are significant players in this sector. During the last 10 years, SSI units have grown from 7232 units to 10498 units. The number of workers employed

Table:2
Status and Concentration of Large and Small Scale sector in Different District in Punjab

District	Large & Medium Sector No. of units and Employment	Large & Medium Scale Sector Production (in Rs. Crores)	Small scale Sector No. of Units and Employment	Small scale Sector Production In (Rs. Crores)	Exports (Rs Crores)	Concentration of type of industries
Ludhiana	147 (68040)	6133.27	41852 (262050)	4712.58	1879.21	Bicycles & bicycle parts, Automobile parts, Hosiery goods, sewing machine & parts, Home appliances, machine tools, Readymade garments, Hosiery needles, Rubber goods, Label (Metal &Cotton), Chemicals goods, oil engines, Agricultural implements, electronic goods, Tractor parts, cycle tyres/tubes, Plastic goods.
Amritsar	56 (14799)	867.72	27027 (112065)	1817.95	552.98	Power Loom Weaving, Weed & Machine Screws, Radio & Transistors, Agricultural implements, Paints & Varnished and Dyes, Pharmaceuticals, printing machinery, Electric fans, Textiles, Chemicals, Soap, Acids
Jalandhar	30 (9533)	492.88	27545 (141043)	1804.61	825.08	Surgical instruments, sports goods, hand tools, Automobile parts, Cocks & valves, Pipe fittings, Bus body building, leather tanneries, Ball bearings, publication, Switch & switch-gears, and rubber goods.
Patiala	107 (28608)	3550.41	12441 (43421)	1135.11	32.46	Automobile parts, Sewing machine parts, copper wire, Electrical goods, Bakery machinery, cutting tools, Biscuits, shoes.
Ropar	60 (23545)	5535.42	8659 (28034)	376.36	12.07	Agricultural implements, Pharmaceuticals, Tractor & parts, electronic components, Electrical components
Bathinda	14 (4740)	835.19	6225 (18364)	380.81	16.28	Cotton ginning and processing, Pharmaceutical, Flour mills
Faridkot	4 (1346)	39.04	2482 (11155)	164.95	17.43	Agricultural implements, Cotton seed oil, rice bran oil
Ferozepur	17 (7369)	495.59	6902 (27142)	471.50	-	Cotton ginning & processing, Grey board, flour mills, Agricultural implements, Millboard
Gurdaspur	18 (4812)	307.53	11471 (53358)	589.35	20.18	Agricultural implements Conout pipes, Machine tools, soap & Chemical product oil, castings Brassware
Hoshiarpur	33 (14694)	1027.52	9084 (28683)	168.51	75.45	Rosin & Turpentine oil, paints & Varnish, Sugar, Agricultural implements, Pressure cookers, Paper and Paper board.
Kapurthala	9 (18023)	1813.00	7734 (24809)	305.39	172.40	Agricultural implements, Pressure cookers, Fans, wood & Machine Screws Electrical goods Rice Mills, Rubber goods, Bolts & Nuts, and Diesel engines.
Sangrur	50 (17599)	1684.22	16842 (45044)	732.43	4.56	Agricultural implements, Tractor parts, cycle parts, Sweing machine parts, Milk products, Chilled rolls
Fatehgarh Sahib	31 (4189)	764.98	3831 (17654)	1051.74	7.56	Steel Re-rolling mills, Oil pump parts, Sewing machine parts, Truck body building
Mansa	-	-	2719 (8543)	273.67	1.92	Agricultural implements, cotton Spinning
Moga	5 (1895)	870.62	2612 (16404)	231.81	5.40	Agricultural implements, Milk Products
Mukatsar	7 (1921)	154.03	4004 (16631)	172.63	2.31	Cotton yarn, Rice Bran, Oil Paper
Nawan Shahar	14 (6816)	804.18	3914 (10192)	55.08	1.24	Light commercial vehicles, pharmaceutical, Cotton/synthetic Yarn, and Sugar
Total	602 (227929)	25375.60	195344 (864592)	14444.48	3629.13	

Adapted from Kaul(2001)
Note: Units
One Crore = 10 million
10 lacs= 1 million
1 lacs=.1 million



has increased from 71,044 to 87,942. Production has increased 2.5 times during the same period (at constant price of 1993-94). The large and medium sized units have increased from 2 to 17 units and in the last three years the increase in the number of large units has been very steep. The production has almost expanded by 10 times. This shows that although small units are still dominating in this sector (in terms of employment and production), the rise of large and medium size enterprises is very fast (see graph). A further analysis of data shows that the SSI sector has improved its efficiency overtime marginally by using more capital per employee. On the other hand, the large and medium sector has become more capital intensive and less productive over time.

This sector contributes to the extent of around 12 per cent of the total exports of Punjab. Export of Hosiery and Garments is around 2.7 percent of India's export in the year 1992-93. This increased to 3.5 percent in 1995-96. However, the share of this sector's export to the total exports of India has declined in the year 1998-99. Comparing the three years' average growth rate of export of Punjab at two points of time (1993 to 1996 and 1996 to 1999) with growth rate of India's export tells us that during the last few years Punjab's competitiveness has *declined* within India.

To get an insight of the industry, primary information was collected through a questionnaire from District Industrial Centre in Ludhiana regarding Knitwear industry. This industry has a diversified product portfolio. The quality of their output is comparable to the best in the world. They import around 40 % of their raw material requirements from countries like Australia, New Zealand, Japan and Korea. Duties charged by the Government on import of raw materials are perceived to be quite high. The prices of imported products are close to half of the domestically produced ones. Plus, imported brands are quite well known, such as Benetton, Nike, Pringles etc. High cost of

production is partly because of older/ obsolete technology used in operation and partly because of high duties on imported raw materials[5].

The scope for increasing exports is high. This requires the industry to look into those areas where they can become more competitive. Technology is one of the areas that needs to be analysed. A large number of units are using modern technology, which is imported from Europe, China, Taiwan, Hong Kong etc. It is recognised that the imported machinery has improved quality of the product. There is still scope for improvement.

However, price of technology may be a hindrance for some of the industry players. The industry is taking steps to improve its capabilities. Many firms are getting ISO certification.

However, the industry players feel that they should be provided with cheap inputs. The taxation on the final products and then on the by-products is not a rational one. They strongly feel that Export incentives must not be withdrawn. Infrastructure should be made available to the ones in the business at a cheaper cost than what is presently available. There is a need of skilled manpower that is trained to meet the industry requirements. Some solutions can be – modernisation of the industry as a whole and augmentation of its productive capacity in selected segments (using modern machines) and setting up of knitwear parks. A trade fair complex may be set up. 100 per cent depreciation should be made applicable to the plant and machinery.

Specific demands made by the SSI unit-holders are: custom duties reduction on raw materials, higher custom duties on finished products, anti-dumping duties, imposing standards on imports (MRP on products), (Blend and garment), R&D cum training centres, and changing labour laws.

There is no specific institute providing R&D assistance to the industry. Only one testing facility - under the Textile Committee - is located here. In addition, the industry feels that there is a shortage of skilled manpower. The industry is confident that with some infrastructure support they can match quality, cost and productivity standards of international players. Modernisation of the industry as a whole and augmentation of its productive capacity in selected segments (using modern machines) and setting up of Knitwear/Apparel park. A trade fair complex may be set up. One hundred per cent depreciation should be made applicable to the plant and machinery.

The enterprises having latest technology can focus on the upper segment of the market along with the big brands, while small entrepreneurs can concentrate on the lower segments. There is a need to develop indigenous technology to avoid dependence on the West. Establishing linkages with Department of Textile Engineering of IIT, Delhi, Textile institute at Bhiwani, Punjab, NIFT etc. can be given some serious thought.

[5] Cost of Imported raw material is approximately 40% of total cost of all raw materials used.

The availability of modern technology is considered important. Entrepreneurs are attempting to develop latest technology by copying fabrics and visiting abroad. This route may become difficult with the strengthening of the patent regime. However, it shows reverse engineering skills which need to be developed into creative imitation and then on to innovation. In addition to providing financial assistance to the industry for purchase new technology at reduced import duty, some institutions need to be developed to support research and development. This will help this sector grow as more innovative and competitive.

A positive aspect of this cluster is the existence of co-operative spirit among producers. There are 20 Associations here and are thought to be doing excellent work. They are playing a key role in strengthening the capabilities of the industry. They can be an example for other associations in other industries. There have been collective programmes for exposure and information. Delegations have been sent to developed countries for exposure and consultants from overseas have been invited for sharing expertise and experience. A newsletter, "Knitwear club update", is also published on a monthly basis. They organise seminars and training programmes on quality, ISO, E-commerce etc. There has been joint participation in the national trade fairs as well. There is also an association, with 150 members. The association can be developed into a good mechanism to develop a spirit of collective learning. The association can establish contact with other institutions like Engineering colleges and with NIFT or the Fashion and Textiles College at Mohali to get technical support. All this help will help in making this sector in Amritsar more innovative.

Cycles and Parts Sector

Cycle and Parts industry located in Punjab consists of both small scale industries(SSI) and large & medium sized enterprises. The total number of SSI units has increased during the last 10 years from around 2,997 units to 3,753 units by 1998-99. The graph below illustrates that SSI units employment has increased. Employment has increased from 38,054 to 45,335. Production has increased 5 times at constant prices in the last 10 years.

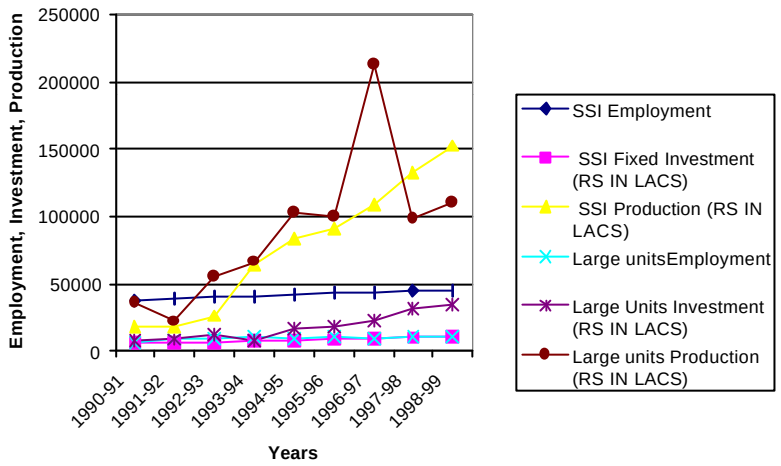
No increase in the large and medium sized units has been recorded. Rather, their number has declined from 7 to 6 units. The increase in the production is almost 2 times. The role of the small sector in this sector is substantial. The analysis of data shows that the SSI sector has improved its efficiency overtime by using labour more productively. On the other hand, the large and medium sector has been growing in size and becoming more capital intensive over time.

The industry is concentrated in Ludhiana. There is large number of units. It is found that the technology presently used by the local manufacturer is outdated. The ISI (Indian Statistical Institute) standards are the main source of reference. Very few entrepreneurs have adopted the ISO certifications. The manufacturers follow the specifications given by the Exporters. However, it is recognised that the present technical standards used by the manufacturer are not upto the expectations of the global players. Hence, there is a need for the R&D centre, Central tool Room and technical institutes, which need to be updated

with the latest technology, which are comparable with the developed countries. One R&D centre set up by the Government with the help of UNDP is not providing R&D support. The Centre in itself need renewal as all its technology and machinery is now outdated. No patented technology is available. New technology can be taken from Taiwan and China. It can reduce the manufacturing cost substantially. Further, they need finances at low rates.

Tariff duty on Bicycles is 44 per cent and bound rate is 40 per cent, in case of Bicycles parts, the duty is 67.08 per cent and bound rate is 40 per cent. With increased competition in the domestic market and in the global market, this sector needs special focus. They need mainly R&D support to make their product more cost effective and of

Figure 2 Comparision of Cycle and Parts Sector



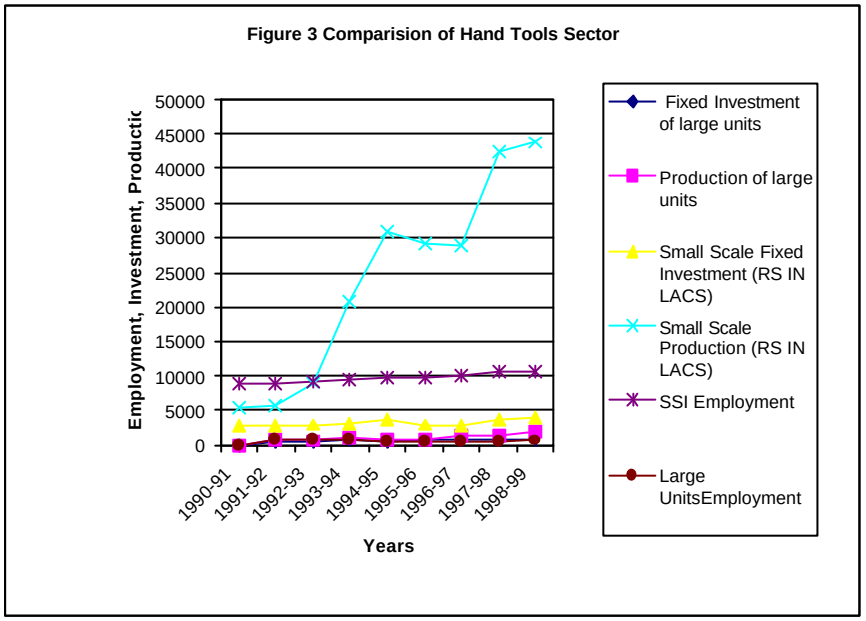
better quality. Industry does not feel threatened from imports. There is no scope to increase tariffs any further. Smaller units are interested that Government should strictly implement the policy of reservation of product for SSI

In Ludhiana, a number of large and medium size cycle manufacturing units are also operating. The linkages of large with small units can be used effectively to promote it as an innovative cluster. Threat from Chinese products can be used by the Government to motivate the industry to think in terms of innovation. There is no dearth of proactive and dynamic small entrepreneurs in this sector. They need vision, support and encouragement. Renewal of existing R&D centre and setting up of new of institutions will promote the industry in this cluster.

Hand Tools Sector

Hand tools sector in Punjab is important. It consists of both SSI and large and medium sized enterprises. Total number of SSI units has increased during the last 10 years from around 930 units to 1158 units by 1998-99. The employment has increased from 8731 to 10733(see graph). The production has increased more than five times during the same period at constant prices. Number of units in the large and medium sized units has increased from 2 to 5. This shows the predominant role of the small sector in this sector. The analysis of data shows that the SSI sector has improved its efficiency overtime by using labour and capital more productively. The large and medium sector has been growing in size and becoming more capital intensive over time.

Figure 3 Comparision of Hand Tools Sector



Jalandhar is the main centre of Hand Tools industry. Domestically manufactured hand tools products are around twenty-five per cent costlier than the imported product. The part of the problem may be the raw material imports from Europe at higher import duty(i.e. 25%). Though the proportion of imported raw materials is small, yet to make these units more competitive, it should be removed. Another reason for the higher cost of domestically produced hand tools is the low technology used which is not comparable to global standards. Though the cost of new and better technology is high, it can reduce cost of production by 10-20 per cent. The industry plans to buy good quality machine tools and need support for that.

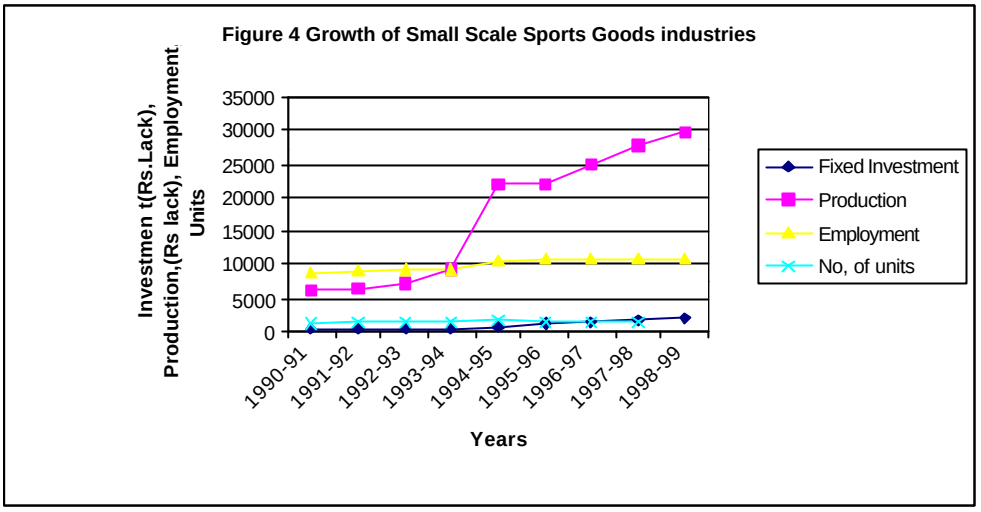
Despite competition in the international market, Indian businessmen feel that the scope for exports is good. Responses from exporters indicate they expect no problems from WTO. They are quite confident of their competitiveness. However, they mentioned that their main problems include: High transportation costs, Taxation (Octroi/Freight to

Bombay etc.), Need for information about other technical and quality standards, Inadequacy of the existing R&D support structure. In fact, no institutional support is being given. There is a strong case for institutional support for R&D , Non-availability of finance at lower interest rates from the banks, Technology and quality standards may prove to major impediments, Standardisation is conspicuous by its absence. Help of the BIS or the ISO must be sought, Competition from China. In view of the aforesaid problems it is all the more expedient for industries in this sector to co-operate and work together as a cluster to face common challenges.

Jalandhar is a large district. A number of educational institutions are located there. There is one Government Engineering College. However, it seems there are no linkages between industry and other institutions. The role of association is also not known. Industry demands a rise in custom duty on the imported product from the existing 67 per cent. It is not possible to increase it, as the WTO bound rate is 40 per cent. However, there is a need to provide better infrastructure especially, power, subsidised freight to Bombay port, lower railway freight, changes in labour laws. Keeping in view the growing competition, it is important that this sector should focus on innovation. The role of technology is widely recognized. Government can help in procuring latest technology to these units. But at the same time, it is important to think in terms of becoming more innovative. Better linkages among the existing educational institutions, government institutions and industry can be used for this purpose. New Research and Development center can be established in joint or with the help of Government.

Sports Goods Sector

This sector is a predominantly SSI based sector. The graph below shows that the number of SSI units has increased during the last 10 years from around 1352 units to 1622 units. The employment has increased from 8716 to 11018. Fixed investment for the same period has witnessed a gradual rise and the production has leaped 5 times during the same period from Rs 83.42 crores to Rs 221.65 crores at constant price of 1993-94. Analysis of the data shows that the SSI sector has improved its efficiency overtime by using same labour and more capital. The export from this sector contributes around 4.4 per cent of the total exports of Punjab. Its contribution to total export increased from 3.7 per cent to 6.2 per cent by 1996-97. During the last two years, it has declined first to 5.9 per cent and then to 4.4 per cent. It's share to the total sports goods exports of India increased from 40.1 percent to 53.2 percent in 1998-99. Its three years average growth rate at two points of time (1993 to 1996 and 1996 to 1999) with growth rate of India's export has been impressive. In the first period it was 191.2 percent in comparison to India's growth of export of 143.4 percent and in the second period, it was 36.5 per cent in comparison to negative 22.9 percent of India. This sector is quite competitive in India. However, declining growth rate during the last few years shows that internationally competition is becoming tough.



This industry is concentrated in Jalandhar. About 60 per cent of the sports goods that are manufactured comprises of different kinds of inflatable balls. Besides inflatable balls, the other sports goods that are largely manufactured are badminton racquets and shuttle cocks, cricket bats and balls, different kinds of gloves and protective equipment. Although most of the sports goods are primarily manufactured in industries, it has been seen that the big factory owners and exporters manufacturing different kinds of sports goods, are many a times not able to cope with their large export orders. Therefore, they shift a part of their production to small unregistered units. These small home-based units operate mostly with the services of the family members and a couple of workers are hired occasionally.

Imported raw materials form 40 per cent of the total and are subject to the import duty of 50-60 per cent. Perhaps that is why prices of domestically produced products are substantially higher(more than double) than the imported one. International brands are to be fought. Branding tends to induce customer loyalty. As on now 50 per cent of both domestic and export markets have been captured. But the potential for exports is very high. Technology and quality constraints are important export impediments. As of now, old technology is being used. New technology though very costly can cut costs by as much as 40 per cent. Obviously, technological upgradation is going to be the key. Industry demands restructuring of labour law, reduction of bank rates, and fewer formalities in financial aid (collateral) a new technical guidance centre. The tariffs rate are 25% where as the bound rates are 40%. There is a scope to increase tariffs to protect the industry. However, technological improvement is the key in the long run.

The institutional support is unknown in this cluster. *Entrepreneurs feel helpless and want new institutions for support.* The possibility of leveraging the existence of the famous sports institute at Patiala need to be looked into. The industry can be linked to the institute. Thus, the peculiar requirements of the sports person will be known, and the product development will be easier. Further, establishing linkages with the

B.R.Ambedkar Engineering College at Jalandhar or to the Thapar Institute of Engineering Technology at Patiala may be helpful for the industry. The Mechanical engineering faculty can be of tremendous help in product development.

There exists a co-operative spirit among the industry members. There are as many as four associations. Such unity is strength. Together, they can lessen risks associated with new product development. Plus, Punjab state is a front runner in sports. If products are further developed and high quality image is established then, they can become suppliers to not only the Punjab teams (hockey, football, etc) but also to the CRIF, CISF and Haryana(another state in India) teams and later to other states' teams, Indian Railways teams and private teams such as JCT Phagwara, etc. It is significant to note that many of the players in these teams (e.g. Army, CRIF etc) and many of the coaches belong to Punjab. This Punjab connection can be a valuable resource. The entrepreneurs need vision and institutional support to be more innovative.

Region-wise Cluster-focused Solutions within Punjab

The dynamism of a region depends on its learning capabilities which depends on the innovative skills of industries, institutions and regional authorities. The impact of the WTO crisis depends on the strength of the region and its learning capabilities. With a strong willingness and capabilities a region can overcome any crisis and emerge to be strong one. As major concentration of all these industries in Punjab is in selected districts, viz., Ludhiana, Jalandhar, Amritsar, Ropar and Patiala, these regions and their learning capabilities will be put to a test. The government policy and actions to support these industries need to be the devised as per the strength of the respective districts. The policy intervention needs an understanding of the industry, to be more specific, its linkages, institutional support and other physical infrastructure available, synergy utilising existing resources, the existence of social capital. In this section, an attempt is made to examine these issues briefly.

Ludhiana As A Cluster

Ludhiana is a major industrial district in Punjab. Both small and large-scale units are located and contributing equally to the total industrial production of the district. Fifty percent of exports from the state are from this district. The industries located in the district are linked closely with each other horizontally and vertically. The major industries in the district are hosiery and garments, bicycle and parts, sewing machines and parts, auto parts, machine tools etc. These units are closely linked with each other. Hence, a holistic view of the district and industry gives a better view of its strength in facing the problem. It is found that the industries located here are learning fast. Knitwear industry, Cycle and Parts, sewing machines are few examples. They are aware of the problem and taking steps to improve its technology. However, one problem emerging out of the existence of different industry is the purchase of second hand machinery. Knitwear segment wants to purchase second hand machinery so that they can upgrade their quality at a lower cost. Machines tools sector which are lagging behind in

learning curve, finds it a threat. This problem is to the resolved amically by supporting machine tools industry to move upward on learning curve.

To upgrade the technology and standards of the industry, institutional support is required. In Ludhiana, the government has established a large number of institutions. However, the information collected from industry reveals that the qualities of these institutions need to be upgraded. This seems a serious problem of the Ludhiana where the R&D centre has turned out to be obsolete. They should have been renewing themselves to keep update. Upgradation of these institutions will have wide ranging effect on the quality and technology of the industry located in the district. There is also a need to set up new institutions. The Government needs to encourage the establishment of such specialised institutions by private initiative supported by industry associations and the government. Fund allocated by the Government to set up institutional support is all WTO compatible.

The role of association is very important. To face WTO related crisis, a collective strategy is to be evolved. Small scale unit's in particular need a co-operative spirit to overcome their weakness of size. By combining and joining with other to pool their resources they can compete and grow fast. To start with trade association is an effective media to combine their efforts. In Ludhiana, it is observed that there exist a co-operative spirit among the members. Knitwear industry is a very good example. Instead of focusing on just lobbying with the government, the association can create confidence among the members, can help in creating networks of few units to work on specific project of cost cutting, exporting, upgrading technology etc. Information dissemination is the key function of the association.

Solving these problems need innovative solutions. Existence of co-operative spirit among members speaks of high social capital in Ludhiana. This is an asset, which can be used to face the crisis. Even in the past also, industry in Ludhiana, has faced and overcome problems linked with break up of USSR and its adverse impact on Knitwear industry. Carrying the same spirit, industries located in Ludhiana can take a lead in upgrading its existing strength. A long-term view should be taken to face the crisis.

Jalandhar Cluster

Similar to Ludhiana, Jalandhar is also a big centre of SSI units. The export from Jalandhar is around 22 per cent of the state. It is a cluster of hand-tools, sports goods, surgical instruments, leather goods, automobile parts etc. A number of institutions have been created in the district by the government. It is observed through the responses of industry that institutional support is not enough. Even the quality of existing R& D institutes needs to be improved. Unlike Ludhiana, co-operative spirit in some sector is missing. Though, there are a number of associations in Jalandhar, they are not as effective as associations in Ludhiana. The linkages among the institutions and industry need to be strengthened.

CONCLUDING OBSERVATIONS

Small-Scale industry though concentrated in few sector and in few district it contributes significantly to the employment, production and income of the state. Large and medium scale units that have an important place in the industrial development are also located in several parts of the state. However, it is found that few district are dominating as far as industrial units are concerned. The role of government policy in a more globalized and integrated world economy is to facilitate the growth of industry and makes them more competitive. The government role and effectiveness of its policies can be measured at the regional level. Both existing industrially developed districts and the peripheral region lacking industries need to be supported equally. Both these have positive and negative features. The existing industrially advanced districts have grown in over time focusing on selected industries. A cluster-focused policy will be helpful in this respect. These districts can be developed after examining the existing resource both physical and institutional. The gaps and problems in their development can be identified. Filling the gap in terms of industry using value chain approach and developing different institutions can help and promote such regions. At the same time, regions that have no particular focus of industry can take a different route to grow provided relevant institutional support is provided. A long-term view is to be taken by policy makers.

There is an evolutionary process in the development of regions which starts with the emergence of specialised region and move on to industrial district, and then on to innovative clusters. There is learning capability and process in every region. None of the districts in the state of Punjab has moved on to an innovative cluster. There are many regions which emerged as a specialised region and need to be developed as industrial district. The role of the Government is to identify the need of the region and take appropriate steps.

With the emergence of WTO the State Government needs to take corrective steps to make its promotional policies WTO compatible. The state government in Punjab to support different industrial needs has created number of institutions. The quality of the support provided by these institutions, however, need to be examined. There is also a need to keep an upgrading the quality of these institutions. One more thing that is observed in the institutional support is a lack of linkages between the institutions. There is an urgent need to promote the linkages among educational institutions, Government, research laboratory, and the industry. More interactions will result in improved information systems, quality of product and process and more innovation. In the wake of WTO regime, some of the foreign products are making inroads into the Indian domestic as well as exports market. Both small and large scale units are to adopt two pronged strategy first, to improve its competitiveness in the domestic market by improving the quality of its products and at the same time to be cost competitive; secondly, to compete in the international market. They require developing a vision/orientation of both domestic market and foreign market. Government supports need to be developed keeping in mind this focus, Policies required to strengthen

innovative, entrepreneurial and long term capabilities of entrepreneurs which are WTO competitive. Others are to be removed.

One of the reason attributable to the declining dynamism of the State of Punjab is the dominance of small scale sector and the non-dispersal of industry in other less industrial district. However, with focused vision and effective planning, these seeming weaknesses can be turned into strengths for the state. *The presence of such a vibrant and expansive small-scale sector depicts the wide abundance of entrepreneurial skills in the state.* Additionally, these *small firms are more innovative than larger ones.* Presently, most small enterprises in Punjab operate in traditional manufacturing areas and only reverse-engineer various products. *There is an urgent need to develop a mechanism so as to leverage their reverse engineering skills and help them evolve into 'creative imitators' and, ultimately, into 'innovators'.*

To be innovative and competitive, small enterprises need to become part of the value chain of an industry or become a part of a larger social community like the Third Italy or Silicon Valley to overcome their inherent weaknesses in the form of small size and paucity of resources. They obtain size advantages through new form of economic association such as: formal and /or informal networks, clusters, or joint ventures and strategic alliances. Thus cluster formation in the context of a Regional Innovation System is useful for the small enterprises. This requires a co-ordinator networking with Government, Industry, University and Public Research centres. Continuous learning on the part of all the stakeholders in the region is required as only a learning region will survive and prosper in the emerging economic environment. It is also seen that the growth of the learning region is an evolutionary process and may proceed step by step as exhibited by the case study of the Ludhiana knitwear cluster. In view of the WTO provisions and the strength of the industries in Punjab, this is an appropriate and sustainable strategy.

It is clear from the case study that a co-ordinated approach can yield substantial results. However such co-ordination needs to take place at the regional level to be truly effective. To develop such a learning region, action needs to be taken on three fronts: strengthening entrepreneurs/ small firms, enhancing the role of co-ordinators/ associations and initiative from the policy making government machinery.

At the firm level, it is the competitiveness and efficiency which are key to success in the new WTO led environment. Firms need to develop strategies to be competitive. They are to identify the means and methods to identify the opportunities to reduce cost continuously, improve quality and improve their efficiency. This requires a change in the mindset of entrepreneurs. The WTO crisis can initiate change in their mindsets and trigger a learning process. They need to enhance competitiveness by improving their functioning. Some problems like not meeting the delivery schedule and quality etc. will hurt their interest severely. There is a dire need to build a strategic vision of their markets and business. For this, the role of information, knowledge and learning capabilities are crucial. A continuous improvement in its products and processes requires information and knowledge. How effectively they use these for bringing innovation depends on their

learning capabilities. Generally, small entrepreneurs have an urge to improve and learn. They need to organize themselves more systematically. In addition to the information through suppliers and marketing people, they need to explore other sources of knowledge in terms of existing institutions in the locality. In view of the above, networking and collaboration become essential strategies. Obtaining information and knowledge for improvement and innovation to enhance competitiveness needs some mechanism. Networking and collaboration with others is the best possible mechanism. The concept of cluster and flexible business networking is being used in number of countries. These flexible business networks build critical mass of groups of Small and Medium Enterprise, which then act informally as learning organizations, and formally as competitiveness-enhancing mechanisms that generate scale, scope and speed, to help the participating SMEs compete domestically and internationally as a larger firm (Philippe, 1998).

As the networking and collaboration is important, formation of industry association is the first step towards collaboration. In addition to the industry associations, the role of local development agencies and other Government institutions is crucial. They should try to help the small and local entrepreneurs to overcome their shortcoming, help them in providing assistance from the state and central government and Institutions. They can help in forming networking and bringing collaboration among the entrepreneurs. In the past they have been working as regulatory agencies and thus have extensive information on the region, industries and problems. They can be very helpful in promoting growth-oriented policies for the clusters.

In addition to the short term objective of bringing relief to the small and mediums sized enterprises facing WTO related problem, the state government needs to play a major role in articulating the process of becoming a learning region and dynamizing its innovation system. The regional innovation system is what determines the effectiveness and efficiency of regional knowledge building and transfer among the different integrating parts of the system. The government can play the role of the 'collective intelligence' necessary for a region to spark the process of becoming a 'learning region'. In terms of political legitimacy and economic powers, it is best placed to facilitate the inter-linkages of the regional innovation system.

REFERENCES:

Arthur,W.B.(1994), *Increasing Returns and Path Dependence in the Economy*, University of Michigan Press: Ann Arbor, 1994.

Braczyk, H.-J., G. Fuchs and H. G. Wolf, Multimedia and Regional Economic Restructuring, London: Routledge, 1999.

Capello, R. (1999) *Spatial transfer of knowledge in high technology milieux: learning versus collective learning processes*, Regional Studies, 33, 1999, pp 353-65.

Chesbrough, Henry W., The organisational Imact of Technological Change: a Comparative Theory of National Institutional Factors, Industrial and Corporate Change, Volume 8, Number 3, 1999.

Dosi, G., Sources, procedures, and microeconomic effect of innovation. Journal of Economic Literature, 26:1120-71,1988.

Edquist, C.(ed), Systems of Innovation: Technologies, Institutions and Organisations", Pinter Publishers, London, 1997.

Freeman, C. Networks of Innovators: a Synthesis of Research Issues', *Research Policy*, Vol 20, No.5,1991;

Freeman, C.,The National System of Innovation in Historical Perspective, *Cambridge Journal of Economics*, vol 19, no.1, 1995;

Gertler,M.S. and S.Brail,The Digital Regional Economy: Emergence and Evolution of Toronto's Multimedia clusters", eds. H.-J. Braczyk, g. Fuchs and H. G. Wolf, Multimedia and Regional Economic Restructuring, London: Routledge, 1999;

Hakansson, H.(1988), *Industrial Technological Development, A Network Approach*, Croom Helm, London, 1988.

Kaul, Vijay Kumar(2000), High-tech Enterprises, Collective Learning and Innovative Clusters: Implications for Public Policy in Developing Countries, *Proceedings of the International Conference on 'Development Strategies for the New Millennium'*, Indira Gandhi Institute of Development Research, Goregaon, Mumbai, India, July 2000.

Kaul, Vijay Kumar (2000), Small enterprises, Collective Learning and Cluster Studies: Implication for Public Policies, papers presented at conference " Industrialization in a reforming Economy- A quantitative assessment", *Proceedings of* International Conference on Quantitative Assessment of Indian Economy, Center for Development Economic, Delhi School of Economic, University of Delhi, December 2000.

Kaul, Vijay Kumar, (2001), *The impact of Globalisation and WTO on Industries in Punjab and Haryana*, a Report submitted to the Department of Planning, Government of Punjab, India, unpublished, April 2001.

Keeble, David, Clive Lawson, Barry Morre, and Frank Wilkson(1999), Collective learning processes, networking and institutional thinckness in the cambridge region, *Regional Studies*, June 1999.

Kenney, Martin and Urs von Burg (1999), Technology, Entrepreneurship and Path Dependence: Industrial Clustering in Silicon Valley and Route 128, *Industrial and Corporate Change*, Vol. 8 and Number 1, 1999.

Kline, S.J.and N. Rosenberg, An overview of innovation, In Landau R., and N.Rosenberg (eds.), The Positive Sum Strategy. Washington, National Academy Press, 275-305, 1986;

Knitwear club Update(2001), Ludhiana , India Issues Oct 2001, Nov.2001, Dec. 2001

Lundvall, B.,-A, and Susana Borras, The globalising learning economy: Implications for innovation policy, -Report based on contribution from seven projects under TSER Programme, DG XII, commission of the European Union, December 1998.

Lundvall, B.A, National System of Innovation: Towards a Theory of Innovation and Interactive Learning', Pinter Publishers , London. 1992
Lundvall, B.A., 1988.

Nelson, R.R.(ed), National Innovation Systems: A Comparative Analysis', Oxford University Press, Oxford and New York.,1993;

OECD (1998), *NIS Focus Groups: Draft Summary Reports- Working Group on Innovation and Technology Policy*, OECD, 23-24, November, 1998.

Porter, M.(1990), *The Competitive Advantage of Nations*, Free Press: New York,1990.

Roy, Philippe(1998), Business Networks For SMEs: Powerful Synergy For Growth In The Emerging Global Market Place, Prepared For *Conference On "Globalisation And Emerging Businesses: Strategies For The twenty-first Century"*, McGill University, Montreal, Quebec, Canada, September 26-28, 1998.

Schmitz, Hubert and Khalid Nadvi (1999), Clustering and Industrialization: Introduction, World Development, Vol 27, No. 9, 1503-1514,1999.

Sexenian, A, *Regional Advantage*, Harvard University Press, Cambridge, MA,1994.

Sternberg, R, Government R&D expenditure and space: empirical evidence from five industrialised countries, *Research Policy*, 25: 741-58,1996a.

Sternberg, R., Technology policies and the growth of regions: evidence from four countries, *Small Business Economics, 8: 75-86, 1996b*.

Storper, M and R. Walker(1989), *The Capitalist Imperative: Territory, Technology, and Industrial Growth*, Basil Blackwell: London, 1989.

Stroper, M, The limits to globalisation: technology districts and international trade, *Economic Geography*, 68, 60-93, 1992.

Stroper, M., The Resurgence of regional economics, ten years later: the region as a nexus of untraded interdependencies, *European Urban and Regional Studies*, 2, 191-221,1995.

Tewari, Meera, (1999), Successful Adjustment in Indian Industry: The Case of Ludhiana's Woollen Knitwear Cluster, *World Development*, Vol. 27, No. 9, 1999.

Walker, R.(1985), Technological Determination and Determinism: Industrial Growth and Location, in M.Castells(ed.) *High Technology, Space and Society*, Sage: Beverely Hills, CA,pp226-64,1985.

Wolfe, David A., Globalization, Information and communication Technologies and Local and Regional System of Innovation, in Kjell Rubenson and Hans Schutze(ed), Transition of the Knowledge Society: Conference Proceedings, University of British columbia Press, Vancouver, forthcoming.

COMPETITION AND INNOVATION: SMALL AND MEDIUM ENTERPRISES IN THE NEW ECONOMY

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ABSTRACT

The advent of the "New Economy" has important implications for how small and medium-sized enterprises will compete. This paper proceeds by examining the key characteristics of the industries of the New Economy, and what they mean from the perspective of innovation and competition for SMEs.

1. INTRODUCTION

The advent of the "New Economy" which has emerged in the last two decades or more has, like the Industrial Revolution more than a century ago, wrought "fundamental economic transformations" (Stiglitz, 1999). This poses great challenges as well as great opportunities for business. The industries of the New Economy are characterised by a number of prominent features that have both contributed to and resulted from its emergence. These features have important implications for business in general, but in this paper we shall focus on the implications for small and medium-sized businesses.

The paper is structured as follows. In the following section we identify some of the key characteristics of the New Economy and assess what they imply for the nature of competition. Specifically, we shall look at the implications for small and medium enterprises.

2. CHARACTERISTICS OF THE NEW ECONOMY

The New Economy is also variously referred to as the "Knowledge Economy", the "Digital Economy" and the "Cyber Economy", among other terms. Despite the widespread use of these terms, there is no generally agreed definition of what they mean. However, because the terms are frequently used to characterise the technological and economic transformations which economies around the world are undergoing (European Commission, 2000), it makes sense to focus on the key features or characteristics of the New Economy. These characteristics may be said to define the New Economy, just as the "Old" (Industrial) Economy may be said to be defined and characterised by factories, assembly-line mass production techniques, and a focus on manufacturing. There are four interrelated characteristics or features of the New Economy which may be identified. These are now discussed in turn.

The Role of Information

The primary feature of the New Economy is the dominant role played by information or knowledge.[1] Information features importantly as both an input and the output of many products and services. According to the Canadian Information Highway Advisory Council (1997, p. v):

> "[I]n a knowledge-based economy, ideas and information effectively overshadow physical goods and services as the primary units of production, distribution and consumption."

Reliance on Information and Communications Technology

The key role of information in the New Economy is closely related to the second feature, a heavy reliance on information and communications technology (ICT), which in turn is a direct result of rapid advances in that technology. The extraordinary rate of innovation and progress that has occurred in ICT in recent decades have led to equally dramatic declines in the cost of information processing and communication. Computer programs today are an order of magnitude more sophisticated and powerful than those of just a decade ago, and businesses and households increasingly rely on them to carry out routine functions. In communications, the Internet and mobile and other forms of communications technology have spread to every corner of the globe. Indeed, the use of ICT now permeates almost every aspect of developed economies around the world.

The very nature of ICT, its widespread use, and the sheer economic logic to develop common standards and interoperability among different systems to enable "inter-connectivity" between them means that network effects, sometimes referred to as economies of scale in consumption (Hahn, 2001)[2], are pervasive.

Network effects refer to the benefit or value derived by a consumer over and above the value received in the absence of other users of the good. The latter, the standalone value of the good to the consumer in the absence of other users, has been termed the "autarky" component. The former, the value derived by the consumer from being part of the network of users, is the "synchronisation" component (Liebowitz and Margolis, 1998). Metcalfe's "law", which states that the utility or value of a network is in direct proportion to the square of the number of participants in the network, nicely conveys something of the power of network effects: the value of the network to users grows at a rate far in excess of the number of users.

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[1] Information and knowledge are obviously not the same thing. In particular, information needs to be internalised before it becomes knowledge – recognised in the conceptual distinction often made between explicit knowledge and tacit knowledge (see, e.g., Nonaka, 1994). In the context of the New Economy, however, the transmission of information is the crucial process that enables many of its markets to function and thrive. For this reason, authors in this area often use the terms information and knowledge interchangeably, or they qualify it. Quah (2001), for example, refers to "codifiable knowledge".

[2] Strictly speaking, Hahn is referring to direct network effects (discussed below).

When network effects are large, the synchronisation component is a large proportion of the value derived by a consumer from a product. Two types of network effects may be distinguished (Liebowitz and Margolis, 1998). Direct network effects are generated directly through the number of users of a particular product on its value to an individual user. Telephones and fax machines are typical examples of goods exhibiting direct network effects. With a small number of users, the value of a fax machine to an individual is limited; as the number of users increases, so does the value to the user because the potential use of the machine goes up. While network effects are observed in goods that do not necessarily have a direct connection with ICT – the QWERTY keyboard (at least in its early manifestations) being an oft-cited example – it is in ICT-related applications that they are arguably most marked.

Indirect network effects, which may be termed economies of scope in consumption, occur when the value of a product increases as other products related to its use are developed. In other words, as the network size increases, so does the number of complementary products available to members of the network. One reason for the popularity of the Windows-based personal computer over the Mac is the fact that Microsoft worked harder to make it easy for developers to write software applications for Windows (Hahn, 2001).

The existence (some would say prevalence) of network effects in the New Economy has important implications for the nature of competition. Because networks take time to build up to "critical mass" (i.e., become widespread enough to be economically viable), producers that are sufficiently ahead (in both time and appeal to the market) of the competition with a new product or application will be able to acquire the necessary critical mass to exploit economies of scale. Economies of scale are common among information goods. Once network effects kick in, new entrants to that segment of the market will be confronted with a daunting barrier to entry as consumers are presented with plenty of incentives to remain part of the dominant network, and very few to be part of the "new boy's club".

The widespread use of ICT also means that the fact that information or knowledge is not easily constrained by the boundaries imposed by geography and politics is even truer today than it has ever been at any time in the past. An important aspect of the revolution in ICT is the codification of information or data that can be transmitted almost costlessly around the world and interpreted and manipulated by computers. This has led Stiglitz (1999a,b) and others (see Kaul et al. 1999) to argue that, unlike most public goods whose benefits are limited geographically, knowledge is a global public good.[3] The application and production of information or knowledge generates processes and/or goods that are highly innovative. This is aided by the codification process – the conversion of text, images and sounds into a sequence of zeros and ones – which has meant that information expressed in different media can be just as easily manipulated, customised and repackaged by computers at low cost.

[3] Stiglitz (1999a) identifies four others: international economic stability, international security (political stability), the international environment, and international humanitarian assistance. Some authors (Kaul et al. 1999, Sandler 1999) suggest that the concept of a global public good should be extended beyond purely geographical notions to encompass inter-generational aspects.

Cost Structure of Information Goods

The third feature of the New Economy is the cost structure that information goods tend to exhibit. Although the development costs of information goods are often very high, the marginal cost of producing an additional unit tends to be very low: making a digital copy of an information good is very inexpensive. Many goods (films, software) require large fixed costs of development, although subsequent copies can be turned out at negligible marginal cost. This means that there are economies of scale in industries exhibiting this kind of cost structure, which in turn translates to a form of first-mover advantage for the firms that are able to build up sufficient market mass to take advantage of the scale economies. This is bad news for the more sluggish firms. On the other hand, entry costs in some sectors of the New Economy are dramatically lower than the corresponding costs for their physical-world counterparts: for example, the operating costs of web-based businesses can be much lower because of savings on fixed costs. Firms that only operate online bear lower costs because of savings in terms of the rental of office space, administration and other operating costs. This suggests opportunities for SMEs.

Competition will therefore tend to increase and firm size to decrease because entry costs and fixed costs of operation are lower. Other kinds of fixed or entry costs, however, may increase. For example, new online firms may find it necessary to invest heavily in building a reputation or brand – but this has always been the case for most SMEs even in the physical world.

In addition, there are widespread economies of scope arising from the digitisation of information. Products created for a particular market can be packaged with other material, or modified and customised for other markets and uses at low cost, allowing the fixed costs of development of the initial products to be spread more widely. The presence of economies of scope would tend to reinforce the tendency towards greater concentration and less competition.

Global dimensions

The fourth feature of the New Economy is its global dimensions and reach. As we note below, this has the potential to create huge opportunities but also risks for SMEs. One of the traditional disadvantages faced by SMEs has been lack of access to markets. The use of the Internet and generally the ability to tap into the power of ICT has dramatically altered this dimension for SMEs. Distant markets and customers can potentially be reached relatively inexpensively, and even firms catering to niche markets may find themselves more economically viable because of global access. The size of the pie has increased proportionally. The downside, of course, is that whereas previously competition had been limited to geographically proximate rivals, it is now global.

3. WHAT DOES ALL THIS MEAN FOR SMEs?

In general, it is fair to say that the New Economy has brought with it vast opportunities for those SMEs able to take advantage of them. If the twentieth century was the century of big business and conglomerates, the twenty-first may well turn out

to be the century of the entrepreneur. Never before in history has the small entrepreneur had so many resources at his or her disposal. Many commentators have noted the potential of the technologies of the New Economy to dramatically change "the way businesses work, thereby yielding a quantum shift in productivity" (European Commission, 2000). This has two important dimensions. First, small and medium sized enterprises are able to accomplish far more than was possible before, because of the ability of businesses generally to access the capabilities of ICT. This encompasses the whole range of the operations of a business, from production to marketing to the general organisation of the business. Second, both product and process innovations are spurred by the combination of ICT and highly-skilled labour driven by profits to maintain competitiveness.

As DTI (1999) has noted:

> Newer firms (mainly SMEs) can have a tremendous advantage in comparison to larger organisations. Not only do they have the speed of communication and learning but also they do not bear the heavy cost of maintaining physical assets. They can exploit the latest technology and build their systems around that technology. And often the traditional barriers to small firms competing with larger ones are being removed. For instance, ICT allows small firms to access international markets without the need for a global marketing network.

The advent of the New Economy has important implications for SMEs in several ways. First, transaction costs and a wide array of fixed costs are dramatically lowered, which tends to level the playing field, which had been tilted against SMEs by virtue of their lack of size. Second, the nature of competition has altered. In an environment of relentless innovation, competition in the New Economy resembles not so much the conventional static competition of neoclassical economics as the Schumpeterian one driven by the process of "creative destruction".

As Graham (2001, p.157) has observed, regarding Internet commerce, an important and growing part of the New Economy, although his comments are applicable to the New Economy generally:

> [T]he Internet appears to be moving through phases that bear a resemblance to those of earlier technological revolutions (such as the discovery of electricity). In broad terms, the first phase is dominated by pure research (often taking place in universities or in research institutes with public funding). In the second phase, when the original discovery has been made, but no one knows exactly how to use it, all kinds of experiments are made. This second phase is particularly suited to small firms and venture capital. Many new firms are born but a great many fall by the wayside. In the third phase the market consolidates and large firms with their superior marketing facilities and worldwide reach take the lion's share.

As he goes on to note, the process is one of Schumpeterian competition. In this process, market leaders attain their dominance by virtue of innovations that allow them to leap-frog over the previous leaders, and the fear of being overtaken in this way by new upstarts is what keeps the incumbents relentlessly innovating. Schumpeterian competition, the ascendancy of the most innovative, dramatically levels the playing field for smaller entrepreneurial firms that are able to innovate.

Another aspect of competition and innovation relates to the nature of information goods. As Stiglitz (1999b) notes, each piece of information, almost by definition, is different from every other piece of information. This, in combination with the possibilities offered by ICT, implies vastly expanded opportunities for customisation and catering to niche markets, which often tends to favour SMEs that are otherwise disadvantaged because they do not have the economies of scale possessed by larger firms in the same industries.

The industries of the New Economy are characterised by high levels of workforce skill that are well placed to take advantage of the opportunities offered by the new environment. Innovations may be divided into two broad types: process innovations and product innovations. Process innovations may involve firms in more traditional industries automating processes that had previously been performed laboriously. Typically these include back-room operations (processing orders, etc) that involve information flows both within the business and between the business and its customers, functions that are well performed by ICT. Process innovations may also result in the emergence of new types of intermediaries that are able to capitalise on the information-processing and communication power of the technology. Thus, while the New Economy, by significantly lowering transaction costs, may result in a process of disintermediation in many traditional functions performed by middlemen, opportunities exist for the creation of new roles and functions for quite different classes of intermediaries that could not exist before.

The transformation of the intermediary function typically performed by SMEs will be affected by several factors, including the following:

- To the extent that transaction costs permit, some producers may find it more economical to sell directly to their end-consumers rather than utilising intermediaries (changes driven by transaction cost advantages)

- In other cases, new forms of intermediaries may emerge which are able to capitalise on the features and strengths of ICT – e.g., web portals featuring firm clusters organised either geographically or by industry, auction sites like eBay and Yahoo (changes resulting in previously non-existent types of intermediaries)

- Intermediaries that essentially perform the same functions as their physical-world counterparts but with quite different cost profiles that reflect the cost advantages of ICT in the provision and transmission of information – e.g., Amazon and CDNow, which are popular examples of process innovations, although there are numerous examples in more traditional industrial contexts

- Intermediaries that are driven by both product and process innovations

Two kinds of businesses are typically distinguished in e-commerce: business-to-business (B2B) and business-to-consumer (B2C). The former is the kind of business that most SMEs find themselves in, as suppliers to larger businesses. In the new environment of electronic commerce, SMEs that are part of B2B value chains will be forced to consider whether they are in danger of being squeezed out of the value

chain, and if so, how they can stay relevant by creating new forms of value that allow them to retain their positions in the chain.

A different set of issues confronts firms that are considering getting into B2C businesses – that is, selling directly to consumers. While fixed costs are often much lower than in the physical world, other kinds of fixed costs can represent barriers to entry. In particular, they may have to incur large costs in building a credible online presence through advertising and other means. Asymmetric information is particularly serious in B2C businesses, raising problems associated with credibility, reputation and lack of trust on the part of consumers.

4. SUMMARY AND CONCLUSIONS

A number of broad issues have been discussed in this paper. First, dramatically reduced entry costs and transaction costs will tend to produce enterprises of smaller size in the New Economy. Second, there are clear advantages to being the first mover in the New Economy. There are several sources of first-mover advantage. These include the existence of economies of scale, network effects and lock-in (by which customers are "locked in" to the products of the dominant firms because of the high cost of switching over to the products of rival firms).

Third, as these effects tend to translate into high entry barriers to aspiring firms, they will tend to produce dominant firms in each industry. Economies of scope will also tend to produce firm concentrations.

Fourth, the first and third points do not necessarily contradict each other. What they suggest in combination is that industries will tend to be dominated by a small number of powerful firms, but also will be inhabited by a large number of small firms that will operate either in the mainstream or in small niches. These firms pose a continual threat to the dominant firms as they constantly strive to innovate. While many commentators argue that the process of Schumpeterian competition will operate in general to maintain the flow of innovation, this view is by no means universally held. For example, Stiglitz (1999b) has argued that

> … Schumpeter's conjecture, that a succession of entrants would provide competitive discipline, [is] not in general true. Even small entry costs could result in large monopoly power, with not only prices being maintained high, but with the pace of innovation far slower than under competition.

He goes on to sound a note of warning for policymakers:

> As we move into the "knowledge economy" just as the new technologies provide greater scope for the suppression of competition, the consequences may be more adverse… [T]he kind of creativity that is essential for the knowledge economy requires the engagement of the mind. Organizationally, small new enterprises often have provided more fertile ground for this kind of creative engagement than do large established bureaucracies. Many of the most important innovations

> have originated in these small enterprises. These firms typically begin with a number of disadvantages, such as lack of access to inexpensive capital. If, in addition, there are artificially created market (anti-competitive) barriers then the pace of innovation may well be slowed.

Finally, it is clear that information and knowledge will determine the economic destinies of countries. As the OECD commented in a 1995 report:

> Knowledge in all its forms plays today a crucial role in economic processes. Intangible investment is growing much more rapidly than physical investment. Firms with more knowledge are winners on markets. Nations endowed with more knowledge are more competitive. Individuals with more knowledge get better paid jobs. This strategic role is at the root of increasing investments by individuals, firms and nations in all forms of knowledge. (OECD, 1995, quoted in Soete and Weel 1999).

In other words, policies that encourage investments in knowledge and the acquisition of skills, and that encourage SMEs with those skills to capitalise on them, will win the day.

REFERENCES

Department of Trade and Industry (DTI) (1999), "Building the Knowledge Driven Economy", White Paper, Analytical Report.

European Commission (2000), "The Internal Market and the New Economy", speech by Commissioner Frits Bolkestein, 9 October. At http://europa.eu.int/comm/internal_market/en/speeches/spch357.htm

Graham, Andrew (2001), "The Assessment: Economics of the Internet", *Oxford Review of Economic Policy*, Vol. 17 No. 2, 145-158.

Hahn, Robert W. (2001), "A Primer on Competition Policy and the New Economy", Working Paper 01-03, AEI-Brookings Joint Center for Regulatory Studies. At http://www.aei-brookings.org/publications/working/working_01_03.pdf

Information Highway Advisory Council (1997), *Jobs and the Knowledge-Based Economy*, Ottawa, April.

Kaul, Inge, Isabelle Grunberg and Marc A. Stern (eds.) (1999), *Global Public Goods: International Cooperation in the 21st Century*, Oxford University Press.

Liebowitz, S.J. and S.E. Margolis (1998), "Network Externalities (Effects)", *The New Palgrave Dictionary of Economics and the Law*, Macmillan. At http://wwwpub.utdallas.edu/~liebowit/palgrave/network.html

OECD (1995), *Technology, Productivity and Job Creation*, Vol. I and II, The OECD Job Strategy, Paris, OECD.

Soete, Luc and Bas ter Weel (1999), "Schumpeter and the Knowledge-Based Economy: On Technology and Competition Policy", Maastricht Economic Research Institute. At http://meritbbs.unimaas.nl/rmpdf/1999/rm99_004.pdf

Stiglitz, Joseph (1999a), "Knowledge as a Global Public Good", World Bank. At http://www.worldbank.org/knowledge/chiefecon/articles/undpk2/w2wtoc.htm

Stiglitz, Joseph (1999b), "Public Policy for a Knowledge Economy", Remarks at the Department for Trade and Industry and Center for Economic Policy Research, London, January 27. At the World Bank web site at http://www.worldbank.org/html/extdr/extme/jssp012799a.htm

United Nations Conference on Trade and Development (UNCTAD) (2001), *E-Commerce and Development Report 2001*, New York and Geneva: United Nations.

THE ROLES OF SMALL-SCALE AGROINDUSTRY IN ENHANCING GROWTH WITH EQUITY: THE CASE OF INDONESIA*

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ABSTRACT

Although the contribution of agriculture to GDP and employment is inevitably decreasing along with economic growth, the importance of agriculture is increasing. Agriculture has significant roles in accumulating and self-sustaining growth. One possible strategy to improve agricultural sectors as well as the overall economic growth is by developing agroindustry. Some literatures argue that agroindustry improves income equality while still maintaining economic growth. This research is purposed to use empirical data in a Social Accounting Matrix (SAM) framework to test the argument. The results reveal that agroindustry is suitable for income equality improvement and growth promotion.

INTRODUCTION

Although the contribution of agriculture to GDP and employment is inevitably decreasing along with economic growth, the importance of agriculture is increasing as it has significant roles in economic development. The views toward agriculture have significantly changed. Agriculture is no longer considered as a passive sector, from which resources are squeezed and extracted to support other sectors, particularly industry.

Agriculture roles become more obvious in structural transformation process. Agriculture has critical effect on industrialization and economic growth (Lewis, 2000; Ruttan and Hayami, 1984). It is crucial for export-earnings, employment creation, and food security (Alexandratos, 1995; Anwar, 1991; Babu, 2000; Bahri, Suryana and Erwidodo, 1998; Hayami and Kikuchi, 1987; Paukert *et al.*, 1981). It helps a country to raise living standard of farmers, to generate domestic market for industrial product and to rise term of trade (Lewis, 2000). Agriculture also has important roles in accumulating and self-sustaining growth (Johnston and Mellor, 1995).

One possible strategy to improve agricultural sectors and the overall growth is by developing agroindustry, a rural based industry with business characters, which processes agricultural products (Adjid, 1995; Austin, 1981; Hsu, 1997; Manwan *et al.*,

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1998; Solahuddin, 1999; Suryana *et al.*, 1998). The reasons are that agroindustry is suitable for income equality improvement while enhancing economic growth.

This paper is purposed to test those theoretical findings using empirical data of a Social Accounting Matrix (SAM) framework. The paper consists of five sections, which are organized as the followings. In Section 2 following this introduction, the theoretical findings regarding the roles of agroindustry will be elaborated and highlighted. Then, in Section 3, data and methodology adapted are described briefly. Section 4 is dedicated to expose the results of analysis and relevant discussion about the roles of agroindustry either in economic development or in income equality improvement. Finally, Section 5 depicts the conclusion of the paper.

THE ROLES OF AGROINDUSTRY: THEORETICAL FINDINGS

The decline of agriculture shares in a growing economy is inevitable, particularly the shares of GDP and employment (Anderson, 1987; Anderson and Pangestu, 1995; Antle, 1999; Holt and Pryor, 1999; Johnson, 1991; Mellor, 1984). Logical consequence of this fact is that agriculture's importance in economic development will diminish. However, it is even becoming more important. The view toward agriculture role, which previously was to be squeezed to support more dynamic sectors (Fei and Ranis, 1961; Hirschman, 1958; Johnston and Mellor, 1995; Jorgenson, 1961; Lewis, 1954; Rosentein-Rodan, 1943; Scitovsky, 1954), has noticeably changed to the view that agriculture is important to foster industrialization. Agriculture increases export earnings, generates employment, and ensures food security (Alexandratos, 1995; Anwar, 1991; Babu, 2000; Bahri, Suryana and Erwidodo, 1998; Hayami and Kikuchi, 1987; Paukert *et al.*, 1981). It raises the living standard of farmers, generates domestic market for industrial products, and rises term of trade (Lewis, 2000). Agriculture also has important roles in accumulating and self-sustaining growth (Johnston and Mellor, 1995). Moreover, government attention to agriculture is becoming greater along with economic growth. Anderson (1986) revealed that based on cross-sectional evidence, economies tended to change from taxing to supporting or to protecting agriculture as the economies growing.

Although agricultural development is important, a careful assertion is needed in formulating agricultural development policy. Otherwise, the result could not reach the expected target. Indonesia has had some bad experiences in this case[1].

Since late 1980s, Indonesia has modified the paradigm of agricultural development. The paradigm of how to increase agricultural products at faster rate to ensure food availability and to support industrialization has changed into a new paradigm of how to increase income and welfare of farmers.

The new paradigm enables employment available in rural areas (Suryana *et al.*, 1998), and establishes production systems, which optimally utilize the available resources in a particular region (Manwan *et al.*, 1998). It builds agriculture's linkages with other related sub-systems including infrastructure, processing, marketing, and distribution (Solahuddin, 1999). The development of efficient rural based agribusinesses, with appropriate capital intensity and locally specific technology is a strategy that conforms to this new paradigm (Solahuddin, 1999; Suryana *et al.*, 1998).

Agribusiness is a form of farm with business character (Adjid, 1995), consists of four main sub-systems namely (1) input delivery, (2) farming, (3) post harvest and processing (agroindustry), and (4) marketing and distribution (Suryana *et al.*, 1998).

Agroindustry is one sub-system of agribusiness that has strategic position in the new paradigm because it has several importance roles that help to improve income distribution while also still maintain growth. Agroindustry is an industry that uses or processes agricultural products as raw materials in its production process (Austin, 1981; Hsu, 1997). Some previous studies have found that agroindustrial development is very important in order to accelerate economic development while improving income distribution as well.

Holt and Pryor (1999) revealed that the mature agribusiness has positive correlation to economic growth. In relation to this, Nasution *et al.* (1991) argue that agroindustries can serve economic development process as an intermediary, to maintain a smooth flow of resources between traditional sectors, primarily small-scale farms, and secondary sectors, primarily industries and manufactures.

In Indonesia, there have been so many low-productivity and low-income labors in agricultural sectors. They are forced to stay in agriculture by the unfavorable condition of economic and social. They have no ability to improve the quality of their human capital, neither to invest in other business. Urban industry generally could only provide little employment for the growing number of rural labor (Staatz and Eicher, 1984). This problem looks like a vicious circle trapping poor farmer in poverty.

Agroindustries could break this circle by providing productive employment for the rapidly growing rural labor. The small-scale firm and labor-intensive agroindustry increases rural employment. Giovannucci (2001) suggests that the inevitable agricultural contraction lead to a rising roles of agribusiness in providing employment and economic value. Agroindustries, particularly small-scale and medium-scale ones have effectively provided employment for unskilled labor (Hayami and Kikuchi, 1987). Agroindustry serves as a catalytic factor, which stimulates all levels of rural development (Giovannucci, 2001; Kinsey, 1987). This in turn will help to reduce rural-urban disparity.

Agroindustry ensures food security[2]. Access to food or purchasing ability has vital role particularly for the poor both in rural and urban areas. The ability of agroindustries in preservation, processing, marketing and transportation food at low cost will enable the provision of food at affordable price.

To increase income of rural poor, food price needs to be increased. Food prices are a major determinant of the real income of rural poor (Staatz and Eicher, 1984). However, it should be considered as well that the increase of food prices could be troublesome[3]. To deal with this situation, agroindustry is a good alternative. The growing production in agricultural sectors will keep the food prices low. In order to raise farmer income, agroindustry creates some value added. The prices of agricultural products including food are increased through processing or through improving marketing channels, which are the parts of agroindustry.

Besides that, the development of rural agribusiness and agroindustry can help to avoid urbanization. The abundant labor supply in rural area should be prevented from sharing poverty in agricultural sectors, as the marginal value productivity in these sectors has been very low. Agroindustry solves this problem by providing employment in rural area. This not only generates income, but also increases wage rate and improves marginal value productivity of rural labor (Solahuddin, 1999).

Small-scale agroindustries also contribute to enhancing the existence of small-scale farms, and therefore preventing poor farmers from being suffered by losing their main income sources. Small-scale agroindustries can serve as a special segment of markets where the small-scale farmers can sell their products. More importantly, small-scale agroindustries provide the field where the farmers of small-scale farms can extend their businesses by processing their own agricultural products to acquire value added (Schejtman, 1994).

Mostly agroindustries in developing countries are labor intensive, small scale and relatively efficient as enterprise systems. Its expansion has favorable linkages to small-scale agricultural sectors, improves incomes and provides employment for the rural land-less and poor farmer (Kinsey, 1987). Although they produce less return to capital owners, they do generate a reasonable additional income for the poor. Small-scale agroindustry can be started with only small amount of investment, and therefore this is suitable for rural people with lack of capital. Small-scale agroindustries have the potentials in growth improvement without scarifying the equity purposes.

DATA AND METHODS

This research is designed to verify those previous findings regarding the roles of agroindustry with empirical data. For this purpose, an appropriate model is required. A social accounting matrix (SAM) can fulfill the requirement. As the case for study, South Kalimantan Province has been chosen. In constructing a SAM for South Kalimantan Province, the whole economic activities have been grouped into 19 accounts. Two accounts are included in factors, four accounts are included in sectors, eight accounts are grouped into institutions and five accounts are grouped into exogenous accounts.

For data collection, three particular surveys have been carried out in South Kalimantan Province Indonesia, namely general survey, agroindustrial survey, and household survey. In data analyses, mainly mixed multiplier analyses are utilized[4]. Mixed multiplier derived from the SAM in this research exhibits broad linkages, covering not only sectoral (output) forward and backward linkages, but also forward and backward linkages among and within factors (value added) and institutions (income).

The base year for the SAM is 1999, and the transaction unit is million rupiahs. The complete matrix of 1999 SAM of South Kalimantan Province is provided in Table 1.

EMPIRICAL FINDINGS

The Roles of Agroindustry in Economic Development

Among sectors in South Kalimantan Province's economy, agroindustry seems to be less important, as it has the smallest share (less than one percent) either in output or in value added. The highest shares are for industry. More than a half of shares in output and value added go to this sector. The output multiplier, which measures the change in output as the results of injection on a particular account in the economy, also reveals the similar figure. Industry has the highest output multiplier.

Despite its small shares in those three measures above, agroindustry has some potential advantages. As seen in (Table 2), agroindustry has the highest of value added share in its own output (79.11%), and the highest value added multiplier (0.85). This reveals the potentials of agroindustry in generating factorial income for the economy, with or without external shock to the existing economic condition. These facts confirms the previous findings that agroindustry is suitable for income generation (Anwar, 1991; Solahuddin, 1999).

In terms of productivity, agroindustry has good shape. Although its capital productivity is the lowest (1.38), its labor productivity is the best among the four sectors. It has 15.59, whereas industry as the most dominant sector in the economy has only 10.97. Moreover for total factor productivity (TFP)[5] agroindustry has 7.35, which is the second highest after industry (9.44). This implies that agroindustry is a strategic sector in the economy, particularly when production activities and value added generation process rely more on labor. It has the capability to create more value added if its scale and output are enlarged. It has also the capacity to boost growth both in short run and in long run. These data confirm the ability of agroindustry as an alternative engine of growth (Adjid *et al.*, 1998; Suryana *et al.*, 1998), and highlight its roles in economic transformation process (Nasution, 1991). The high labor productivity enables agroindustry to provide a wider chance to absorb redundant labor that used to work in agricultural sector with very low productivity, which is unable to be placed in urban industry (Staatz and Eicher, 1984). Agroindustries solves this problem by providing productive employment for the rapidly growing rural labor (Anwar, 1991; Giovannucci, 2001).

For total backward linkages agroindustry is the highest with 2.50 (Table 3). Among this total, value added are the area where agroindustry is strong, it has 0.85. In sectoral linkage, agroindustry is the lowest with only 1.10. In income linkage agroindustry stands at 0.54, this is the second place after industry (0.56). These facts emphasize the strength of agroindustry's roles in the economy. Its high value added linkage will make agroindustry generate more factorial income. This income is distributed to households together with some leakage flows to the other region. Income linkage of agroindustry as shown in this multiplier is high, and this is important in an economy. If income growth among households is broadly based, it derives substantial consumption linkages. The consumption creates a mass market for products from any other sectors in the economy. Adelman (1984) and Mellor (1995) have suggested this industrialization process in particular reference to agricultural sectors. In South Kalimantan Province, the data show that agriculture is superseded by agroindustry (See Table 3. for detail).

As like other sectors in the economy, agroindustry's forward linkages are lower than backward linkages. This fact may be interpreted as that agroindustry help more in demand generation for products of other sectors in the economy, but less helpful in stimulating other sectors to grow by the provision of their inputs. This is understandable, as can be seen from the SAM model that mostly agroindustry's products are not for domestic intermediate input of other sectors, instead they are exported[6].

Compared to other sectors in the economy, agroindustry has lower forward linkage (1.17). The highest forward linkage is for service (1.23) and then industry (1.20). Agroindustry is slightly better than agriculture that has only 1.08 (Table 4). However, if these total forward linkages are divided into their parts, agroindustry has consistent figures. As in backward linkages, agroindustry's forward linkages are strong both in value added linkage and in income linkage. Its linkages for these types exceed the linkages of any other sectors. In contrast, agroindustry has weak linkage in interindustry or sectoral linkages. These facts again indicate that agroindustry is more suitable for value added generation and income improvement.

Industry dominates both export and import in the economy. Agriculture is in the second place. Service and agroindustry are left behind (See Table 5 for detail). Based on the shares in total export and import, it seems that industry and agriculture are more tradable. Services and agroindustry mostly are small scale and informal. They are managed as family business, using family labor, simple technology, less capital with small profit. The business orientation mostly is not to generate maximum profit, instead it is purposed to survive family life (Anwar, 1991; Nasution, 1991). These facts, together with their small amount of output have placed agroindustry and service as less tradable sectors.

However, the net export (NE) value indicates some potential of agroindustry. It is small in absolute term, which is unsurprised as agroindustry's output share is very little (only 0.52% of total output in the economy). However, in term of its own output percentage, this NE value is the highest (59.88%) among sectors in the economy. Furthermore, for export and import share in total sectoral output, agroindustry has the best shape. It export share comprises 63.40%, while import shares only 3.52% of the total sectoral output. As a comparison, industry has 34.91% export share in its output, and 22,75% import share. In addition, based on the ratio of export over import, agroindustry have far better ratio than industry. Its ratio is 18.01, whereas industry only has 1.53 (see Table 5).

The facts above imply that agroindustry has good potential in foreign exchange generation, and less dependent to external shock. This confirms the previous findings that agroindustry has a good potential in relation to foreign exchange generation (Alexandratos, 1995; Anwar, 1991; Paukert *et al.*, 1981). Yet, it may have little output, and therefore has little share in export. However, when development strategy can promote the increase in its output, the export will increase significantly.

The Roles of Agroindustry in Income Equality Improvement

Table 6 depicts the summary of all multipliers in South Kalimantan Province's economy, when an injection is given to any endogenous accounts in the economy. Among four sectors in the economy, agroindustry is in the second place with 0.54 of total income multiplier (see Table 6 for details). Focusing to multiplier for poor households only, the results reveal that service and agriculture are sectors that are more favorable. These two sectors have higher multiplier, respectively are 0.13 and 0.11. Agroindustry and industry have the same lower multiplier (0.09). These facts seem to indicate the opposite of some previous works with the arguments that the development of agroindustry is suitable for poor households (Anwar, 1991; Giovannucci, 2001; Hayami and Kikuchi, 1987; Reardon *et al.*, 1994). However, with careful examination of the results, it is quite confident to argue that agroindustry does have some good influence in income distribution flows in South Kalimantan Province.

Agroindustry has only 0.09 of income multiplier for poor households, 0.08 for medium households and 0.11 for rich households. This structure seems to benefits the rich household more. However, mostly agroindustry income multiplier is the share of corporation (0.26). This is far higher than agroindustry's multipliers for the households, and it is higher than other sectors multipliers for corporation. Meanwhile, the increase in income for the corporation will have its own effects on households. As also depicted in (Table 6), it is obvious that among households in South Kalimantan Province, corporation income multiplier is the highest for the poor households (0.02). This is caused by the facts that mostly corporation in South Kalimantan Province is small scale and labor intensive.

Although an exogenous injection on agroindustry does not produce the highest income multiplier for the poor, it generates significantly high-income multiplier for corporation. In turn, the corporation will derive additional income for households, which is mostly absorbed by the poor households. Therefore, as a final results, the accumulation of direct multiplier through its own sector, and indirect multiplier that trigger corporation to create another multiplier, enable agroindustry helping the poor households to earn more additional income through multiplier process.

Income equality can be improved if the income gap between the rich and the poor households can be reduced. For the purpose, income of poor households needs to be increased. Based on the multiplier summary (Table 6) the highest income multiplier for the poor can be acquired if exogenous injections are given to the landless farmer (1.02), small landowner farmer (1.01) and low-income non-farmer (1.01). However, in the economy not only income of the poor households that is affected by the injections, but also income of all endogenous accounts will be influenced (factors, sectors, corporation and other household levels).

Injection to agroindustry has the highest value for total multiplier effects (2.497). This indicates that although agroindustry has less multiplier effects on income for the poor households, but it has far higher multiplier effects for value added and output. If the three types of multipliers (output, value added and income) are taken into accounts simultaneously, then agroindustry is a better choice.

Among factors, labor is a better target for injection than capital if income increase is the purpose of the strategy, as labor generates higher income multipliers (1.03) than capital (0.59). These facts indicate that South Kalimantan Province depends more on labor in order to improve income structure and to spur growth. These also highlight the fact that labor is critical aspect to consider as the changes in this factor have significant influence on household income.

In relation to this, agroindustry has the potentials to support labor development. Agroindustry is the sector with the highest labor productivity (15.59, see Table 2). It can absorb superfluous labor from sectors with low productivity. Therefore, agroindustry help to smooth transformation process (Nasution, 1991) and facilitates the way to transfer resources from agriculture to non-agriculture (Eicher and Staatz, 1984). This role, according to Johnston and Mellor (1995) is necessary for accumulating and self-sustaining growth. High productivity could also imply high wage rate, which help the economy to keep the resources in the region, prevent urbanization and increase income for labor and in turn will confirm the previous arguments that the process helps fostering rural development (Solahuddin, 1999; Suryana *et al.*, 1998).

CONCLUSION

Although the contribution of agriculture to GDP and employment is inevitably decreasing along with economic growth, the importance of agriculture is increasing. Agriculture is no longer considered as a passive sector, from which resources are squeezed and extracted to support other sectors. Instead, it is believed that agriculture has significant roles in accumulating and self-sustaining growth. It has significant effects on industrialization and economic growth.

One possible strategy to improve agricultural sectors as well as the overall economic growth is by developing agroindustry, a rural based industry with business characters, which processes agricultural products. Agroindustry is strategic and has wider effects on family welfare and rural community. It can enhance growth and equity improvement at once. Agroindustry serves as a bridge for economic transformation, generate employment, support rural area, prevent urbanization, improve income for the poor, ensure food security, and help small-scale farmers to survive.

This paper has tested those theoretical findings using empirical data that are organized in a Social Accounting Matrix (SAM) framework. The SAM is constructed from data of South Kalimantan Province of Indonesia, which particularly focuses to agroindustries and households. Data are analyzed using mixed multiplier, which are formulated based on the SAM. The results reveal that agroindustry suitable for maintaining economic growth, and also it is suitable for helping poor farmer to improve their welfare.

Agroindustry has the highest value added share in input and the highest value added multiplier compared to other sectors in the economy. Agroindustry is a productive sector with high labor productivity and total factor productivity. Its linkage values show that despite the little linkages in input provision for other sector, agroindustry has higher linkages for value added generation and income improvement. It has also

a good shape in export-import structure with the highest net export and the highest ratio of export-import. The multiplier analysis also reveals that the accumulation direct and indirect multiplier of agroindustry helps the poor households to earn more additional income through multiplier process. These facts confirm that agroindustry is suitable for income equality improvement and growth promotion.

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[1] Indonesia has been successfully changing from a large importer to a self-sufficient country in terms of rice. However, farmers are still in dominant poverty and rural areas are receiving less attention in development programs (Adjid, 1995).

[2] Mainly there are three aspects of food security: availability, accessibility, and effectiveness.

[3] For the majority of Indonesian, the proportion of food expenditure is quite high. If food prices increase, their welfare will significantly decrease. This in long term will make urbanization increased because farmers leave their farms in rural areas and trying to find out jobs in urban areas. As what has been introduced by Harris and Todaro (1970) in their "two-sector model of migration, unemployment, and development", expected higher wage in urban areas has been the pulling factor for them to move.

[4] Mixed multiplier formula in this research is adapted from Lewis (1992) and Rich (1997)

[5] TFP calculation formula in this research is adapted from Sargent and Rodriguez (2001). They argue that TFP is more effective and reliable as a measure over the long run of growth process, whereas labor productivity is more reliable in the short run, when the underlying growth process is uncertain, or when capital stock data are unreliable.

[6] The share of agroindustry's export in its total output comprises 63.40%. This is significantly high compared to industry, service and agriculture shares, which respectively are 34.91%, 31.80% and 24.91%.

REFERENCES

Adelman, I., "Beyond export-led growth", *World Development*, 12, 1984, 973-986.

Adjid, D. A., "Agribusines sebagai acuan tata nilai masyarakat pedesaan dalam menghadapi globalisasi dengan pasar bebasnya (agribusiness as the framework of rural community value in facing globalisation and free market)", Report, Jakarta, Badan Agribusines Departemen Pertanian, 1995.

Adjid, D. A., *et al.*, "Constraints on, and opportunities for further growth in agriculture", Study Report, Jakarta, P.T. Multi Tehniktama Prakarsa Hunting Technical Services Ltd, Lembaga Bangun Desa Sejahtera, 1998.

Alexandratos, N., *World agriculture towards 2010 : An FAO study*, New York, Food and Agriculture Organization of the United Nations, Wiley, 1995.

Anderson, K., "On why agriculture declines with economic growth", *Agricultural Economics*, 1, 1987, 195-207.

Anderson, K. and Hayami, Y., *The political economy of agricultural protection : East Asia in international perspective*, Sydney, Allen & Unwin in association with the Australia-Japan Research Center Australian National University, 1986.

Anderson, K. and Pangestu, M., "Agriculture and rural development in Indonesia into the 21st century", Adelaide, Centre for International Economic Studies, 1995.

Antle, J. M., "The new economics of agriculture", *American Journal of Agricultural Economics*, 81 5, 1999, 993-1010.

Anwar, A., "To form the fundamentals of sustainable agricultural system to improve the self sustainability of the nation", Presented in Seminar of Agricultural Development Strategy for The Second Stage of Long term Development, Bogor, 28 October 1991, 1991.

Austin, J. E., *Agroindustrial project analysis*, Baltimore, Published for the Economic Development Institute of the World Bank [by] Johns Hopkins University Press, 1981.

Babu, S., "Food and agricultural policies for the 21st century. First world congress of the world agricultural forum, St. Louis, Missouri, 23-25 may 1999", *Food Policy*, 25 1, 2000, 105-109.

Bahri, S., Suryana, A. and Erwidodo, "Implications of Indonesia's monetary crisis for agroindustry development", Presented in Third Workshop of the ACIAR Indonesia Research Project on Agriculture, Trade and Environment, Adelaide, 24-25 February 1998, 1998.

Eicher, C. K. and Staatz, J. M., *Agricultural development in the third world*, Baltimore, Johns Hopkins University Press, 1984.

Fei, J. C. and Ranis, G., "A theory of economic development", *American Economic Review*, 4 51, 1961, 533-565.

Giovannucci, D. P., "Introduction" in Giovannuci, D. P. (Ed.), *The guide to developing agricultural markets & agro-enterprises*, The World Bank, 2001.

Harris, J. R. and Todaro, M. P., "Migration, unemployment and development: A two sectors analysis.", *American Economic Review*, 60 (March 1970), 1970, 125-142.

Hayami, Y. and Kikuchi, M. I., *Rural economic dilemma*, Jakarta, Yayasan Obor, 1987.

Hirschman, A. O., *The strategy of economic development*, New Haven, Yale University Press, 1958.

Holt, T. and Pryor, S., "Agribusiness as an engine of growth in developing countries", Discussion Paper, Washington D.C., USAID's Office of Emerging Market, 1999.

Hsu, S., "The agroindustry: A neglected aspect of the location theory of manufacturing", *Journal of Regional Science*, 37 2, 1997, 259-274.

Johnson, D. G., "Knowledge, technology and world food security", Chicago, University of Chicago, 1991.

Johnston, B. F. and Mellor, J. W., "The role of agriculture in economic development", *American Economic Review*, 51, 1995, 563-593.

Jorgenson, D. W., "The development of a dual economy", *Economic Journal*, 71, 1961, 309-334.

Kinsey, B. H., *Agribusiness and rural enterprise*, London , Wolfeboro, N.H, Croom Helm, 1987.

Lewis, B. D. and Thorbecke, E., "District-level economic linkages in Kenya: Evidence based on a small regional social accounting matrix", *World Development*, 20 6, 1992, 881-897.

Lewis, W. A., "Economic development with unlimited suply of labour", *Manchester School of Economics*, 22, 1954, 139-191.

Lewis, W. A., "Development strategy in a limping world economy" in Meier, G. M. and Rauch, J. E. (Eds), *Leading issues in economic development. Seventh edition*, New York, Oxford University Press, 2000, 332-334.

Manwan, I., *et al.*, "Agriculture and development in eastern Indonesia", Report ADB TA 2660-INO, Jakarta, PT Multi Tehniktama Prakarsa, Hunting Technical Services Ltd. and Lembaga Bangun Desa Sejahtera, 1998.

Mellor, J. M., *Agriculture on the road to industrialization*, Baltimore, Johns Hopkins University Press, 1995.

Mellor, J. W., Agricultural development and the intersectoral transfer of resources, Baltimore, Johns Hopkins University Press, 1984.

Nasution, L. I. *et al*., "Formulation of Indonesia's structural economic transformation to increase the efficiency of agricultural sector", Presented in Agricultural Development Strategy for the Second Stage of Long Term Development, Bogor, 28 October 1991, Bogor Agricultural University, 1991.

Paukert, F., et al., Income distribution, structure of economy and employment : The Philippines, Iran, the republic of Korea and Malaysia, London, Croom Helm, 1981.

Reardon, T., *et al.*, "Is income diversification agriculture-led in the west African semi arid tropics? The nature, causes, effects, distribution, and production linkages of off-farm activities" in Atsain, A., Wangwe, S. and Drabek, A. G. (Eds), *Economic policy experience in Africa: What have we learned?*, Nairobi, Kenya, African Economic Research Consortium, 1994, 207-230.

Rich, K. M., Nelson, A. W. and Nelson, G. C., "Political feasibility of structural adjustment in Africa: An application of SAM mixed multiplier", *World Development*, 25 12, 1997, 2105-2114.

Rosentein-Rodan, P. N., "Problems of industrialization of eastern and south-eastern Europe", *Economic Journal*, 53, 1943, 202-211.

Ruttan, V. W. and Hayami, Y., "Induced innovation model of agricultural development" in Eicher, C. K. and Staatz, J. M. (Eds), *Agricultural development in the third world*, Baltimore, Johns Hopkins University Press, 1984, 59-74.

Schejtman, A., "Agroindustry and changing production patterns in small-scale agriculture", *Cepal Review*, 0 53, 1994, 147-157.

Scitovsky, T., "Two concepts of external economics", *Journal of Political Economy*, 62, 1954, 143-151.

Solahuddin, S., "Keynote address", Bogor, Indonesia, Center for International Economic Studies University of Adelaide, 1999.

Staatz, J. M. and Eicher, C. K., "Agricultural development ideas in historical perspective" in Eicher, C. K. and Staatz, J. M. (Eds), *Agricultural development in the third world*, Baltimore, Johns Hopkins University Press, 1984, 3-30.

Suryana, A., *et al.*, "Key agricultural and agribusiness policy issues in Indonesia", Second Draft Report, Bogor, Center for Agroeconomic Research (CASER), 1998.

APPENDICES

Table 1. SAM 1999 of South Kalimantan Province (19 accounts)

Accounts	1	2	3	4	5	6	7	8	9	10	11	12	13	1
Labour	0	0	1687041	336933	9049	0	0	0	0	0	0	0	0	7
Capital	0	0	6892701	1070771	102580	0	0	0	0	0	0	0	0	3
Industry	0	0	3907839	221240	12882	177770	252142	538836	838572	482146	620672	381726	0	1
Service	0	0	342314	19380	1731	19725	28186	60232	93735	53893	69379	42668	0	8
Agroindustry	0	0	16094	905	62	1289	1852	3964	6164	3547	4562	2803	0	4
Land-less Farmer	159082	61437	0	0	0	868	1244	2660	4139	2381	3064	1885	13861	0
Small land-owner Farmer	227339	195864	0	0	0	1249	1778	3805	5919	3406	4386	2693	19808	0
Large land-owner Farmer	485835	262890	0	0	0	2660	3800	8118	12641	7268	9358	5754	42330	0
Low Income Non Farmer	806002	603680	0	0	0	4139	5914	12641	19674	11311	14562	8957	65875	0
Middle Income Non Farmer	650782	428267	0	0	0	2381	3402	7268	11311	6505	8372	5148	37876	0
High Income Non Farmer	559619	287870	0	0	0	3064	4379	9358	14562	8372	10777	6629	48760	0
Very High Income Non Farmer	53471	1066703	0	0	0	1885	2693	5754	8957	5148	6629	4076	29988	0
Corporation	0	3965418	0	0	0	0	0	0	0	0	0	0	15642	0
Agriculture	0	0	1136012	64314	3714	159476	222763	368025	821269	315360	404402	563667	0	2
Government	0	4115561	0	0	0	9313	13306	28438	44256	25446	32758	20146	987158	0
Indirect Taxes	0	0	310122	43244	6122	0	0	0	0	0	0	0	0	4
Subsidy	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital	0	0	0	0	0	0	52183	111462	173460	599732	428390	278968	2609361	0
Outer Regions	0	1128503	4209035	167231	4968	62949	504927	819103	907460	873817	982980	582460	967662	6
TOTAL	2942130	12116194	18501159	1924018	141107	446767	1098570	1979663	2962119	2398331	2600290	1907579	4838321	6

Table 2. Output, Value Added, Labor, and Capital (in Absolute Values, Shares and Ratios) of Four Main Sectors in South Kalimantan Province Economy

Description	Industry	Service	Agroindustry	Agriculture
Absolute Values (million rupiahs)				
Output	18501162	1924022	141112	6729739
Value Added	8579743	1407703	111629	4679100
Labor	1687041	336933	9049	778058
Capital	6892701	1070771	102580	3901042
Shares and Ratios				
Share in Output	67.78	7.05	0.52	24.65
Share in Value Added	58.06	9.53	0.76	31.66
Value Added share in Output	46.37	73.16	79.11	69.53
Labor Productivity	10.97	5.71	15.59	8.65
Capital Productivity	2.68	1.80	1.38	1.73
Capital/Labor Ratio	4.09	3.18	11.34	5.01
Capital share in Output	0.37	0.56	0.73	0.58
Total Factor Productivity	9.44	3.94	7.35	5.74
Multiplier				
Output	1.22	1.13	1.10	1.16
Value Added	0.61	0.81	0.85	0.80

Table 3. Backward Linkages in South Kalimantan Province

Description	Industry	Service	Agroindustry	Agriculture
Labor	0.12	0.19	0.08	0.14
Non Labor	0.49	0.62	0.78	0.66
Factorial/Value added/GDP	0.61	0.81	0.85	0.80
Industry	1.27	0.14	0.11	0.19
Service	0.02	1.01	0.02	0.02
Agroindustry	0.00	0.00	1.00	0.00
Agriculture	-0.07	-0.03	-0.02	0.95
Sectoral	1.22	1.13	1.10	1.16
Land-less Farmer	0.01	0.01	0.01	0.01
Small land-owner Farmer	0.02	0.03	0.02	0.02
Large land-owner Farmer	0.03	0.05	0.03	0.04
Low Income Non Farmer	0.06	0.09	0.06	0.07
Middle Income Non Farmer	0.05	0.07	0.05	0.06
High Income Non Farmer	0.04	0.05	0.04	0.05
Very High Income Non Farmer	0.05	0.06	0.07	0.06
Corporation	0.16	0.20	0.26	0.22
Institutional/Income	0.41	0.56	0.54	0.53
Total	2.24	2.50	2.50	2.49

Table 4. Forward Linkages in South Kalimantan Province

Description	Industry	Service	Agroindustry	Agriculture
Labor	0.00	0.00	0.01	-0.01
Non Labor	-0.01	0.01	0.01	-0.02
Factorial/Value added/GDP	-0.00	0.01	0.01	-0.03
Industry	1.27	0.24	0.16	0.20
Service	0.01	1.01	0.01	0.01
Agroindustry	0.00	0.00	1.00	0.00
Agriculture	-0.07	-0.06	-0.04	0.95
Sectoral	1.21	1.19	1.12	1.16
Land-less Farmer	0.00	0.00	0.00	0.00
Small land-owner Farmer	0.00	0.00	0.00	-0.00
Large land-owner Farmer	0.00	0.00	0.01	0.00
Low Income Non Farmer	0.00	0.00	0.00	-0.02
Middle Income Non Farmer	0.00	0.00	0.00	-0.00
High Income Non Farmer	-0.00	0.01	0.01	-0.01
Very High Income Non Farmer	-0.01	0.01	0.01	-0.03
Corporation	-0.00	0.00	0.00	-0.00
Institutional/Income	-0.01	0.02	0.03	-0.05
Total	1.20	1.23	1.17	1.08

Table 5. Export, Import and Output in South Kalimantan Province

Description	Industry	Service	Agro	Agric	Total
Export	6457890	611835	89466	1676190	8835381
Import	4209035	167231	4968	601403	4982636
NE (Million rps)	2248855	444604	84498	1074787	3852745
Sectoral Output	18501159	1924018	141107	6729725	27296010
NE (% of Sectoral Output)	12.16	23.11	59.88	15.97	14.11
Export Share	34.91	31.80	63.40	24.91	32.37
Import Share	22.75	8.69	3.52	8.94	18.25
Export/Import	1.53	3.66	18.01	2.79	1.77
Share in Output	67.78	7.05	0.52	24.65	100.00
Share in Total Export	73.09	6.92	1.01	18.97	100.00
Share in Total Import	84.47	3.36	0.10	12.07	100.00

NE (Net Export) = Export - Import
*Export Share = (Export/Total Sector) *100%*
*Import Share = (Import/Total Sector)*100%*
*Share in Output = (Total Sector/Total)*100%*
*Share in Total Export= (Export/Total Export)*100%*
*Share in Total Import= (Import/Total Import)*100%*

Table 6. Income Multiplier Effects of Injection on Sectors and Corporation in South Kalimantan Province

	Multiplier							
Injection	Total	Factor	Sector	Inst.	Poor	Medium	Rich	Corp.
Labor	2.065	1.007	0.029	1.029	0.416	0.395	0.217	0.002
Non Labor	1.588	0.996	0.003	0.589	0.079	0.064	0.118	0.327
Industry	2.240	0.607	1.222	0.411	0.089	0.079	0.084	0.160
Service	2.496	0.809	1.126	0.561	0.129	0.115	0.115	0.203
Agroindustry	2.497	0.855	1.103	0.539	0.094	0.080	0.109	0.255
Land-less Farmer	1.033	0.016	-0.031	1.048	1.017	0.014	0.014	0.004
Small land-owner Farmer	1.087	0.010	0.049	1.028	1.010	0.008	0.008	0.003
Large land-owner Farmer	1.078	0.016	0.025	1.037	0.012	1.010	0.010	0.004
Low Income Non Farmer	1.090	0.007	0.051	1.032	1.011	0.009	0.009	0.002
Middle Income Non Farmer	1.079	0.012	0.040	1.027	0.009	1.007	0.007	0.003
High Income Non Farmer	1.016	-0.007	0.005	1.018	0.008	0.006	1.006	-0.002
Very High Income Non Farmer	0.893	-0.055	-0.034	0.982	-0.001	-0.001	0.998	-0.015
Corporation	1.059	0.000	0.001	1.058	0.021	0.017	0.017	1.003
Agriculture	2.489	0.797	1.161	0.530	0.109	0.096	0.108	0.217

GLOBALISING LEARNING: THE COMPETITIVE ADVANTAGE OF INNOVATIVE SMEs IN INDUSTRIAL CLUSTERS

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ABSTRACT

Small, innovative firms are best placed to pursue global competitive advantage when they locate in industrial clusters. This paper is concerned with investigating the hypothesis from the perspective of small firms in existing and emerging clusters in the United Kingdom and Italy. The authors argue that cluster-based small firms not only make optimum use of global markets, alliances and niche opportunities, but, in the process, enable wider, regional linkages for the clusters in which they operate.

Connections, linkages and partnerships are key factors in distinguishing clusters (Beccatini, 1989, Camagni, 1991, Porter, 1998, Enright, 1998, Cooke and Morgan, 1998, Mitra, 2000). The nature of the linkages – between firms, customers, suppliers, distributors, agencies, and across sectoral boundaries – influence the scope and purpose of various business activities and the innovation process, and often help to determine the effectiveness of those connections at local, national and international levels. The scale of activities at these levels can be said to form part of a continuum of learning (Leonard, 1998, Matlay and Mitra, 2000, Cullen and Matlay, 1999), as firms weave their distinctive patterns of innovation, growth and competitiveness. This learning process manifests itself in the use that firms make of labour, the supply of intermediate inputs, customers and collective learning (Nachum and Keeble, 2000, Matlay, 2000, Mitra, 2002). Research evidence suggests that the learning process is as much a function of agglomeration as it is of the innovative dynamics of stages of evolutionary growth and the abstractions of 'convergence', 'complexity' and 'paradox'. Together these features form part of the global process of change as firms and the regions in which they are located link up with partners across the world. Furthermore, the very process of internationalisation and globalisation reinforces the agglomerative strengths of firms (Porter 2000, Nachum and Keeble, 2000).

The paper has two parts. Part one is concerned with theoretical issues drawn from the litetrature on innovation, especially innovation systems, organizational learning, management and entrepreneurship. Part one ends with the identification of a learning system model which purports to examine the ways in which firms in clusters engage in the innovation process. Part Two examines the model with particular reference to two case studies, one a high technology sector in the UK and the second, a traditional manufacturing sector in Italy. Of particular importance is the emphasis on the learning process for innovation, which suggests that analysing and understanding the learning process is critical for innovation management. The paper ends with some policy notes.

Using on-going research evidence, the authors investigate various forms of learning at the level of the firm and the cluster. The research is based on a new project on 'Clusters' funded by the European Commission.

INTRODUCTION

In considering the idea and value of learning at the global level, it is appropriate at the outset to make some key assumptions. For the purpose of this paper, these assumptions help to provide the necessary framework for testing some ideas on learning and its concomitants, namely innovation and competitive advantage, with particular reference to small and medium sized enterprises (SMEs). The key assumptions include the following:

a) learning for SMEs is closely associated with innovation (in all its forms) because of the need for SMEs either to survive through incremental innovation or grow through dynamic change processes;
b) learning at the level of the firm, or organizational learning, is concerned with systems, based on early Schumpeterian notions of specialist, science-based research and formalized co-ordination in large firms, on the idea of more intensive forms of participation by small firms, or on collective innovation processes in industrial districts or clusters; and
c) systems of organizational learning and innovation are location and culture-specific, suggesting the need for an evolutionary and social constructivist approach to its study

Learning process and especially collective, or organizational learning, underlines different types of innovation. Innovation is often the result of interaction of various subjects, technologies, people and organisations, and that it is the learning that is derived from such interaction which underpins innovative activity. Learning is defined as the "process which changes the state of knowledge of an individual or organisation. A change in state of knowledge may take the form of adoption of a new belief about causal relationships, the modification of an existing belief, the abandonment of a previously held belief, or a change in the degree of confidence with which an individual or individuals within an organisation hold a belief or a set of beliefs" (Sanchez and Heene, 1997; pg.6).

In this paper the context for the connection between innovation and learning is the small and medium sized enterprise (SME). SMEs are better able to innovate when they are part of clusters because it is through the networking process and the management of externalities (key elements in clustering) that they develop new

products, processes and services. The networking process best manifests itself in particular locations (e.g. a geographical region), with the existence and connection between different organizations, technologies, and skills being part of a socially dynamic system.

INNOVATION SYSTEMS

The idea of innovation as a 'system' with spatial and social/cultural dimensions involves the study of national and regional systems of innovation, including industrial districts, spatial networks, clusters and other 'focused environments'. A fundamental point of the 'systemic view' is that it allows for a connection between 'technological' innovation and 'organisational' innovation. This connection also suggests that the factors which foster or frustrate technological innovation are not limited to the internal jurisdiction of the firm (Cooke, 1998). When it occurs, innovation is 'new' to the firm and/or the market, and even when it is absorbed within the firm it has introduced a 'new' dimension. Competitive factors of cost reduction, value added, and new market opportunities may be the spur for innovation, but in essence it has enhanced the firm's activities or capabilities. In this sense the firm has made an extra connection with the market and the wider environment sometimes beyond the routine interactions of daily business. Additionally, the innovation process combines inter-alia, different activities of design, research, market investigation, process development, organisation restructuring, and employee development. The innovation process is, therefore, not complete without connections being made at the level of skills, functions, technologies, commercial production, markets, and other organisations (Mitra, 1999).

The resources and activities of SMEs are often embedded in the region (Granovetter, 1985, Becattini, 1989), and innovative outcomes can sometimes be seen to be the result of a symbiotic relationship between the strategies of individual SME and the clusters in which they operate in a region. Regional embeddedness takes both social and economic forms and is often an important determinant of learning. In this sense firms, wider communities and the region act collectively as 'learning organisations' or 'learning networks'. Firms co-operate and network to reduce uncertainty and maintain stability, 'sensemaking' within a spatial setting to form a common set of meanings and agendas as the building blocks for 'organisational learning' (Cullen and Matlay, 1999)

Competitive advantage both at the level of the firm and the region rests on the management of the inter-face between the 'related industries'. While public policy can help to identify and support such industries, firms in each industry also need to understand and cultivate the relationships. This understanding is perhaps best developed through collective learning based on connected activities.

CONNECTIVITY AND THE SYSTEMIC VIEW IN THE INNOVATION LITERATURE

Lundvall (1992), Nelson (1997) and others, following the work of Freeman (1987), have focused on *national innovation systems*, while Saxenian (1994), Braczyk, et al (1998). Cooke and Morgan (1998), have concentrated their attention on *regional systems.* Still others (Carlsson and Stankiewicz, 1991, Freeman and Soete, 1997) have

studied *technological systems.*. The basic proposition of this literature is that the study of the institutional context of the firm and its relations with other firms is as important as the study of the innovation process in a single firm.

The 'systemic' view has as it antecedents the Marshallian (1920, 1923) notion of externalities where knowledge and its transfer to other economic stakeholders is a factor favouring spatial concentration of industries. The Marshallian idea of 'knowledge spillovers' plays an important role in the regionalisation of innovation and is significant within both federal states (Audretsch & Feldman, 1994) and urban areas. Manifesting itself within supply chain relationships, horizontally related firms, transfer of people and their skills, shared pools of knowledge of markets, research, etc., these spillovers are considered to benefit regions disproportionately. The economic rationale offered for the existence of such localisation (or indeed clusters) from Marshall (1920, 1923) onwards to Weber (1929), Enright (1990), Krugman (1991), is to be found in this idea of special benefits coupled with that of the unique presence of natural resources, all of which help to reduce uncertainties and risks associated with innovation.

Knowledge spillovers, inter-firm relationships, utilisation of shared resources, a well developed local skills base, and the evolution of the region through tacit and explicit knowledge exchange, are typical features of regional clusters. These features also provide the basis for social and economic 'connectivity' that underlines the operation of firms in clusters.

CLUSTERS – COMPARATIVE AND COMPETITIVE ADVANTAGE OF REGIONS

The definition of clusters as "groups of firms in the same industry, or in closely related industries that are in close geographical proximity to each other is meant to include geographically concentrated industries including so-called 'industrial districts' " (Enright, 1998:337). The geographic concentration of interconnected firms is supported by interconnected suppliers, downstream channels, customers, manufacturers of complementary products, and can also extend to companies with complementary skills (Porter, 1998). Clusters also include public institutions, including government education institutions, and support services, with cluster boundaries being defined by linkages and complementarities across institutions and industries (Porter, 1998).

The linkage between the idea of regional innovation and clusters lies in the understanding of the successful evolution of clusters whereby their formation, organisation and structure are themselves features of an innovation process. Various clusters have evolved from being *'comparative advantage'* (based on physical resources) players to being *'competitive advantage'* (based on learning and knowledge) to the way in which old clusters have overcome the loss of original locational advantage. Thus the replacement of water-power by electricity, wood by coal, and the easy availability of steel, did not prevent Solingen from continuing as a successful base for the cutlery industry. It achieved this through its reliance on the particular expertise of its workforce (Enright, 1998). At another point in the spectrum, the disadvantages of a poorer regional economy has not prevented Sialkot in Pakistan from being the second largest exporter (after Germany) of surgical instruments in the

world (Nadhvi, 1998). In essence, therefore, the ability to identify, accumulate, utilise and recycle learning resources embedded in the region, has proven to be the major source of 'competitive advantage' for many regions.

The consequence of innovative evolution has resulted in clusters attracting public and private finance, chambers of commerce and trade associations generating commercial market research, regional government providing industry-specific infrastructure, and local educational institutions doing industry-specific training and research. This combination of integrated and leveraged activity is often at the heart of innovation and collective learning as the literature on innovation highlights (Rosenberg, 1982, Malecki, 1991).

REGION-SPECIFIC RESOURCES AND ACTIVITIES

What would have been regarded as the 'invisible hand' factor supporting the success of specific regions in the past, can now be attributed to 'softer' issues. Such 'soft' issues include competitive technical and managerial expertise, explicit and tacit knowledge, the synergies derived from strong interaction in input-output linkages, collective learning, and what Capello (1998) decsribes as the 'dynamic socialisation' process based on trust, openness, reciprocity and voluntarism (Miles and Snow, 1992). Such 'softer' issues have a tangible force only if they are embedded in regional economic activity (Granovetter, 1985, Becattini, 1989) and which are almost impossible to duplicate.

The pressures, incentives, capabilities and competencies work through the collective learning, inter-firm linkages, and the play of region -specific resources that support region-specific activities. Enright (1998) building on Barney (1991) argues that just as a firm's resource position can lead it to a position of sustainable competitive advantage if the resources are valuable, rare, imperfectly imitated and not subject to substitution, so can the region's specific resources help to lead to sustained competitive advantage for the region. "As with firms, the region's resources will be difficult to imitate if they depend on unique historical conditions, the link between resources and competitive advantage is causally ambiguous or the resources are socially complex" (Enright, 1998:322).

Region-specific resources are generated by the close linkages among flexible and specialised SMEs, often in the same industry contributing to the production of the same product group (Braczyk, et al, 1998), as in industrial districts. The Gremi group's idea of the 'innovative milieu' posits a dynamic model in which the milieu is a complex network of informal relationships in a limited geographical area enhancing local innovative capability through "synergetics and collective learning processes (Camagni, 1991). The 'territorial ecosystem' of innovation model developed by Mitra and Formica (1997), highlights the spatial dimension to networking and learning among regional firms and institutions.

EVOLUTIONARY STAGES OF INNOVATION AND LEARNING

The region-specific resources model does not necessarily explain how the learning relationships between firms and regions work. What needs to be taken into consideration is the evolution of the innovation process through different stages of

development of the firm in particular regions in association with other players in the network or cluster. Development through these stages is closely linked to learning as firms move from one form of organizational practice to another to create new portfolios of products and services.

In recent years theoretical and empirical studies have identified significant changes in the distinctive characteristics of clusters and industrial districts (IDs) The evolutionary process of most ID manifests itself in three stages, namely the start up stage of "formation", the "development" stage and the growth stage of "maturity".(Carbonara and Mitra, 2001). As they evolve, and especially in the last stage, there is often a modification of the structural characteristics including the innovation management processes. The stages and their evolution (including modification) would appear to reflect the processes of 'variation', 'selection' 'retention and diffusion' and 'struggle for resources', that distinguish evolutionary forms (Campbell, 1950, Aldrich, 1999)

The early stages are characterised by the reinforcement of a 'craftsman-like' manufacturing system localised in a specific geographic area, and, then, by the development of networking processes among firms that carry out an integrated system of production activities in accordance with the 'flexible specialisation' model (Piore and Sabel, 1984). During these stages the technical-operative, tacit and informal knowledge, widespread in the local area, play a fundamental role in the innovative processes and in the industrial development of the IDs and clusters. The growth of technical-operative knowledge, supported by processes of learning by doing and learning by using, combined with the idea of "dynamic socialisation" (Capello, 1999) processes, produces very important innovative results. This property, known as "widespread innovative capacity" (WIC) (Bellandi, 1989), is probably the most important source of the competitive advantage for clusters, as long as the competitive environment is static. In this context an adaptive learning process, characterised by incremental improvement of products, services and technologies, enables firms to generate competitive advantage.

The description of the different stages of evolution is complicated by factors associated with both the density of inter-firm links and rapid change linked to technological developments, namely, uncertainty, complexity and the constant need to assess relevant competencies with which to sustain the learning process.

COMPLEXITY, UNCERTAINTY AND COMPETENCIES

Technological change, inter-firm interaction and alliances, trust and reciprocity are all part of a complex web of issues. The complexity is heightened by the considerable uncertainty in the external environment as well as within firms. Complexity and uncertainty are perhaps usefully dealt with when there is a range of competencies and capabilities within and among firms with which to use resources and generate common activities. '*Competence building'* (to achieve qualitative change, e.g. new firm creation, new product development), and '*competency leveraging'* (applying competencies to market opportunities or shared activities) are the actions taken by firms to generate learning resources. These competencies can then be utilized by '*firm-specific assets' (*assets exclusive to and tightly controlled by a firm) and '*firm-addressable assets'* (assets which it is able to draw on through networking) to manage

'causal ambiguities' resulting from asymmetrical and ambiguous data gathered from an uncertain environment, and innovation.

While 'competency building' and 'firm-specific' assets are part of the internal portfolio of a firm, 'competency-leveraging' and 'firm-addressable' assets are externalities which a firm is best able to manage and use through co-operation and interaction (Sanchez and Heene, 1997, Bellini, et al,1997). Firms in clusters *learn to innovate* through a systematic application of these competencies and use of these assets. The learning process is continuous and tends to take place even when innovations are not apparent (as in incremental innovations).

Competency building and leveraging using firm-specific or firm-addressable assets, are features of systemic effort in that they recommend the management of routines and outcomes leading to change. They could be considered to be key elements of a 'learning system' (Mitra, 2001) for an organization. While large firms are better placed to internalize such a system, the smaller enterprise has to rely on external linkages and networks to manage the processes of learning and innovation. The cluster model incorporates the 'learning system' through the web of connections and interactions between firms in both spatial and organizational terms

THE LEARNING SYSTEM AND INNOVATION

The generation, codification and transfer of knowledge are the essential elements of the *'Learning System'*. Within a cluster the system is operational within and across firms through the dynamic exchange afforded by 'competency building' and 'competency leveraging'. As the cluster environment is conducive to innovation because of the availability of essential innovation 'attractors' (skills and knowledge base, information access, capability of market conversion of ideas, knowledge and technological spillovers), learning for innovation is concerned with

- the creation, adaptation and fusion of new ideas among firms and across the region (generation and competency building)
- re-sue and reference of knowledge through continuous learning (codification and competency leveraging), and
- moving knowledge from one firm to another or between institutions and firms (transfer and co-ordination, and the move from firm-specific assets to firm-addressable assets)

SMEs AND THE 'LEARNING SYSTEM'

The role of small firms in the *'Learning System'* is based on both the 'negative' and 'positive' presumptions of SMEs. Thus the 'negative' suggestions are that SMEs are too small and too resource constrained to develop adequate competencies within the organisation. Hence they are naturally dependent on externalities with their well spring being within the firm and the company domain. In these circumstances the core capabilities of the SME lies in their ability to learn, generate sufficient internal knowledge and to leverage their competencies with other firms, resources and institutions available externally.

Lacking in size, adequate resources and market power, SMEs have little direct control over their environment. They are, therefore, fundamentally dependent upon a series of critical relationships with both individuals and disparate organisations within a transactional or task environment, and in a social milieu. The management of this externality is a highly complex process, and unlike large firms, there is an absence of formal strategies for co-ordination and communication, and considerable dependence on supply chains and sub-contracting. The organisation and reorganisation of competencies become a function of the relationship with the outside world and of the learning process.

SMEs are critical constituent of clusters. While large firms may operate within clusters, their SME counterparts create the hub of learning often in association with large firms, and through co-operation and competition among themselves.

CONVERGENCE AND PARADOX IN CLUSTERS AND THE INNOVATION PROCESS

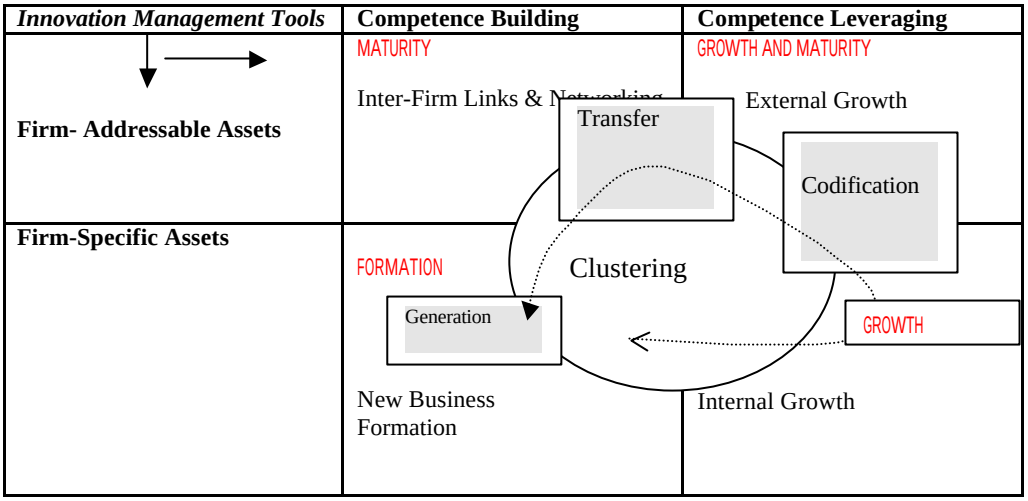
The 'Learning System' approach helps us to identify a few other important features of clusters and their learning environment. The first feature is that of *convergence*. Longhi and Keeble (1998) have referred to the evidence of clusters found in European high-technology regional clusters in the 1990s. Convergence may be detected in sectoral structures through diversification, combination of technologies, and the rise of new micro clusters such as biotechnology, information and communication technologies, internet applications, image processing, multimedia and computer applications. Convergence can also be detected in growth processes through spin-offs (endogenous growth) relative to external large firm investment, and in the pro-active technology transfer policies and training programmes of universities, and development of regional collective enterprise.

The second extended feature is that of *paradox*. Clusters and SMEs in those clusters may be said to innovate through the management of paradox (Mitra, 1999). Paradox is evident in the globalisation-regionalisation tensions inherent in clusters. Successful clusters such as in the Silicon Valley, in Emilia Romagna, Basle, balance regional productive excellence with international market positioning. In fact empirical studies (Keeble, et al, 1997 in Cambridge and Oxford, Formica and Mitra, 1996, in London) have found that firms with above average international links have higher local linkage intensities and frequencies than their nationally oriented counterparts. Paradox is also evident in the need to mass customise products while concentrating on core competencies, and in the existence of both traditional and high technology based industries in the same cluster. Different levels of industrial/sectoral and technological convergence also provide for both increasing and diminishing returns, depending on the industry, within the same cluster environment.

The learning process involved in the building and use of competencies and assets help firms to identify issues of convergence and paradox, and manage the complexity and uncertainty of the external environment. Every attempt at developing a new product, a new process and a new market opportunity, is a function of this learning process.

The following diagram illustrates the '*Learning System'* approach to cluster based innovation (Mitra, 2001) incorporating the above-mentioned elements discussed above.

Figure 1: The Learning System Approach to SME Clustering and Innovation



The Learning Context and the Innovation Process *(adapted from Mitra, 1999and Bellini, et al, 1997)*

THE EVOLUTIIONARY TRAJECTORIES OF CLUSTERS OF HIGH TECHNOLOGY SMEs – TWO CASE STUDIES

In considering the different levels of 'connectivity' in industrial clusters, two examples, one from the UK and the other from Italy, are drawn to illustrate the nature, scope and type of connections enabling innovation in clusters. The examples also provide the basis for a consideration of the learning process within and outside firms and the development of a systemic view of learning, which could help both firms and the regions in which they are located to adopt effective management policies.

More specifically, the case studies illustrate the two main aspects of the learning process that enables and supports innovation within firms and regions. While the UK case study is concerned with the dynamics of the abstract features of 'convergence', paradox and 'uncertainty' underpinning cluster-based growth and development, the Italian case study explores the learning process through the different stages –of formation, growth and maturity of a cluster, and how these stages sustain innovative firms and regions. The case studies refer to two different industrial environments, a high technology (UK) and traditional manufacturing (Italy). The differences do not allow for easy comparisons but that is not the purpose of the exercise. Rather, the emphasis here is on identifying critical features in the learning process that supports innovation in firms in clusters.

Case Study 1 - St. Asaph, Denbighshire, North Wales

This case study was carried out in 1999 to 2000 with a view to testing A picturesque small town in North Wales, St. Asaph is characterised by small businesses, some of which have benefited from the focus on high technology and innovation. The development of the optical cluster arose from the foresight and drive of Dr Lawrence Pilkington, brother of Lord Henry Pilkington) from the 1950s onwards. In 1957 he set up a 'state of the art' factory which is now 'Special Glass Ltd'. based on US technology

The Cluster

The optics cluster in St.Asaph has 13 key companies, employing over 1200 people, with a total turnover of £120m. Pilkingtons still owns (or is a major partner of) 5 of the businesses, employing 80% of the work force. Ex-Pilkington employees run all the other 8 businesses.

Eighty per cent of the turnover is from the 'high' end of the high-technology optics businesses with the key technology being the convergence of glass technology and optical instruments to create 'optronics'. The global export market is the main target of all firms, and although overall employment has not grown since the 1970s, the added value of firms has more than doubled. In the 1970s the 2 core businesses ('Special Glass' and 'Pilkington Optronics') employed around 1000 people. Since then 500 traditional jobs have been lost and replaced by employment through high-technology spin-offs.

A Wales Opto-Electronics Forum which was set up in the 1990s and now has a membership of 100 supports Strong networking between the firms. The following table provides a picture of the nature, scope and distribution of the opto-electronics sector in St.Asaph.

Underlying Issues

The Optronics cluster in St. Asaphs is a sophisticated example of clustering created out of the visionary ideals of the owners of a leading glass company. As a large firm led cluster, some of its interesting features include its 'large family' style make up, its particular focus on high technology, and the manifestation of the convergence factor through two technologies and medium small firm interaction. As in all successful clusters, St. Asaph attracts highly trained, highly paid quality of staff who help to boost the skills base of the region. Again, in common with well-known clusters, St. Asaph Optronics enjoys a high level of networking, which is institutionally supported by the Optronics Forum and the Welsh Development Agency (WDA). Through its recognition of opto-electronics as a key enabling technology, the WDA does more than support networking - it has linked strategic economic development policy to the interest of the cluster.

Since Pilkington opened up in St.Asaph in 1957, as a single industrial base, the region has seen both the evolution of the company at the cutting edge and the emergence of a brood of small, high technology companies around the mother hen' Special Glass'. The new firm formation alongside advances in productivity and convergent technologies, is similar to the evolution of the wool cluster in Prato, albeit at a smaller

scale. This also allows for economies of scale (groups of firms co-operating for international markets) and scope (variety of products and services through networks) to be realised, and reflects the convergent factors of combined technologies, growth processes and supportive infrastructure referred to by Keeble (1998) and Porter (1998).

Table 1 - The Optronics Cluster in St. Asaph, North Wales - Size, Scope, Nature and Distribution

Pilkington Companies	**Date Started**	**Nos. Employed**	**Turnover £m**	**Technology Type (High, Medium, Low)**	**Comments**
Special Glass Ltd.	1957	230	14	Medium	High export of optical glass, esp. to Japan
Optronics	1967	450	40	High +	Leading world co. in electro & defence optics
Space Technology	1987	80	6	High	Glass covers for space satellites
British Shielding Windows	1988	15	4	Medium	Nuclear Industry shields
Micronics	1989	185	15	High+	Ultra thin glass for displays & data storage
Non-Pilkington Companies					
Pinacl	1992	150	38	High	MBO from Optronics, Fibre-optics systems for banks, etc.
Phoenix	1992	25	2	Medium	Sale to Pilkington employees; processing of optical glass
Omitec	1995	70+	8	High	Gen.Manager- ex-Pilkington (only inward investment)
D&R Electronics	1990	6	1	Medium	Distributor
Leader Optics	1994	4	£0.5	Medium	Consultants
Others	1968-90	30	3m (cum.)	Various	

Source: Mitra and Murray (1999)

The evolution of the St. Asaph cluster is closely defined in the sense that specialisation in optics and electronics defines the competency base of the firms and, synergistically, the region. The spin-off process enables the transition from competency building to competency leveraging more easily than a linear process of development because specific expertise is retained within the nexus of firms and within the region. Specific firms find to easier to deploy firm addressable assets from the larger network of kindred people and firms. The spatial dimension does not reflect natural resource advantage but the competitive advantage of highly specialised knowledge base. The regular spin-off process and the inter-firm linkages through technology, people and focused resources, also allow for collective efficiency, development of techniques for customer orientation and cumulative capacity. Innovation, therefore is more likely to place in such an environment with its enhanced skills and knowledge base, its infrastructure, and technology spillovers. Managing the innovation process for firms is to a great extent tied up with the externalities of networking, reliance and use of complementary technologies, skills and expertise, and operating in similar global markets.

The Optronics cluster also demonstrates the innovation paradox of growth not being confined to firms growing in size but rather through the spin-off process allowing many small firms to emerge in fairly short period of time. The close cluster, regional phenomenon also has a global dimension in that most firms operate in international markets while having a regional network base.

Some General Observations

In considering the St. Asaph case study of clustering and the related learning process, some observations are worth noting.

- different factors and incentives encourage clustering. The St. Asaph model highlights 'visionary leadership' on Pilkington's part. This can be compared to the 'regional high technology excellence' model of Cambridge (Longhi and Keeble, 1998) or the 'demand factor,large-firm-small firm mix' model of West London (Mitra, et al, 1999). The way firms in such clusters learn and grow is to some extent dependent on the type of cluster in question;
- the organisational form is dynamic in nature and scope (allowing for different types of firms to emerge and evolve at different points in time, as for example the spin-offs in St.Asaph. Thus the learning process is concerned with changes in the nature and scope of different organisations, which in turn is dependent on how these organisations interact;
- technological organisational, and skills convergence are essential to learning and the clustering process, as evinced in the focus on optronics in St.Asaph;
- convergence factors lead to the management of paradox, as in local networking for international markets, the development of internal competencies together with the management of external interfaces, increasing returns and economies of scope from upstream activities, especially with small firms as in the multiple portfolio of firms in St.Asaph; The learning process is supported by convergence factors, and the emerging set of competencies helps to manage paradox and complexity;
- the management of externalities, convergence, paradox, coupled with the mix of skills base, infrastructure support, new firm formation and technological development, offer the best opportunities for learning, innovation and the realisation of competitive advantage, both at the level of the firm and at the level of macro level policy making

Case Study 2: The Industrial District of Bari and Matera

This case study is based on a qualitative survey carried out in 2000 and 2001. The survey was aimed at testing the hypothesis that it is possible to identify different learning mechanisms in each type of cluster. The survey is concerned with the leather sofa industrial district (ID) localised in the area of Bari and Matera (Southern Italy), which has gone through all the life-cycle stages (formation, development and maturity). Furthermore, the survey points out the role of leader firms in the development of the cluster's innovative capability.

The Industrial District

The ID emerged in the 1950s as a result of an agglomeration of isolated craftsman-like firms, which produced leather sofas in small volumes. In this stage of *formation* the ID consisted of many workshops, each making the entire production process and selling their final products to a local market. The level of labour division among firms was low so that each of these firms was almost autonomous (inter-firm relationships being very scarce). The product was craft-made and characterised by low levels of complexity and innovation. The strength of ID was due to both the technical-craftsman-like competencies and the spread of know-how within the area. In this stage the knowledge required to carry out the leather sofa was not particularly "sophisticated"; it was basically tacit and context-specific resulting mainly from processes of learning by doing, and exchanged through human and informal face-to-face relationships (Albino et al., 1999). In fact, skills and tacit knowledge are transferred through apprenticeship processes, in which the apprentices, emulating the expert craftsman, assimilate in their cognitive maps a fund of tacit knowledge base of manufacturing capabilities.

During the 1970s and until the late '1980s, the ID was in the *development* stage characterised by the entrance of strategic entrepreneurial actors ('terminal firms'). The latter determined radical changes of the ID, due mainly to the development of a manufacturing strategy dependent on the externalisation of production process phases, an extensive use of industrial production technologies, and the growth of the export quota.

In this second stage the ID was characterised by the development of the labour division among highly specialised subcontractors, according to the flexible specialisation model. Even if the product was still characterised by a craftsman-like content and the production process, marked by a low level of technological automation, an important innovation concerning the organisation of the production process was introduced by the 'terminal' firms. Such an innovation consists not only in the division of production process in spatially separable phases, but also in the introduction of a preliminary phase of prototyping and in the industrialisation of some other phases (cutting and sewing).Therefore, the 'terminal' firms developed a new knowledge base and combined it with the tacit competencies accumulated and shared in the local area over many years. This knowledge was transferred in a direct way to the subcontractors related to the 'terminal firms', through the use of technical data (design specifications, quality and production standards, manufacturing technical specifications) characterising the supply.

Since the late 1980s to date, the ID can be said to be in the maturity stage. In fact the ID is characterised by the development of a few firms, such as Natuzzi, Nicoletti, and Calia, which have acquired 'leader positions within both the ID and their market. These firms have undertaken a process of internal growth that has involved considerable modification of inter-firm relationships (Carbonara, 2000). Through the definition of more structured relationships, characterised by a high degree of dependency, the leader firms have achieved a greater control of the tangible and intangible resources, activities, and flows characterising their network of subcontractors.

The leader firms have increased the "degree of sophistication" of knowledge embedded in the leather sofa production process. This has been made possible through two processes: one corresponding to the tacit knowledge codification process, and the other concerned with the transfer from the ID's external environment to the internal one of a body of codified knowledge. Such codified knowledge generates new and more complex tacit knowledge after undergoing an acquisition-assimilation process. Therefore, leader firms have performed a set of knowledge management processes, endogenous and exogenous to the ID, achieving in this way a strict control of the innovation process.

As a result of explicit and tacit processes, the innovative capability of the leader firm has increased and the potential innovative potential capability of the other ID firms has also developed. In fact, the innovative behaviour of the leader firm influences directly those firms having a client-supplier relationship with them, and in an indirect way the other ID firms that compete with them (followers). The former make investments in new technologies as well as in new managerial tools and techniques, in order to comply with technical specifications defined by leader firms. They also look to satisfying specific requirements concerning, for example, quality standards, lead-times, terms of delivery, etc. The latter, increase their innovative ability and improve their own knowledge emulating the innovative behaviour and the strategic actions of leader firms.

The following table summarises the characteristics of 3 different stages of cluster-based development

Table 2:. Main Characteristics of Stage of Cluster Development.

Cluster Development Stages	Cluster Structure			**Nature of knowledge**
	Units	**Boundary**	**Network**	
Stage 1	Small firms	Closed	Social relationships	Practical knowledge and craftsmanship capabilities
Stage 2	Small-medium specialized firms	Closed	Economic and social relationships	Technical specialized knowledge firm-specific
Stage 3	**Leader firms / meta-management structure /highly specialized firms**	**Open**	**More structured economic relationships / social relationships / inter–sectoral relationships**	Market and technological knowledge and strategic capabilities

Adapated from Carbonara and Mitra (2001)

Each learning mechanism characterising the different types of cluster can involve one or more organisational learning processes . Table 3 presents these relations.

Underlying Issues

A consideration of the different types of learning and innovation generated by managerial actions taken by the leader firms in the clusters is shown below

Empirical learning

The leader firms have spent in the past few years considerable resources in R&D expenditure. Natuzzi for example has undertaken a formalised activity of R&D (in 1996 the cost of *intra-muros* R&D was about three billion lire), and educates its personnel through the Natuzzi Training Center. In a different way, the others leader firm, Nicoletti and Calia, carry out the industrial research activity within the functional areas of design, manufacturing, and marketing. In each case the research and development is mostly addressed to the creation of new models and new organisational systems. But sometimes it has been focused on new materials both for covering and padding, innovative production techniques, new treatments of leather, etc.

Table 3. 'Learning Processes Charactersing Each Stage of Cluster Development

Cluster	Learning mechanisms in the cluster	Organisational Learning processes
Stage 1	Learning by localising Learning by doing	Empirical learning
Stage 2	Learning by specialising Collective learning	Empirical learning Learning by emulation
Stage 3	Learning by doing/by using Learning by specialising Collective learning Learning by interacting	Empirical learning Learning by emulation Learning by acquisition

Adapted from Carbonara and Mitra (2001)

Learning by emulation

Through the presence at the international trade fairs the leader firms acquire from competing firms new technological and stylistic knowledge, which is developed within an external context,which is different from the local context in which they operate.

Learning by acquisition

Some leader firms acquire from external firms advanced services concerning for example: the development of software, business processes reengineering, and quality certification. In other cases the leader firms require financial advice from consulting firms to manage, for example, the quotation on the Stock Exchange (Natuzzi was listed on the New York Stock Exchange since 1993); and strategic advice to manage processes of acquisition of firms, formation of industrial groups, and creation of foreign business units.

Other leader firms have established collaboration agreements with public and private research institutes. Calia, for example, is engaged with the local Technology and Science Park (Tecnopolis), in the development of new production technologies. The research is aimed at carrying out a prototype for the leather automatic cutting. The main objective is to optimise the process of cutting in terms of reduction of manufacturing waste and/or process time reduction.

Nicoletti in the last years has activated joint research projects with the University of Naples addressed to develop new production technologies and new materials to help increase the 'comfort' levels associated with the product (in 1996 the cost of external R&D was about two billion lire).

Natuzzi has developed joint research projects with very different actors: with a firm from the automotive sector for the sofa comfort measurement and optimisation; with the University for the development of new methodologies for inventory management, loading optimisation, and fast prototyping; with the infrastructure suppliers for the co-design of new production technologies.

The effects of the learning processes activated by leader firms on their innovative capability can be explained by analysing some of the most important innovations generated by leader firms.

Process innovations

*T*he leader firms have redesigned the layout of the production plants in order to automate the internal logistics. In fact, material handling is generally carried out in a semi-automatic way, even if completely automatic systems (AGVS) are used more frequently these days. The process innovations implemented by the leader firms also concern the adoption of:

- computer-based systems (CAD, 3CAD and CAM) for the design phase, the sewing process, and the polyurethane shaping process;
- automated systems for the cutting process of leather and textile fibres;
- CNC technology for the shaping process of wood components.

Product innovations

The ID's leader firms develop mostly stylistic innovations relating to the model and its functionality. Such a product innovation is due to continuous research and experimentation of new solutions in the product design, materials, colouring, and reclining mechanism. Currently Natuzzi produces over 400 models of contemporary, traditional and classic furniture, at every price-point and for every type (sofas, recliners, sofa-beds, sectionals), available in 480 different coverings, including leather, fabric and micro-fibre.

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Some leader firms are engaged directly, through *intra muros* R&D, or indirectly, through collaboration agreements with external firms and/or research centres, in the research and experimentation of new materials. Furthermore, leader firms have developed other kind of innovations. These involve the following functional areas:

- *marketing*, Natuzzi, for example, sell in some country through a franchised chain;
- *organisation*, the formation of industrial groups and the creation of inter-firm consortium, aimed at concentrating the purchasing and distribution activities, can be considered as organisational innovations;
- *supply chain management*, techniques of vendor rating and information network linking the more strategic suppliers with the leader firm have been introduced;

- *operation management*, techniques of just in time, inventory management, materials requirements planning, and design review techniques are adopted more frequently than before.

Organisational and managerial innovations

The ID's leader firms have activated quality certification procedures. Nicoletti's Quality System is certified from 1996 according to the ISO 9001. In 1995, Natuzzi's Quality System received the ISO 9001 certification, and this certification was extended to all units of the Natuzzi Group in 1997. Calia has obtained the ISO 9001 certification for the quality system of the entire production process, from the design based on the customers' requirements for new product development.

Some General Observations – Case Study 2

The literature on IDs and clusters has identified innovative capability as one of the most important competitive factors of such cross or pan-organisation productive models. In contrast with the large firm where innovations are based essentially on the R&D functions, the smaller firms in IDs and clusters acquire the ability to generate innovations through the development and dissemination of specific technical-operating competences. The presence of entrepreneurial abilities and the formation of a dense network of relationships among the firms are the key to such developments.

These innovation mechanisms, known as "widespread innovative capacity" or "innovative capability without research", have been the main ingredients of the innovative capability of IDs and clusters in the first phases of their evolutionary process (phase of formation and development). However, in the recent competitive context, and in accordance to the structural changes that are impacting on IDs and clusters, new mechanisms of innovation management are activated.

The development of firms with a leader position within IDs and clusters and of meta-management structures modifies both the inter-organizational relationships and the learning processes at the level of the single firm and at level of system of firms.

Based on both the literature analysis on IDs and clusters and the proposed model, the characterisation of innovation within three different stages of cluster development, helps us to identify the performance levels at each stage. Furthermore this approach helps the researcher to identify the key role played by leader firms and meta-management structures in the innovation management. The results of an empirical research carried out on an Italian IDs, demonstrate how the learning process affect product, process and organisational and managerial innovations in firms.

CONCLUSIONS AND POLICY CONSIDERATIONS

The objective of this paper was to explore the link between collective learning and innovation through clustering as an innovation management process for both firms regions keen to build on the advantages of new technology and innovation. By studying the examples of clustering through an adoption of the *'Learning System'* model of analysis, both the policy maker for the region and the manager of the

individual firm can make decisions, which are aimed at improving competitiveness capabilities.

In forming effective policies both at the level of the firm and the region, decision makers need to consider carefully the learning process inherent in the management of externalities, convergence issues, paradox, uncertainty and complexity. This is especially useful in the current economic climate. Through such a management process due care can be taken of the global-regional dichotomy, co-operation and competition issues, core competencies and divergent product base, increasing and diminishing returns, all of which appear to be taking place at the same time, often within the same industry. This helps to avoid hard line approaches that would claim, for example, that only those industries demonstrating increasing returns are likely to survive the competitive race. Managing paradox also helps to accommodate different agendas of stakeholders, especially within a cluster environment.

Ensuring transversal technological connectivity coupled with appropriate management know-how is perhaps adequately afforded through the adoption of a learning system, which connects firms, their knowledge base, their learning processes and their competencies with the environment.

Also from a policy development point of view it is critical to appreciate and identify the evolutionary stage of the firm and indeed the cluster in which the firm is located. Of equal value is the recognition of the fact that each stage in the evolutionary process offers its own opportunities for managing innovation both at the level of the firm and the cluster. Finally it is important to stress the main critical factors of success of the cluster model. In fact, although clusters are highly individual and differentiated it is possible to identify some common factors of success and, in particular, their innovative capability, linked to continuous learning at level of single firm (learning by specialising) and at the level of the system of firms (collective learning and learning by interacting).

REFERENCES

Albino V., Garavelli A.C., Schiuma G., (1999), "Knowledge transfer and inter-firm relationships in industrial districts: the role of the leader firm", *Technovation,* Vol. 19, pp. 53-63.

Albino, V., Carbonara, N., and Schiuma, G. (1999) '*Knowledge in inter-firm relationships of an industrial district'* paper presented at the 44th ICSB World Conference, 20-23 June, 1999, Naples.

Albino V., Carbonara N., Schiuma G., (2000), "Knowledge in inter-firm relationships in an Industrial District", Industry and Higher Education, December, pp. 404-412.

Aldrich H.A., (1999), *Organisations Evolving*, London, Sage

Audretsch, D. and Feldman, M.P. (1994) '*Knowledge Spillovers and the Geography of Innovation and Production'*, Schumpeter Society Conference, Munster.

Barney, J. (1991), 'Firm Resources and Competitive Advantage', *Journal of Management*, 17, pp. 99-120.

Becattini, G. (1989), 'Sectors and/or Districts: Some Remarks on the Conceptual Foundations of Industrial Economics', in Goodman, Bamford, and Saynor (eds.), *Small Firms and Industrial Districts in Italy.*

Bellini, E., Capaldo, G., Raffa, M. and Zollo, G. (1997) '*Universities as Resources for Entrepreneurship'*,Working Paper, Fredrico II University of Naples, Italy

Braczyk, H-J, Cooke, P., and Heidenreich, M. (1998), *'Regional Innovation Systems',* UCL Press, London

.

Bellandi M., 1989, "Capacità innovativa diffusa e sistemi locali di imprese", in G. Becattini (a cura di), *Modelli locali di sviluppo*, Bologna, Il Mulino.

Camagni, R. (1991), *'Introduction: from the local milieu to innovation through co-operation networks, in 'Innovation Networks: Spatial Perspectives'*, Camagni, R. (ed.), Bellhaven Press, London

Capello R., (1998), "The role of inter-SMEs networking and links in innovative high-tech milieux", *Proceeding of the International Conference "Networks, Collective Learning and Knowledge Development in Regionally Clustered High-Technology Small and Medium Sized Enterprises in Europe"*, 7 December, Cambridge.

Carbonara N., (2000), "New models of inter-firm network within industrial district", *Proceedings of the RENT XIV Conference on Research in Entrepreneurship and small Business, Prague 23-24 November.*

Carbonara, N. & Mitra, J (2001) '*New Actors For The Competitiveness of Local Clusters and Industrial Districts: a cognitive approach to learning and innovation in Clusters and Industrial Districts'*, *Proceedings of the ISBA Small Firms Research and Policy Conference, Leicester, November,2001*

.

Cooke, P. and Morgan, K. (1998) '*The Associational Economy: Firms, Regions and Innovation.*

Cullen, J and Matlay, H. (1999) 'Collaborative Learning in Small Firms: Why Skill Standards Don't Work', paper presented at the 22nd Institute of Small Business Affairs Small Firms Policy and Research Conference, *'European Strategies, Growth and Development'*, Leeds, 17-19 November, 1999

Freeman, C. and Soete, L. (1997) '*The Economics of Industrial Innovation',* Pinter, London

Granovetter, M. (1985), 'Economic Action and Social Structure: The Problem of Embeddedness', *American Journal of Sociology*, 91, pp. 349-364.

Keeble, D., Lawson, C., Lawton-Smith, H., Moore, B., Wilkinson, F. (1997), 'Internationalisation Processes, Networking and Local Embeddedness *in Technology*

Intensive Small Firms', ESRC Centre for Business Research Working Papers, 53., University of Cambridge, Cambridge.

Enright, M. (1998), 'Regional Clusters and Firm Strategy' *in* Chandler, Jr. A.D., Hagstrom, P. and Solvell, O. (eds.) '*The Dynamic Firm: The Role of Technology, Organisation and Regions',* Oxford University Press, Oxford.

Krugman, P. (1991), '*Geography and Trade',* MIT Press, Cambridge MA

Longhi, C. and Keeble, D. (1998) 'European Regional Clusters of High-Technology SMEs: Evolutionary Trajectories in the 1990s', paper presented at the *TSER European Network Conference,* 7 December, 1998, Robinson College, Cambridge.

Lundvall, B.A. (ed.) (1992), '*National systems of Innovation: Towards a Theory of innovation and Active Learning',* Pinter, London.

Malecki, E.J. (1991), '*Technology and Economic Development: the Dynamics of Local, Regional and National Change',* Longman, New York

Marshall, A. (1920) '*Principles of Economics, 8th edition, Macmillan, London, (***1923),** *'Industry and Trade',*3rd edition, Macmillan, London.

Mitra, J. and Formica, P. (1997), 'Innovative Players in Economic Development in Europe: Learning Companies and Entrepreneurial Universities' *in* Mitra, J. and Formica, P. (eds.), *'Innovation and Economic Development:University-Industry Partnerships in Action',* Oak Tree Press, Dublin.

Mitra J., (2000), "Making Connections: innovation and collective learning in small businesses", Education and Training, Vol. 42 No. 4/5, pp. 228-236.

Mitra J., (1999), "Managing externalities: integrating technological and organisational change for innovation", *Proceedings of the 9th International Technology Forum,* 4-8 October, Minneapolis.

Mitra, J, and Murray, J. (1999) ' Building Knowledge Driven Clusters: Shifting patterns in UK competitiveness Policy and Practice', *workshop paper presented at the 44th ICSB World Conference, 20-23 June, 1999, Naples, Italy.*

Mitra, J. (1999) ' Managing Externalities: Integrating Technological and Organisational Change for Innovation' keynote paper presented at the 9th *International Technology Forum, Minneapolis, Minnesota, USA,* University of Minnesota, 4-8 October, 1999.

Nadhvi, K. (1998),'International Competitiveness and Small Firm Clusters - Evidence from Pakistan', *Small Enterprise Development Journal,* pp.12-24, Vol. 9, No.1, March, 1998.

Porter, M. (1998), 'Clusters and Competitiveness' in *Harvard Business Review,* Vol.76, Nov.-Dec., 1998.

Rosenberg, N. (1982) '*Inside the Black Box: Technology and Economics'*, Cambridge University Press, Cambridge.

Rosenfield, S.A. (1997), 'Bringing Business Clusters into the Mainstream of Economic Development', *European Planning Studies*, pp 13-17, 3 (1), February.

Saxenian, A. (1994),'*Regional Advantage:Culture and Competition in Silicon Valley and Route 128'*, Harvard University Press, Cambridge, MA.

Piore M., Sabel C., (1984), The second industrial divide: possibilities for prosperity, Basic Books, New York.

Weber, A. (1929), *'The Theory of the Location of Industries'* (trans. C. Friedrich), University of Chicago Press, Chicago.

THE EFFECTS OF THE MACROECONOMIC FORCES ON THE PERFORMANCE OF SMEs IN TURKEY

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ABSTRACT

This paper examines the relationship between financial and economic variables using a sample of publicly-held small and medium sized enterprises (SMEs) operating in manufacturing industries. Our results suggest that real exchange rates significantly affect the profitability of SMEs. The rise in expected inflation and crude oil prices are perceived as the rise in the business risk and SMEs are balancing their liquidity and financial leverage accordingly. Remaining factors affecting financial leverage of SMEs are real exchange rate and real per capita GDP growth rate.

Key Words: Small and Medium Sized Enterprises, Manufacturing Industries of Turkey, Economic Variables, Multiple Regression Analysis.

I. INTRODUCTION

Small and medium sized enterprises (SMEs) are the subject of major concern in emerging countries. The governments are trying to develop economic policies that will assist the development of SMEs. However, the macroeconomic instabilities adversely affect SMEs as in the case of Turkey. The downturn of the Turkish economy in the recent decade has deteriorated the financial and operating performance of industrial firms, including SMEs.

Turkish SMEs account for 99% of established enterprises, 55% of the labor force, 30% of investments and 27.3% of total value-added in Turkey, becoming a key player in the economic activities. Turkish SMEs usually undertakes subcontractor role in the economy. The trend analysis conducted in this study on the sample of 179 publicly-held enterprises including 32 publicly-held industrial SMEs over the period of 1992-2000 shows that industrial firms experienced sharp decrease in profitability and sharp increase in risk measures. Average profitability of SMEs over the period of 1992-2000 was below than real interest rates in the economy and showed downward trend. In the other hand, the business risk of SMEs has increased in recent years. These results imply that SMEs in Turkey are standing in very difficult position and the situation may become worse if a serious rehabilitation process will not be implemented.

The comovement of financial variables suggests the presence of underlying exogenous influences. Since macroeconomic variables represent systematic risk, it may systematically affect the risk and return measures of the industrial firms. The multiple regression analysis conducted in this study on the sample of 32 publicly-held SMEs operating in manufacturing industries over the period of 1992-2000 analyzes the relationship between macroeconomic and financial variables of SMEs. The independent macroeconomic variables analyzed in this study are real exchange rates, real interest rates, expected inflation rates, real per capita GDP growth, production index and crude oil prices. The dependent financial variables are return on assets, current ratio and financial leverage ratios.

The results of the multiple regression study shows that real exchange rates affect the profitability of Turkish SMEs. Devaluations in the local currency increase, whereas overvaluations in the local currency decrease the profitability of Turkish SMEs. The effects of the remaining macroeconomic variables on the profitability of SMEs return on assets are not statistically significant.

The business risk variables of Turkish SMEs are found to be significantly affected by the expected inflation, crude oil prices, real per capita GDP growth and real exchange rates. An increase in the expected inflation and crude oil prices, a decrease in real per capita GDP growth and currency overvaluations have been perceived as the potential risk sources by SMEs.

The research results are very instrumental in explaining the nature of the economic crises in Turkey. It clearly shows that stabilization programs based on using exchange rates as a nominal anchor leads to the currency overvaluations which results in the loss of the competitiveness of real side of the economy and leads to the increasing current deficits which is the main reason of the recent economic crises.

The remainder of the paper is organized as follows. Section II describes sample and data used in the study. Section III describes the research methodology. Section IV presents and discusses the research findings. Section V gives a brief conclusion.

II. SAMPLE

The only publicly-available financial statements data in Turkey is the financial statements of firms registered in Istanbul Stock Exchange (ISE). The number of industrial firms in ISE whose financial statements are available is 179.

Since our study focuses on the SMEs, we need to select these companies from this primary database. However, there isn't any uniformly agreed SME definition in Turkey. Most of the SME definition in Turkey is based only on the employee number. But this type of the definition may lead to the wrong classification, since some enterprises that can be classified as SME based on the employee number criteria, actually, may not show SME behavior because of their market share, independence level in the ownership structure, total sales and assets volume. Therefore, in order to select our sample of SMEs from the primary database, we set the following criteria:

1. Total employee number of the firm must be less than 250.

2. Total asset size and sales volume of the firm must be lower than total asset size and sales volume of firms with the employee number greater than 250.

These selection criteria have resulted in the final sample of 32 SMEs. The source of the quarterly financial statements data of publicly-held companies are Istanbul Stock Exchange, whereas macroeconomic data are retrieved from State Planning Organization, State Institute of Statistics, Central Bank and Treasury of Republic of Turkey.

III. RESEARCH DESIGN

III.I Research Predictions and Variables

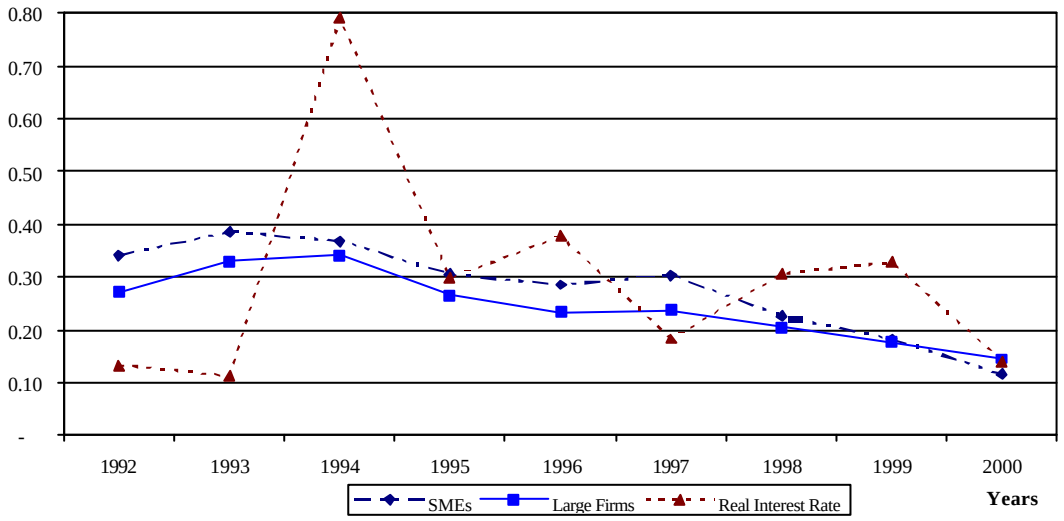
In this study we have identified a number of macroeconomic variables that may affect the financial performance variables of SMEs. These financial and macroeconomic variables, and their interaction process are discussed hereinafter.

III.I.I Financial Performance Variables

Financial variables contain important clues about the corporate performance. Many variables may be selected to represent the profitability and risk dimensions of corporate performance. However, high correlation between these variables (Horrigan, 1965), make it possible to use a smaller number of variables to represent them.

Figure 1: Return on Assets

Return on assets ratio is defined as the ratio of earnings before interest and tax to total assets The variable values in this figure are calculated from the consolidated financial statements of publicly-held industrial SMEs and large firms.



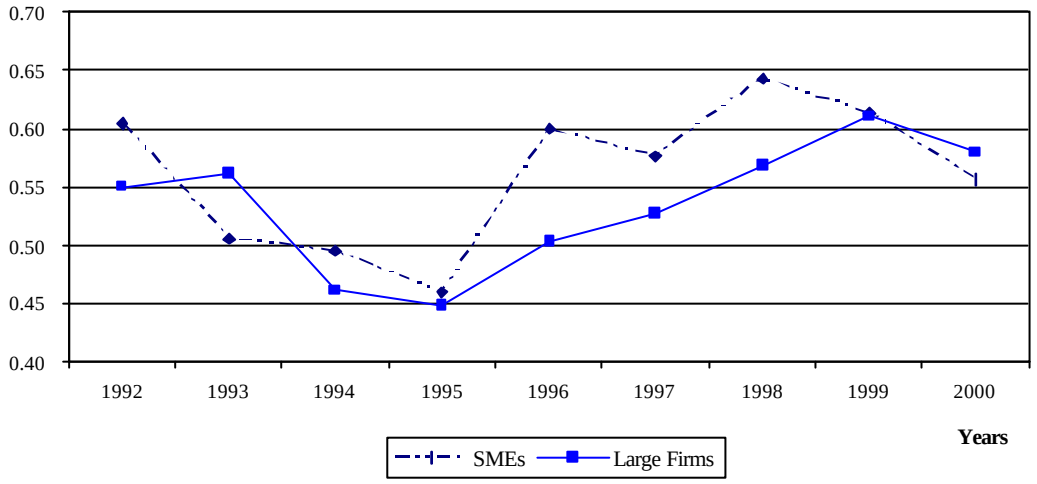
Return on assets is one of the most important representatives of the firm profitability. It is measured by deflating EBIT (earnings before interest and tax) to the book value of assets. Return on assets measures cash flows in terms of total asset size. The trend analysis of return

on assets ratio shows that the profitability of Turkish industrial firms[1] has downward trend in 1992-2000 (Figure 1). Return on assets was 11% for SMEs and 14% for large firms in 2000. Another important finding is that real interest rates were on average higher than return on assets of industrial firms in 1992-2000. The gradual decline in the profitability of industrial firms suggests that the critical level that return on assets of SMEs and large firms approached in 2000 year is the result of the combined effect of the macroeconomic instabilities and financial crises in Turkey in recent years.

The trend analysis of the financial leverage ratio of industrial firms in 1992-2000 shows that these firms are experiencing decreasing financial leverage ratios until 1995 which appears to be turning point (Figure 2). After this year industrial firms increase their financial leverage. The financial leverage ratio was equal to 56% in SMEs and 58% in large firms in 2000. The upward slope of the financial leverage ratio of the industrial firms is the evidence of the increasing business risk of Turkish industrial firms.

Figure 2: Financial Leverage Ratio

Financial leverage ratio is defined as the ratio of total liabilities to total assets. The variable values in this figure are calculated from the consolidated financial statements of publicly-held industrial SMEs and large firms.

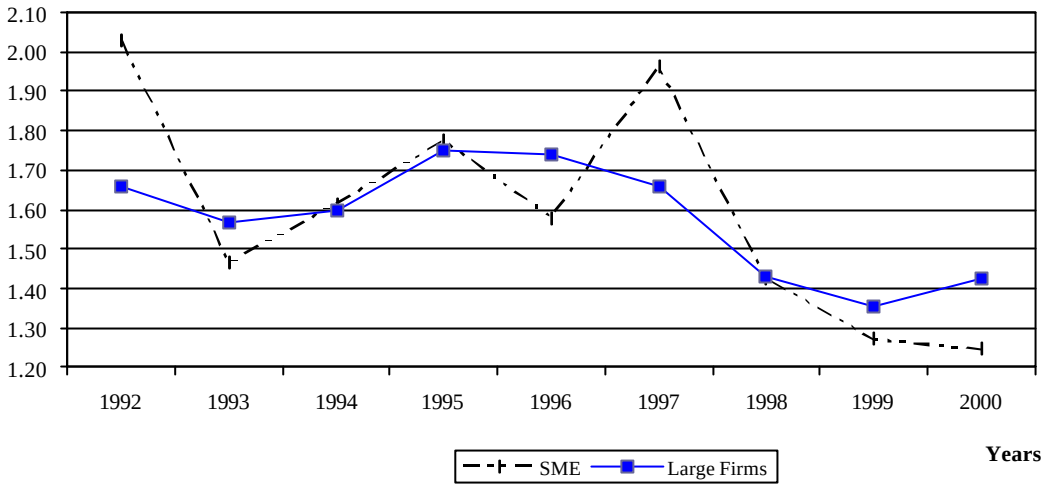


Second business risk measure employed in this study is the current ratio which is measured as the ratio of current assets to current liabilities. The current ratio shows whether the firm is capable to meet maturing obligation as it comes due. The trend analysis shows that the current ratio of SMEs experienced sharp decline in recent years (Figure 3). It has declined from 1.96 in 1997 to the 1.25 in 2000. Similar decline is evident in the large firms as well. The current ratio of large firms has declined from 175 in 1995 to the 1.42 in 2000. These findings combined with the finding of increasing financial leverage imply increasing business risk for Turkish industrial firms.

[1] The industrial firms analyzed in the trend analyses include our primary sample of 179 publicly-held industrial firms in ISE, 32 of which are SMEs.

Figure 3: Current Ratio

Current ratio is defined as the ratio of current assets to current liabilities. The variable values in this figure are calculated from the consolidated financial statements of publicly-held industrial SMEs and large firms.



To calculate financial performance variable values, we use quarterly financial statements data. Since quarterly income statement data is not comparable across different quarter categories[2], we use subtraction method to adjust income statements data on the comparable base.

In addition, financial ratios do not conform to the normal distribution assumption of the multiple regression analysis. Therefore, we calculate variable values by taking the first differences of their natural logarithms.

$$\Delta ROA_t = \log_e \left(ROA_t / ROA_{t-4} \right) \quad (1)$$

$$\Delta FL_t = \log_e \left(FL_t / FL_{t-4} \right) \quad (2)$$

$$\Delta CR_t = \log_e \left(CR_t / CR_{t-4} \right) \quad (3)$$

Since we use quarterly financial data, X_t represents the value of variable X for the quarter t, whereas r_{t-4} represents variable value of X for the quarter $t-4$ in equation (1-3).

III.I.II Macroeconomic Variables

The macroeconomic variables included in this analysis are real interest rates, real exchange rates, expected inflation, real per capita GDP growth, industrial production, and crude oil prices.

[2] For example, the sales figure in three-month income statements is not directly comparable with the sales figure in six-month income statements, since former covers performance results for three-month, while latter covers performance results for six-month.

Real Interest Rates

The role of the real interest rates in promoting economic growth has been a focus of the academic controversy and discussions between Keynesian and neo classical schools in the last century. One line of the academic research (Keynesian School) argues that higher real interest rates impede economic growth and therefore, it should be kept under control (Tobin, 1965). Another line of the academic research (Neo Classical School) argues that higher real interest rates result in the injection of more savings to the economy and reallocation of the savings towards sectors with higher efficiency which results in the economic growth (McKinnon, 1973; Shaw, 1973). There are also some researches that try to bring these contradicting theories together and establish a new model. According one of these models, there is an inverse U type relationship between real interest rates and economic growth (Calvo and Guidotti, 1991). To put it differently, real interest rates that is below equilibrium level in the competitive markets negatively affect economic growth and real interest rates that is above equilibrium level in the competitive market reduces investment ratio, therefore slows down economic growth.

Real interest rates have followed erratic trend in Turkish economy. Due to the high public sector borrowing requirements, internal interest rates adjusted for inflation remained at very high levels, at average 32% for the period of 1992-2000 in Turkey. This high rate of return combined with the disparities among inflation, interest rates, exchange rates and wages have caused the economic fundamentals to deteriorate in recent years.

In this framework, we predict that high real interest rates cause in the reduction of the profitability and increase in the business risk measures. We have measured real interest rates using Fisher equation.

$$rr_{t,k} = \frac{i_{t,k} - p_{t,k}}{1 + p_{t,k}} \qquad (4)$$

In equation (4), $i_{t,k}$ is the nominal interest rate at time t on a k period bond, $rr_{t,k}$ is the real interest rate on the same bond and $\eth_{t,k}$ is the expected inflation rate at time t for the period t to $t+k$. The nominal interest rates are taken as the average compound interest rates of Turkish treasury bills, whereas inflation rate is calculated using consumer price index.

We have made following logarithmic transformations in order to calculate growth rate in the real interest rates.

$$\Delta rr_t \equiv \log_e\left(rr_t / rr_{t-4}\right) \qquad (5)$$

Since we use quarterly data, r_t represents real interest rate for the quarter t, whereas r_{t-4} represents real interest rate for the quarter $t-4$ in equation (5),

Real Exchange Rates

Real exchange rates convey information about relative competition strength of the economies. Those economies that have low real exchange rates become more advantageous in the international markets, since they can deliver their products cheaper. Overvaluation in the local currency, which means higher real exchange rates, increases the current account deficit of the economy and results in reduction in reserves (Krugman, 1979).

The explanations above fit very well to the crisis Turkey experienced in 1994. This crisis is closely related to the use of exchange rates as a nominal anchor to fight inflation. After 1989, the Turkish government assigned a high priority to reducing and finally controlling inflation. For this purpose, Turkey chose the easy way of using exchange rates as a nominal anchor. With the pegging the exchange rates, the local currency overvaluation was about 29.6%. The natural consequence was a deteriorating foreign trade deficit. It was about 3 billion U.S. dollars between 1981-1988, and increased to 9.3 billion dollars in 1990, and to 14 billion in 1993 (Ertuna, 2002). This situation combined with the sudden rise in exchange and interest rates caused an economic crisis in 1994 in Turkey.

The contagion effect of the Asian crisis on Turkish economy is spread through the real exchange rates, as well. Asian countries are competitors to Turkish products in many markets. Asian crisis has resulted in huge devaluations in the currencies of the countries in the crisis region. Undoubtedly, these devaluations in the crisis countries' currencies caused an increased competitiveness power of Asian countries. However, Turkey kept its currency pegged to the USD and DM basket. This reduced the competitive position of Turkish goods in external and internal markets. By the end of 1997, Turkey's competitiveness power decreased by 44.1% against Indonesia, 67.6% against Thailand, and 46.4% against South Korea. The foreign trade deficit of Turkey increased to 22.5 billion USD in 1997.

In the above-stated framework, we predict that an increases in real exchange rates result in the reduction in return on assets of SMEs, whereas it may result in the deterioration of risk measures. We have measured real exchange rates (Q_t) using purchasing power parity theory.

$$Q_t = \frac{S_t P_t^*}{P_t} \qquad (6)$$

In equation (6), S_t is the nominal exchange rate, P_t^* is the general price level in the domestic country and P_t is the general price level in the foreign country. An increase in the real exchange rates leads to the decrease in the competitiveness power of the domestic economy, whereas a decrease in the real exchange rates leads to the contrary result. Real exchange rates in Turkey is calculated against a currency basket of (0.75 $+ 0.25 DM) until 2000 year. Producer prices in USA, industrial products producer prices for Germany and wholesale products prices are used for the calculation of relative price levels. The growth rate in the real exchange rate is calculated as in equation (7).

$$\Delta Q_t = \log_e (Q_t / Q_{t-4}) \qquad (7)$$

In equation (7), Q_t represents real exchange rate for the quarter *t*, whereas Q_{t-4} represents real exchange rate for the quarter *t-4*.

Expected Inflation

Inflation reduces the informational content of relative prices and therefore, prevents the efficient allocation of the resources. Since relative price changes become more complicated due to the high inflation, the efficiency of the price mechanism in the resource allocation is hampered and it becomes more difficult to distinguish between real and nominal economic shocks. If we apply this model to the manufacturing industries, inflation results in the high volatility in the production volume. This volatility is the cause of the greater uncertainty which negatively affects the operation of manufacturing industries.

Turkish economy is used to the two-digit inflation numbers in last decade. High inflation results in the deteriorating balance between different parts of the Turkish economy. Therefore, within last ten years Turkish authorities launched a number of economic stabilization programs to reduce and finally, control high inflation.

In this study, we predict that an increase in the expected inflation decrease profitability and increase the business risk, since inflation represents uncertainty. By the definition, inflation means an increase in the general price level within the economy. Therefore, we have measured inflation ($\eth_t$) as a growth rate in the consumer price index. The growth rate in the expected inflation is calculated as follows:

$$\Delta p_t = \log_e (p_{t+4}/p_t) \qquad (8)$$

In equation (8), $\eth_t$ represents expected inflation rate for the quarter *t*, whereas $\eth_{t-4}$ represents expected inflation rate for the quarter *t-4*.

Real Per Capita GDP Growth

Real economic growth means an increase in the income of the population which leads to an increase in the domestic demand. In turn, this leads to the increasing domestic sales and increasing profitability of domestic firms. Increasing sales also may lead to the investment in the current assets which results in the increasing liquidity of the firms. Therefore, in this model we predict positive effects of the real per capita GDP growth rate on the financial performance measures of SMEs.

In this paper, we have used growth rate in the per capita GDP in constant prices of 1987 year as a proxy of real per capita GDP growth.

$$\Delta GDP_t = \log_e (GDP_t / GDP_{t-4}) \qquad (9)$$

In equation (9), GDP_t represents per capita GDP for the quarter *t*, whereas GDP_{t-4} represents per capita GDP for the quarter *t-4*.

Industrial Production

The performance of the manufacturing industries is related to the changes in industrial activity in the long run. Therefore, we have included production index variable into our analysis. The growth in industrial production (*PROD*) is predicted to affect business profitability and risk measures of SMEs favorably. We measure growth rate in industrial production using following formula.

$$\Delta PROD_t = \log_e (PROD_t / PROD_{t-4}) \qquad (10)$$

In equation (10), $PROD_t$ represents industrial production index for the quarter *t*, whereas $PROD_{t-4}$ represents industrial production index for the quarter *t-4*.

Crude Oil Prices

Crude oil represents the significant portion of the imports of the country. The monthly crude oil import of Turkey is 1.960.000 tones in 1998, 1.900.000 tones in 1999, 1.760.000 tones in 2000, and 1.835.000 tons in 2001. Since crude oil is one of the important inputs of the industrial production, it is predicted that increases in the crude oil prices may negatively affect the financial performance measures of SMEs.

An increase in crude oil prices is measured in (11).

$$\Delta OIL_t = \log_e(OIL_t / OIL_{t-4}) \qquad (11)$$

In equation (11), OIL_t represents crude oil prices for the quarter *t*, whereas OIL_{t-4} represents crude oil prices for the quarter *t-4*.

III.II Research Methodology

To test the research predictions, we use the multiple regression analysis as our principal method. We have estimated following multiple regression models for each of our dependent variables.

$$\Delta ROA = b_0 + b_1\Delta rr_i + b_2\Delta Q_i + b_3 p_i + b_4\Delta GDP_i + b_5\Delta PROD_i + b_6\Delta OIL_i + e_i \qquad (12)$$

$$\Delta CR_i = b_0 + b_1\Delta rr_i + b_2\Delta Q_i + b_3\Delta p_i + b_4\Delta GDP_i + b_5\Delta PROD_i + b_6\Delta OIL_i + e_i \qquad (13)$$

$$\Delta FL_i = b_0 + b_1\Delta rr_i + b_2\Delta Q_i + b_3\Delta p_i + b_4\Delta GDP_i + b_5\Delta PROD_i + b_6\Delta OIL_i + e_i \qquad (14)$$

Regarding sample adequacy condition of the multiple regression analysis, there are total 445 cases[3] in this study which means 74 cases for each independent variable. This ratio meets the proposed guideline for the ratio of observations to independent variables (Hair, et. al., 1998).

There are three assumptions for the individual variables in the multiple regression analysis; linearity, stationarity, and normality. The examination of the scatterplots of the individual variables did not indicate any non-linear relationship between the dependent and independent variables.

The normality tests conducted on the raw variable values show that these variables do not conform to the normal distribution. Therefore, as mentioned in the variable definition section, we have taken the first differences of the natural logarithms of raw variable values. These transformations helped to derive stationary time series of the variables that conform to the normal distribution.

Multiple regression analysis based on the time series also requires checking for the autocorrelations in the variables. Table 1 displays the autocorrelations for the macroeconomic variables computed over the entire sample period. Expected inflation variable is highly autocorrelated, whereas other variables display mild autocorrelations. The autocorrelation in the independent variables implies the existence of an errors-in-variables problem that will bias

[3] We use quarterly data (total 36 quarters) of 32 SMEs in 1992-2000 period.

estimates of the loadings of the dependent variables on these variables and will bias downward estimates of the statistical significance.

Table 1: Autocorrelations of the Economic Variables (1992-2000 Quarterly Data)

	$\tilde{n}_1$	$\tilde{n}_2$	$\tilde{n}_3$	$\tilde{n}_4$	$\tilde{n}_5$	$\tilde{n}_6$	$\tilde{n}_7$	$\tilde{n}_8$
Real Interest Rates	0.51	0.31	0.26	0,20	0,12	0,27	0,23	0,13
Real Exchange Rates	0,68	0,28	-0,07	-0,31	-0,26	-0,14	-0,02	0,07
Expected Inflation	0,82	0,64	0,44	0,23	0,16	0,12	0,07	0,05
Real Per Capita GDP	0,60	0,30	-0,04	-0,41	-0,34	-0,31	-0,18	-0,05
Production Index	0,44	0,23	-0,07	-0,31	-0,20	-0,06	0,13	0,17
Crude Oil Prices	0,74	0,41	0,13	-0,19	-0,33	-0,33	-0,35	-0,38

We also check for the cross correlations between independent variables in Table 2. There are six statistically significant correlations out of total fifteen between independent macroeconomic variables. These statistically significant correlations occur because of the close interaction between the macroeconomic variables. This problem is defined as the multicollinearity among independent variables and may adversely affect the estimation of the regression coefficients and their statistical significance tests. Therefore, in order to control for the multicollinearity, we choose stepwise regression analysis method in our study.

Table 2: Correlation Matrices for Economic Variables (1992-2000 Quarterly Data)

SYMBOL	Drr	Dð	DGDP	DQ	DPROD	DOIL
Drr	1,00					
Dð	0,10	1,00				
DGDP	-0,36**	0,17	1,00			
DQ	-0,47***	-0,21	0,65***	1,00		
DPROD	-0,17	0,21	0,77***	0,60***	1,00	
DOIL	-0,23	-0,35**	-0,03	0,14	-0,06	1,00

*, **, *** indicates significance at 10, 5, and 1% significance levels respectively using two-tailed test.

IV. EMPIRICAL RESULTS

In this section we present and discuss our empirical results for the full sample of SMEs. The regression analysis results are presented in Table 3.

Stepwise regression analysis for return on assets ratio (Panel A of Table 3) reports that only the estimated coefficient of real exchange rate is statistically significant. The estimated coefficient on real exchange rate is negative, which means that the growth in real exchange rate (that is currency overvaluation) leads to the loss of the return on assets of SMEs, whereas the decline in real exchange rate (that is currency devaluation) leads to the increase in the return on assets of SMEs. Other economic indicators are excluded from the stepwise regression model since they do not significantly contribute to the explanatory power of the regression equation.

In the second regression model where financial leverage ratio is the dependent variable, it is found that expected inflation, real exchange rates, real per capita GDP growth and crude oil

prices are statistically significant predictors of the financial leverage ratio. The estimated coefficients for the expected inflation, real exchange rate and crude oil prices are negative, whereas the estimated coefficient for the expected inflation is positive. These results imply that financial leverage ratio of SMEs decrease as they expect currency overvaluation, high inflation and high crude oil prices. Note that all of these macroeconomic indicators convey information about the increasing uncertainty, competitiveness and costs. However, SMEs increase their financial leverage ratio when they face currency devaluation and real per capita GDP growth.

Stepwise regression analysis for current ratio found that two macroeconomic variables are statistically significant predictors of the current ratio. These macroeconomic variables are expected inflation and crude oil prices whose regression coefficients are positive. This means that SMEs increase their liquidity when they expect higher inflation and crude oil prices. Therefore, these factors are perceived as potential risk sources by SMEs.

Table 3: The Effects of the Macroeconomic Indicators on Financial Performance of SMEs

This table presents the results of the three regression analyses. The abbreviations of the financial and macroeconomic variables are as following. **DROA** = growth in return on assets ratio; **DFL** = growth in financial leverage ratio; **DCR** = growth in current ratio; **Drr** = growth in real interest rate; **DQ** = growth in real exchange rate; **Dð** = growth in expected inflation rate; **DGDP** = real per capita GDP growth rate; **DPROD** = growth in production index; **DOIL** = growth in crude oil prices

Panel A: Return on Assets
(t-values in parentheses)

$$\Delta ROA = -0.04 - 0.683\ \Delta Q$$
$$(-4.47)\quad (-6.01)^{a}$$
$$R^2 = 0.08,\quad F-statistic = 36.08,\quad N = 444$$

Panel B: Financial Leverage
(t-values in parentheses)

$$\Delta FL = 0.339 - 0.622\ \Delta p - 0.639\ \Delta Q + 0.801\ \Delta GDP - 0.063\ \Delta OIL$$
$$(7.17)^{a}\quad (-6.81)^{a}\quad (-5.51)^{a}\quad (3.96)^{a}\quad (-2.47)^{b}$$
$$R^2 = 0.12,\quad F-statistic = 15.00,\quad N = 444$$

Panel C: Current Ratio
(t-values in parentheses)

$$\Delta CR = -1.438 + 2.496\ \Delta p + 0.615\ \Delta OIL$$
$$(-4.44)\quad (4.20)^{a}\quad (3.38)^{a}$$
$$R^2 = 0.04,\quad F-statistic = 9.70,\quad N = 444$$

[a], [b], [c] indicates significance at 1, 5, and 10% significance levels respectively using two-tailed test.

V. CONCLUSION

The analysis results show that profitability of SMEs in Turkey has been significantly affected by the changes in the real exchange rates. Currency devaluations increase, whereas currency overvaluations decrease profitability of Turkish SMEs. This is most probably due to the fact that currency devaluations increase the competitiveness power of SMEs over its foreign

competitors in domestic and foreign markets. The effects of the remaining macroeconomic variables on the profitability of SMEs are not found statistically significant.

The liquidity of SMEs has been significantly affected by the expected inflation and crude oil prices. An increase in the expected inflation and crude oil prices has perceived as the potential risk sources by SMEs and they are going to stay liquid in front of this potential risks. The financial leverage of SMEs has been significantly positively affected by real per capita GDP growth, whereas it is significantly negatively affected by expected inflation, real exchange rate and crude oil prices. It means that real per capita GDP growth and devaluations in the real exchange rates is perceived by SMEs as opportunities for growth and they increase their financial leverage to exploit these opportunities. However, an increase in expected inflation and crude oil prices are viewed as potential risk and they try to avoid it by decreasing their financial leverage level.

These results suggest in the case of emerging country that macroeconomic dynamics actively affect the financial performance of the SMEs. Governments should pay attention to the effects of the macroeconomic forces on the performance of the real side of the economy in order to support the balanced growth of the SMEs.

REFERENCES

Aras, G. (2002). The New Roles and Problemns of Turkish SMEs in the Globalization Process, *Foundation of Friedrich Ebert*.. Working Paper.

Calvo, G.A. and Guidotti, P.E. (1991). *Interest rates, Financial Structure, and Growth: Bolivia in a Comparative Perspective.* Washington, DC. International Monetary Fund.

Chen, N. Roll, R. and S. A. Ross. (1986). Economic Forces and the Stock Market. *Journal of Business*. Vol. 59. pp. 383-403.

De Gregorio, J, and Guidotti, P.E: (1995). Financial Development and Economic Growth. *World Development* 23. pp.433-448.

Ertuna, O. (2002), Short Term Capital Mobility and Crises: Asymmetric Risk and Return', *Bogazici University Working Paper.*

Fry, M.J. (1988). *Money, Interest, and Banking in Economic Development.* Baltimore, John Hopkins University Press.

Hair, J. F., Anderson, R.E., Tatham, R.L., and Black, W.C. (1998**)** *Multivariate Data Analysis*. Prentice Hall. New Jersey.

Horrýgan, J.O. (1965). Some Empirical Bases of Financial Ratio Analysis, *The Accounting Review*, July, pp. 558-568.

Kapur, B.K. (1976). Alternative Stabilization Policies for Less Developed Countries, *Journal of Political Economy* 84, pp. 777-795.

Krugman, P. (1979). A Model of Balance of Payments Crises, *Journal of Money, Credit and Banking*, 11/3: 311-325.

McKinnon, R.I. (1973. *Money and Capital in Economic Development*. Washington, Brookings.

Muslumov, A. (2002). *Turkish SMEs in the 21st Century: Problems, Opportunities, and Solutions*, Literatur Publications, Istanbul.

Shaw, E.S. (1973**)**. *Financial Deepening in Economic Development.* Oxford University Press, New York.

St-Amant, P. (1996). *Decomposing U.S. Nominal Interest Rates into Expected Inflation and Ex-Ante Real Interest Rates Using Structural VAR Methodology.* Bank of Canada Working Paper. Ontario.

Tobin, J. (1965**)**. Money and Economic Growth. *Econometrica* 33, pp. 671-684.

Uygur, E. (1993**)**. *Financial Liberalization and Economic Performance in Turkey*. The Central Bank of Turkey, Ankara.

Vinde, V. P. (1995). General Introduction to Environment for SMEs. OECD.

Warman, F. And Thirlwall, A.P. (1994**)**. Interest Rates, Saving, Investment and Growth in Mexico 1960-90: Tests of the Financial liberalization Hypothesis. *The Journal of Development Studies* 30, pp. 629-649.

Yazman, I. and A. Akpinar, (2001). *Financing SMEs*. TESKOMB Publications, Ankara, Turkey.

Yýlmaz, E. (2000). The Impact of Persistent Devaluation on Growth: The Case of Turkey During the Post-1980 Period. *Yapý Kredi Economic Review* 11. pp. 29-41.

DISTINGUISHING BETWEEN EXPORTING AND NON-EXPORTING SMALL AND MEDIUM-SIZED ENTERPRISES IN SWAZILAND

James Obben[1] and Phumzile Magagula[1]

ABSTRACT

Policies to assist more SMEs in developing countries to export must be informed by any systematic differences between current exporters and non-exporters. The results of a logit model estimated to ascertain the explicability of why some SMEs are exporters and some are not in Swaziland show that foreign language proficiency and frequency of business-related foreign trips are very significant determinants of high export propensity. A quadratic specification of the manager's age seems to resolve the seemingly contradictory effects of that variable reported in previous studies based on linear specification. Effectual policies must aim at upgrading the language skills of managers and assist with business-related foreign travel.

1. INTRODUCTION

The promotion and development of small and medium-sized enterprises (SMEs) is important for achieving national development goals such as economic growth, poverty alleviation, democratisation of the economic participation, employment creation, and the promotion of pluralistic societies (World Bank, 1991; Heshmati, 2001). Since SMEs tend to be concentrated in relatively labour-intensive activities, they contribute significantly to the achievement of social and economic objectives, such as labour absorption, income distribution, rural development, poverty eradication and regional balance (ADB, 1990). In developing countries, where the labour force growth rates have been far more than the job creation rates, SMEs have been instrumental in increasing the effective labour force by, for example, making more effective use of women in employment[2] and giving opportunities to rural people (UNCTAD, 1998).

Traditionally, SMEs played an important role only in their local economies and 'conventional views on growth' tended to overlook the acute importance of a dynamic SME sector. In recent years, however, SMEs have had significant success in international markets as more and more small firms gain a competitive edge and contribute significantly to total exports. Their changing role in international trade has made them significant contributors to the economic growth and development of many countries (Birch, 1988; UNCTAD, 1998; and Weaver *et al*, 1998). Evidence from some of the fast growing Asian economies (e.g., Taiwan, Singapore and South Korea) suggests that many of the opportunities for economic growth have come from, among other things, encouragement of the export capabilities of SMEs (UNCTAD, 1998). In

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[2] This is an important developmental objective. Because this study is about a developing country, we shall be considering the share of females in SME employment as one of the variables in the model to be estimated subsequently. The objective would be to ascertain the impact of increasing female share of SME employment on the propensity to export.

those economies, SMEs have made significant contribution to the export growth engine. For example, they account for about 35 percent of total exports, create between 40 and 80 percent of total employment, contribute between 30 and 60 percent of the Gross Domestic Product and constitute up to 95 percent of all registered enterprises (UNCTAD, 1994). Such significant contributions explain why SMEs have been regarded as 'kings' in some of these economies (Flannery and Shapiro, 1992).

The recent success of SMEs in international markets, coupled with increasing trade deficits and other economic problems have forced many developing countries to refocus their attention on the search for strategies and the design of policies and assistance programmes aimed at the promotion and development of their SMEs. Sound policies and effective assistance programmes for the promotion and development of SMEs, however, can only be developed if policy-makers have a good understanding of the dynamics of the SMEs.

A number of empirical studies have been carried out on the subject of export behaviour or the internationalisation of SMEs (e.g., Bilkey and Tesar, 1977; Yaprak, 1985; Axinn, 1988; Aaby and Slater, 1989; Keng and Jiuan, 1989; Louter *et al.*, 1991; Caughey and Chetty, 1994; Moini, 1995, 1998; and Weaver *et al.*, 1998). These studies have revealed that both external and internal factors are important for explaining the export behaviour of SMEs. Constituting the internal factors are firm-specific and decision-maker characteristics that have been found to be correlated to the firm's ability to identify appropriate export opportunities and to participate successfully in exporting. The commonly studied firm-specific variables are firm size, years in business, competitiveness of products, international experience, foreign market coverage and ownership structure of the firm (Axinn, 1988; Cavusgil and Zou, 1994; Calof, 1994; and Moini, 1995). Managerial characteristics that have been studied include education and age of the manager, foreign language skills, international orientation and international travel (Kaynak and Kothari, 1984; Moini, 1995; and Weaver *et al.*, 1998).

Amongst the external factors are external stimuli (e.g., fortuitous orders from foreign customers, economic integration and market opportunities) and government assistance programmes. Some studies have noted that whilst external stimuli and government assistance programmes, in particular, have contributed positively to the success of the SMEs in the exports sector, often issues of awareness, knowledge and utilization undermine the effectiveness of those schemes (Naidu and Rao, 1993 and Moini, 1998). Other problematic areas in the case of assistance schemes pertain to a mismatch between the needs and the availability of assistance programmes due to factors such as lack of precise objectives, poor targeting of client groups, and lack of understanding of user needs. Because of these difficulties and deficiencies in data pertaining to the external business environment of SMEs, Philp (1998) notes that most studies have tended to concentrate on the internal firm-specific and management attributes.

The most intensively studied firm-specific characteristic seems to be firm size and its effect on the propensity to export (i.e., the probability of being either an exporter or a non-exporter) and/or the intensity of export activities (proxied by the share of export sales in total sales). Despite the vastness of the literature, the evidence is inconclusive. After reviewing 55 studies, Aaby and Slater (1989) concluded that

there is little agreement on the impact of firm size on export propensity. Earlier, Miesenbock (1988) had reported that the majority of the studies he had reviewed supported the view that there is a positive relationship between exporting and firm size. Gemunden (1991) reports that a positive relationship between firm size and export propensity is generalizable but refrains from drawing the same conclusion about firm size and export intensity. After a comprehensive review of the literature, Bonaccorsi (1992) summarizes that whereas the probability of being an exporter increases with firm size, the variable does not have any significant effect on export intensity. In a recent study that focused on 'very small enterprises', Philp (1998) has reported that when a comprehensive range of explanatory variables are modelled with firm size, the size variable ceases to contribute significantly to explaining the probability that a firm is an exporter.

Research findings on the nature of the relationship between managerial characteristics and export performance have established that a clear positive relationship exists between the educational level of the manager and the degree of export involvement of the firm (Axinn, 1988; Keng and Jiuan, 1989; and Moini, 1998). Evidence on the relationship between the decision-maker's age and export performance is mixed. Aaby and Slater (1989) reported that a significant negative relationship exists between the age of the decision-maker and the export propensity of the firm, suggesting that firms with older managers tend to take fewer risks and are less willing to be innovative and expand internationally. However, Kaynak and Kuan (1993) found evidence to the contrary, suggesting that firms managed by older managers tended to have better export performances.[3] On foreign language skills, it has been argued that firms that have decision-makers that speak foreign languages are expected to have better export performances than firms that have monolingual managers (Kaynak and Kuan, 1993; and Moini, 1995). In a study of 76 small manufacturing firms in Finland, Lautanen (2000, p. 121) concludes that: "… it does not seem, among other things, that the financial risk related to exporting, nor the lack of experience, nor the education level of the white collar staff is likely to determine which small firms develop exporting quickly, but rather the language skills of the entrepreneurs".

Most of the work that has been done on the export behaviour of SMEs has been based on data pertaining to developed countries. Whilst these studies are useful in improving our understanding of the subject, there is still an information gap about developing countries and attempting to generalise on the basis of findings from industrialized economies only may both be 'dangerous and misleading' (Katsikeas and Piercy, 1993). This paper attempts to shed light on the nature and relevance of firm and managerial characteristics for the export propensity of SMEs in a small landlocked, developing, African country, Swaziland. With a population of about 1 million (in 1999) and an area of 1,674 square kilometres, Swaziland is a small country by international standards. Given the constraints imposed by a small domestic market, the export sector is of critical importance to the economic growth and

[3] The contradictory effects of age reported by Aaby and Slater (1989) and Kaynak and Kuan (1993) may perhaps be due to their linear specification of the age variable. A quadratic specification, if significant, can accommodate a non-monotonic relationship within the relevant range, thus resolving the seeming inconsistency. Indeed, such was found to be the case in the current study when a linear specification of age of the manager yielded a counter-intuitive non-significant negative coefficient but a quadratic specification yielded significant positive and negative coefficients for age and the square of age.

development of the country. Exports contribute about 80 percent to GDP, hence, the relevance and importance of the exporting dynamics.

Because our interest is in the export propensity of SMEs (i.e., either an SME is an exporter or it is not), the dependent variable will be dichotomous and the applicable analytical model should come from the binary-choice genre of models (Judge *et al*. 1985, Ch. 18; and Pindyck and Rubinfeld, 1991, Ch. 10). Consequently, the logit model is employed. The specification and estimation details of the logit model are relegated to a later section in the paper. The rest of the paper is organized as follows. Section 2 gives a brief outline of the background to the changes in policy towards SMEs in Swaziland and the rationale for this study. Section 3 deals with the data sources and specification and estimation of the logit model. The analytical results are presented and discussed in Section 4, and the last section summarizes and provides the conclusions from this study.

2. EMERGING POLICY RECOGNITION OF SMEs IN SWAZILAND AND RATIONALE FOR THE STUDY

Among the economic and political changes taking place in southern Africa, the end of the apartheid regime in the Republic of South Africa, the end of the war in Mozambique, and the re-negotiation of the Southern African Customs Union Agreement are posing major challenges to policy-makers in Swaziland. The pre-conditions for high economic growth, which were present in the 1980s, have largely disappeared. In the 1990s economic growth has been sluggish, foreign direct investment (FDI) has stagnated owing to the increased regional and international competition for FDI, and unemployment and poverty levels have increased to alarming rates. There is, therefore, a pressing need for the country to come up with policies, ideas, and institutions that can enhance growth, reduce the unemployment levels, improve income distribution and alleviate poverty.

In the past, the Swaziland government, like many other governments in developing countries, regarded large-scale industries as the 'royal road' to economic development. As such, government policy focused on attracting FDI and promoting large-scale GNP-focused industrialization. Large-scale industries were promoted in the private sector under an extremely generous system of incentives and public subsidies, and most of the benefits accrued to non-Swazi entrepreneurs.

In recent years, however, the government has recognised and acknowledged that SMEs have a significant role to play towards solving the looming economic problems in the country, and that SMEs are the emerging private sector and thus form the base for private-sector-led growth. In recognition of the significant potential contribution of SMEs, the government has introduced various assistance programmes in an attempt to promote the development of SMEs in the country. In addition, there is recognition of the constraints of the limited domestic market to the growth of SMEs and the fact that, in order to attain an export-led recovery of the Swaziland economy, it is important to encourage all businesses to export. Consequently, some of the promotion programmes were designed to encourage businesses to export (e.g., the Export Credit Guarantee Scheme and the Trade Promotion Unit). Most of these assistance programmes were introduced in the early 1990s. However, a casual inspection of the Swaziland Directory of Exports and Exporters shows that, to date,

very few SMEs are involved in exporting. Although in 1999 more than 80 percent of all registered companies were SMEs, only 6 percent of exporting companies were SMEs; these accounted for just 3 percent of the country's export earnings.

In order to achieve the objective of encouraging non-exporting SMEs to enter the export field, it is essential that policy makers develop a clear understanding of the differences that occur among SMEs. In addition, given the limited public budget, competing public priorities, and the need to ensure efficiency in the use of the available public funds, reaching out to all SMEs might be difficult and therefore it might be necessary to concentrate only on a few growth-oriented SMEs. A starting point is the recognition that SMEs are a very heterogeneous group and therefore the policies and assistance programmes have to take cognisance of this fact. Knowledge of the factors that distinguish non-exporting from exporting SMEs would, therefore, aid policy makers in facilitating the selection process, leading to the efficient and effective use of public funds. This study was undertaken to identify any systematic differences between current exporting and non-exporting SMEs that can guide policy to encourage more SMEs to export.

3. DATA SOURCES AND ANALYTICAL METHODS

3.1 The Data

There is no universal standard definition for SMEs. For statistical and policy purposes, however, previous studies have used the following scale variables: number of employees (ranging between 1 and 500 depending on country size); invested capital; total value of assets; annual sales turnover; production capability and average income. For example, using the number-of-employees scale to define SMEs, Roy and Simpson (1981) settled on less than 500 employees; Kaynak and Kothari (1984) opted for less than 250 employees; Reid's (1984) definition ranged from 100 to 500 employees, whilst the definition used by Walters and Samiee (1990) ranged from 1 to 99 employees. Among the studies in which volume of annual sales was used to define SMEs, Rabino (1980) employed less than $10 million; Culpan (1989) and Ali and Swiercz (1991) chose less than $5 million; and Beamish *et al*. (1993) opted for a limit of $25 million.

In Swaziland, SMEs that employ up to 2 people are classified as 'micro enterprises'; those that employ between 3 and 5 persons are classified as 'small enterprises'; and those that employ between 6 to 20 persons are classified as 'medium enterprises' (Public Policy Co-ordination Unit, 1998). For operational purposes, and in consonance with most other international studies, SMEs in this study are defined as those enterprises that have up to 100 employees.

The data for this study were collected through a survey questionnaire, which was administered in the year 2000 to a random sample of 40 managers of exporting and non-exporting SMEs across the country. The choice of variables that were included in the questionnaire was based on a review of the literature. The firm-specific characteristics that were measured are: firm-size, measured in terms of employment and sales in 1999; firm-age, measured in terms of number of years in business since the firm's establishment; and the percentage of employees that are female.

Managerial characteristics that were measured included the following: level of education; age; proficiency in Siswati (the local language[4]), English, Afrikaans (the two official languages in the Republic of South Africa, Swaziland's major trading partner[5]), French and Portuguese (the official language of neighbouring Mozambique); number of business-related trips to foreign countries[6]; and perception of exporting on the profitability, riskiness and cost of the business. Several other variables that were included in the questionnaire related to the business environment. The products these SMEs are involved in are mainly processed food items, manufactures, handicraft and textiles.

Owing to the difference between the Swaziland official classification of SMEs and the definition adopted in this study, identifying eligible SMEs required negotiating access to and searching the records of several statutory bodies and private organizations. The exporting SME sub-population in this context, which comprised SMEs from all industries excluding those in transport services and 'retail and trade', was obtained from the Swaziland *Directory of Exports and Exporters*, published by the Trade Promotion Unit of the Ministry of Foreign Affairs and Trade, and complemented by the list of exporters as compiled by the Central Bank of Swaziland. Using the upper limit of 100 employees, a total of 80 firms were identified and a random sample of 20 was selected. The non-exporters' group was obtained from lists of registered SMEs compiled by the Swaziland Enterprise Development Company (SEDCO), the Swaziland Chamber of Commerce (SCC), the Federation of Swaziland Employers (FSE), the Association of Swaziland Business Community (ASBC) and the Business Women's Association of Swaziland (BWAS). A random sample of 20 was selected from this group. Resort had to be made to the various sources because of the incomplete and scattered nature of the data on SMEs in the country. The size of the sample and the investigation, in general, was limited by the sparse information on exporting activities of SMEs in the country.

A preliminary examination of the data shows that there are some systematic differences between exporters and non-exporters. The average age of the non-exporting SMEs is 13 years whilst that of the exporting subgroup is 20 years, giving an overall sample average of 17 years. With an average annual sale of 14 million emalangeni (E14 million = US$2.15 million[7]) and 59 employees, the typical exporting SME is bigger than the typical non-exporting SME with E2 million (= US$0.31 million) in sales and 11 employees. The size distributions of the key variables

[4] In Swaziland, Siswati and English are the two commonly used languages for business transactions. Proficiency in the local language is included among the explanatory variables because some of the owners of the SMEs are known to be non-Swazi nationals who could not speak the local language.

[5] The Republic of South Africa absorbs 70 percent of Swaziland's exports and supplies 80 percent of Swaziland's imports.

[6] There is some apprehension about the implied causality from 'foreign trips' to export propensity when it could very likely be the reverse. It may be helpful to note that Kaynak and Kothari (1984) emphasized the importance of foreign travel and overseas work experience. Philp (1998) also considered those two variables as well as country of birth of the manager in an Australian study although the manager-related characteristics were not found to be significant determinants of export propensity. In the Swaziland SME study, consistent and useable data could be obtained for foreign travel but not for overseas work experience and country of birth. The causative reasoning about the foreign trips variable is that, more travel overseas (e.g., to attend trade fairs and various business exhibitions) increases the possibility of clinching a deal with foreign customers.

[7] Exchange rate in 1999: US$1 = E6.5.

representing firm characteristics are reported in Table 1. It may be inferred from the figures therein that a positive correlation exists between export propensity and age of the firm, volume of sales and the number of employees.

The size distributions of the manager-related characteristics are reported in Table 2 from which it may be gleaned that export propensity is positively correlated with the manager's age, education attainment, proficiency in foreign languages and frequency of foreign trips.

Table 1
Firm Characteristics

	Non-exporters		Exporters		Total Sample	
Variable	%	% Cum	%	% Cum	%	% Cum
Years in business						
5	30		--		15	
6 – 10	20	50	20		20	35
11 –15	20	70	30	50	25	60
16 – 20	10	80	20	70	15	75
21 – 30	10	90	5	75	7.5	82.5
31	10	100	25	100	17.5	100
Sales (millions of emalangeni)						
< E1	65		20		42.5	
E1 – E5	20	85	15	35	17.5	60
E6 – E10	5	90	15	50	10.0	70
> E10	10	100	50	100	30.0	100
Employees						
5	40		5		22.5	
6 – 20	50	90	35	40	42.5	65
21 – 100	10	100	60	100	35	100
Share of Female Employees						
25%	45		35		40	
26 – 50%	5	50	25	60	15	55
51 – 75%	5	55	--		2.5	57.5
76 – 100%	45	100	40	100	42.5	100

Table 2
Characteristics of Managers

	Non-exporters		Exporters		Total Sample	
Variable	%	% Cum	%	% Cum	%	% Cum
Age						
25 – 34	10		10		10	
35 – 44	30	40	20	30	25	35
45 – 54	35	75	15	45	25	60
55 – 64	20	95	40	85	30	90
65	5	100	15	100	10	100
Education						
Less than high sch.	15		--		7.5	
High sch. cert.	5	20	5		5	12.5
Post-high sch. cert.	55	75	21	26	37.5	50
College cert.	15	90	16	42	15	65
Under-grad degree	5	95	11	53	7.5	72.5
Post-grad degree	5	100	47	100	27.5	100
Language skills						
Siswati:						
None	--		10		5	
Poor/fair	15		30		22.5	
Good	25		30		27.5	
Excellent	60		30		45	
English:						
None	--		--		--	
Poor/fair	10		--		5	
Good	70		25		47.5	
Excellent	20		75		47.5	
Afrikaans:						
None	65		20		42.5	
Poor/fair	35		45		40	
Good/Excellent	--		35		17.5	
Portuguese:						
None	80		90		85	
Poor/fair	10		5		7.5	
Good/Excellent	10		5		7.5	
French:						
None	85		65		75	
Poor/fair	10		25		17.5	
Good/Excellent	5		10		7.5	
Foreign trips						
1 – 2 per annum	20		10		15	
3 – 5 per annum	20	40	25	35	22.5	37.5
6 – 10 per annum	45	85	10	45	27.5	65
> 10 per annum	15	100	55	100	35	100

3.2 Model Specification and Estimation Techniques

As mentioned earlier, the research objective is to find the determinants of the likelihood of an SME being an exporter. Econometrically, this could be modelled via the linear probability model in which ordinary least squares (OLS) is applied straightforwardly. Unfortunately, with a dichotomous dependent variable, the error term in the linear probability model suffers from heteroskedasticity and, even more seriously, the estimated conditional probabilities may fall outside the permitted range or logical limits of [0,1]. Whereas the problem of heteroskedasticity can be resolved with an appropriate transformation of the data to ensure homoskedasticity, the non-fulfilment of the 0-1 conditional probability requires the use of a cumulative distribution function (CDF) and the maximum likelihood estimation procedure. The probit model (that uses the normal CDF) and the logit model (that uses the logistic CDF) do guarantee that the estimated conditional probabilities will lie within the 0-1 interval (Gujarati, 1995, p. 544).

The probit and logit models are quite comparable and give qualitatively similar results. However, because the logistic CDF is not in integral form, that makes the logit model somewhat easier to work with (Griffiths *et al*., 1993 p. 751). In a note on 'Logit versus Probit', Gujarati (1995 p. 568) concludes that "... the logit model is generally used in preference to the probit". Pindyck and Rubinfeld (1991, p. 256) deem the logit model to be 'somewhat more appealing' than the probit model. Consequently, we utilise the logit model.

To motivate the logit model, assume there is a theoretical continuous index Z_i which ranges from – to + and which is determined by a set of explanatory variables that we can write as

(1) $Z_i = \beta_1 + \beta_2 X_{i2} + ... + \beta_k X_{ik} \quad i = 1, ..., N$

Using matrix notation

(2) $\mathbf{Z_i} = \mathbf{X_i'B}$

where $\mathbf{B} = [\beta_1 \ \beta_2 \ .... \ \beta_k]'$ and $\mathbf{X_i'} = [1 \ X_{i2} \ .... \ X_{ik}]$.

Observations of Z_i are not available. Assume further that the available data distinguish only whether individual observations are in one category (exporter) or in a second category (non-exporter). Thus the dependent variable is a dummy variable taking the value 1 if the SME is an exporter, and the value 0 if the SME is a non-exporter.

The logit model assumes that Z_i is a logistic random variable. Hence, the probability that an individual SME would be an exporter given its characteristics can be computed from the logistic CDF evaluated at Z_i:

(3) $P_i = F(Z_i) = 1 / (1 + \exp\{-Z_i\})$

where P_i is the probability that SME i is an exporter, $F(\bullet)$ is the [logistic] CDF evaluated at a specific value. Z_i goes from – to + as P_i goes from 0 to 1, and when $Z_i = 0$, $P_i = 0.5$.

Multiplying both sides of the equation by $(1 + \exp\{-Z_i\})$, dividing the result by P_i and subtracting 1 from both sides yields

(4) $\exp\{-Z_i\} = P_i / (1 - P_i)$

which is the odds ratio – the ratio of the probability of an individual SME being an exporter to the probability of not being an exporter. Taking the natural logarithm of both sides gives

(5) $Z_i = \ln [P_i / (1 - P_i)] = \mathbf{X_i'B}$
$= \beta_1 + \beta_2 X_{i2} + ... + \beta_k X_{ik}$

Therefore, the dependent variable in the logit model is the log of the odds that an individual SME will be an exporter. The regression coefficients are estimated using the method of maximum likelihood. A given slope coefficient shows how the log of the odds (that an individual SME will be an exporter) changes as the corresponding explanatory variable changes by one unit, or as an attribute different from that of the base category is considered. The statistical significance of the slope coefficients may be assessed from their respective standard errors, t-ratios or p-values. A test of the hypothesis that all the regression coefficients in the model are zero can be done via the likelihood ratio test where the chi-square test statistic has k-1 degrees of freedom.

In dichotomous-dependent-variable models, the conventionally computed coefficient of determination (the R-square) is of questionable value as a measure of goodness of fit (Gujarati, 1995, pp. 545-46, 561, 579). Consequently, several alternatives are suggested in the literature. A number of those are reported with the regression results in the next section.

When the regression coefficients are exponentiated, the derived values or the antilogs indicate the effect of each explanatory variable directly on the odds of being an exporter rather than on the log-odds. Subtracting 1 from the antilogs and multiplying the results by 100 would give the percentage changes in the odds corresponding to one unit change in the explanatory variables (Gujarati, 1995, p. 559).

The probability that SME i would be an exporter can be estimated from the antilogs of both sides of Equation (5):

(6) $P_i / (1 - P_i) = \text{antilog } L_i$
$P_i = (1 - P_i) \text{ antilog } L_i = \text{antilog } L_i / (1 + \text{antilog } L_i)$

where L_i is the estimated value of the response variable from the regression for the i^{th} SME.

The explanatory variables employed in the analysis are:

YEARSBUS = number of years in business;

SALES = gross sales in the year 1999 in millions of emalangeni (E million);

EMPLYEES = number of employees;
AGEMGR = age of the manager in years;
EDUC = educational attainment of the manager (less than high school = 1; high school = 2; some post high school certificate = 3; college certificate = 4; university degree = 5; post-graduate degree = 6);
FEMALES = percentage of workforce that is female;
SISWATI = proficiency in Siswati (none = 0; poor = 1; fair = 2; good = 3; excellent = 4);
ENGLISH = proficiency in English (none = 0; poor = 1; fair = 2; good = 3; excellent = 4);
AFRIKAAN = proficiency in Afrikaans (none = 0; poor = 1; fair = 2; good = 3; excellent = 4);
FRENCH = proficiency in French (none = 0; poor = 1; fair = 2; good = 3; excellent = 4);
PORTUGES = proficiency in Portuguese (none = 0; poor = 1; fair = 2; good = 3; excellent = 4);
FORTRIPS = number of business-related trips to foreign countries;
PERXPRFT = perception of exporting on profits relative to domestic sales (much less = 1; less = 2; about the same = 3; more = 4; much more = 5);
PERXRISK = perception of exporting on risk relative to domestic sales (much less = 1; less = 2; about the same = 3; more = 4; much more = 5);
PERXCOST = perception of exporting on costs relative to domestic sales (much less = 1; less = 2; about the same = 3; more = 4; much more = 5).

Two variants of the model were estimated – one with the foreign trips variable (Model 1) and the other without the foreign trips variable (Model 2) – to accommodate the ambiguity about the direction of causality between foreign trips and export propensity. For each variant, there were two stages to the model estimation. At the initial stage a baseline or exploratory model comprising a linear specification of all the variables was estimated (stage A). It is hypothesized that YEARSBUS, SALES, EMPLYEES, AGEMGR, EDUC, ENGLISH, AFRIKAAN, FORTRIPS and PERXPRFT would be positively associated with the dependent variable; and that PERXCOST would be negatively associated with the dependent variable, but FEMALES, SISWATI, FRENCH, PORTUGES and PERXRISK could go either way.

Multicollinearity (reflected in high R-squares and low t-ratios or large standard errors of the slope coefficients) is to be expected in the baseline models because of high pair-wise correlations among some of the explanatory variables. The significant computed pair-wise correlations are as follows: EMPLYEES & SALES, 0.71; EMPLYEES & EDUC, 0.68; EDUC & ENGLISH, 0.64; EDUC & SALES, 0.55; and PERXCOST & PERXRISK, 0.51. If any continuous variable took a counter-intuitive sign, its quadratic form was considered in an interim step to check the plausibility of a non-monotonic relationship. Then the non-significant variables were eliminated sequentially leading to the final model that contained only the significant variables[8] (stage B). The resulting four logit regression equations are referred to as Model 1A, Model 1B, Model 2A and Model 2B, respectively.

[8] We use the one-tail t-test at the 10% level of significance.

4. ANALYTICAL RESULTS

The logit regression results of the initial and final versions of the two variants of the model are reported in Table 3. As the results of Model 1A show, when FORTRIPS is included in the model the initial version gives a perfect fit (e.g., three of the R-square measures are equal to 1.00) even though the individual regressors are not significant. This is symptomatic of high multicollinearity. It will be noticed that the age of the manager variable, AGEMGR, and the education variable, EDUC, initially take counter-intuitive but non-significant negative signs. In an unreported interim estimation step, the re-estimation of those two variables in quadratic form yielded plausible configuration of signs but the variables were not significant enough to be selected in the final version of the model. The final version, Model 1B, indicates, however, that only one firm-specific variable (EMPLYEES) and three manager-related characteristics (ENGLISH, AFRIKAAN and FORTRIPS) are significant for explaining the differences in the log of the odds of an SME in Swaziland being an exporter. It is worthy of note that there is no high pair-wise correlation among the variables selected in the final model.

Table 3
Logit Regression Results

	Model With Foreign Trips				Model Without Foreign Trips			
	Model 1A		Model 1B		Model 2A		Model 2B	
Variable	Coef	T-stat	Coef	T-stat	Coef	T-stat	Coef	T-stat
CONSTANT	-390.6	-3E-4	-21.9	-2.43	-864.9	-0.67	-53.2	-1.75
YEARSBUS	3.739	4E-4			-3.448	-0.66		
SALES	8.272	3E-4			-6.682	-0.65		
EMPLYEES	0.819	3E-4	0.104	1.90**	4.669	0.68	0.200	2.14**
AGEMGR	-11.08	-2E-4			-30.02	-0.69	12.57	1.40*
AGESQR							-1.83	-1.54*
EDUC	-5.539	-1E-4			38.47	0.64		
FEMALES	0.694	3E-4			0.116	0.67		
SISWATI	10.574	1E-4			-9.421	-0.76	-1.13	-1.37*
ENGLISH	93.325	3E-4	3.622	2.10**	177.5	0.68	4.452	1.99**
AFRIKAAN	28.45	3E-4	1.520	2.13**	64.65	0.68	2.323	1.92**
FRENCH	-51.16	-6E-4			-91.76	-0.67		
PORTUGES	73.31	5E-4			22.67	0.64		
FORTRIPS	97.154	5E-4	1.983	2.04**				
PERXPRFT	-30.81	-1E-4			-14.24	-0.59		
PERXRISK	-44.90	-2E-4			87.92	0.68	3.819	1.56**
PERXCOST	-9.011	-1E-4			-21.95	-0.71		
Diagnostics								
Log Likelih'd Fn	-5E-9		-8.2978		-7.9143		-8.8011	
Likelihood Ratio Test	55.452; with 15 d.f .		38.856; with 4 d.f.		39.623; with 14 d.f.		37.8496; with 7 d.f.	
Estrella R^2	1.00		0.81		0.82		0.80	
Maddala R^2	0.75		0.62		0.63		0.61	
Cragg-Uhler R^2	1.00		0.83		0.84		0.82	
McFadden R^2	1.00		0.70		0.71		0.68	

% of Correct Prediction	100%	92.5%	87.5%	90.0%

Notes
* = *significant at the 10% level.*
** = *significant at the 5% level.*

Apparently, firm size does matter. In Swaziland the number of employees seems to be a much better scale variable than volume of sales. Since the correlation coefficient between SALES and EMPLYEES is 0.71, it is clear that the volume of sales of SMEs increases as they employ more people. The over-riding importance of proficiency in foreign languages, principally English and Afrikaans, for the export propensity of SMEs is upheld by the data from Swaziland. Most of Swaziland's trade is with the Republic of South Africa where the official languages are English and Afrikaans. It stands to reason that these two languages would be featured prominently in the model. The significant and positive relationship between number of foreign trips and the dependent variable augurs well for policies that are designed to assist SME managers with business-related trips to foreign countries.

When FORTRIPS is excluded from the model, the results of Model 2A show that even though the individual regressors are not significant, the likelihood ratio test score (i.e., 39.8496 with 7 degrees of freedom) leads to the rejection of the hypothesis that the estimated coefficients are simultaneously equal to zero. Just as in the case of Model 1A, this outcome is suggestive of high multicollinearity. The variables that initially take counter-intuitive but non-significant negative signs are the age of the manager variable (AGEMGR), the number of years in business variable (YEARSBUS), and the volume of sales variable (SALES). In unreported interim estimation steps, only the re-specification of the age variable in quadratic form yielded a plausible configuration of the signs of the coefficients from which the final set of variables was selected. It must also be noted that when FORTRIPS is excluded from the model, more variables are selected in the final version of the model.

As expected, the set of variables selected in the final model (Model 2B) is different from that selected when FORTRIPS is included in the specification. Age of the manager appears in a quadratic form significantly in this final model. The combination of the positive and negative signs taken by AGEMGR and AGESQR, respectively, implies that the probability of being an exporter increases at a decreasing rate as age of the manager increases. The upshot is that, in the requisite range of values of a linearly specified age variable, the negative/decreasing component could overwhelm the positive/increasing component (or the other way round) resulting in an overall negative (or positive) effect of age on export propensity. Hence, it is clear that depending on the range of values of age in the dataset a linear formulation of age can turn out either a positive or a negative coefficient, giving the impression, perhaps erroneously, of a monotonic relationship. A quadratic formulation in which age and the square of age do not take alternating signs may be the supporting evidence needed to justify a linear specification of the age variable. This finding should help to resolve the seemingly contradictory findings about the effect of age on export propensity reported in the empirical literature.

As in Model 1B, EMPLYEES is the only one selected from among the firm-specific variables in Model 2B; the larger the workforce of the SME the more likely that it would be an exporter. The positive coefficients taken by ENGLISH and AFRIKAAN

mean the greater the proficiency in English and the Afrikaans language, the higher the probability that the SME would be an exporter. In general, the comments made about these two language variables in connection with the results of Model 1B apply here too.

The negative sign of SISWATI implies that, after controlling for the other factors, the probability of being an exporter decreases with the manager's proficiency in the local language. An alternative interpretation is that since the only respondents who did not have any knowledge at all of the Siswati language were exporters and, inasmuch as the majority of those with poor/fair knowledge of the language were also exporters, it is possible for foreigners with little or no knowledge of the local language to establish and conduct small business and undertake exporting activities based in Swaziland. Perhaps we can extend this interpretation to hypothesize that previous stay in a foreign country has salutary effect on export propensity. The positive coefficient for PERXRISK means that those SMEs that perceived that export sales are riskier compared to domestic sales are more likely to engage in exporting than those that perceived export sales to be less risky. This suggests that SMEs in Swaziland are not necessarily deterred from engaging in exporting because of a perceived higher risk to sales; the exporting SMEs may be considered to be less risk averse than their non-exporting counterparts.

5. SUMMARY AND CONCLUSIONS

The paper set out to fit the logit model to the cross sectional data collected via a survey questionnaire to ascertain the explicability of why some SMEs in Swaziland are exporters and some are not (i.e., export propensity). Information was collected on firm-specific and manager-related variables as gleaned from the empirical literature on export behaviour of SMEs. Because of the potential reverse causality between number of business-related foreign trips and export propensity, two variants of the logit model were estimated – one with, and the other without the foreign trips variable. A good fit was obtained for either variant but the variables selected are slightly different. Important insights were obtained from both formulations of the model.

With or without the foreign trips variable in the model, firm size (as measured by number of employees) and proficiencies in English and the Afrikaans language are significant determinants of the probability of an SME being an exporter. For a scale variable, the logit model seems to prefer number of employees to the volume of sales. Hence, this study endorses the use of number of employees as the yardstick for classifying SMEs in Swaziland. The design of assistance programmes should include specific schemes to upgrade the English and Afrikaans and foreign language skills of managers of non-exporting SMEs.

When the foreign trips variable is excluded, the empirical model shows that as the age of the manager increases, the probability of an SME being an exporter also increases but at a decreasing rate. It was possible to capture this relationship with the quadratic specification of the age variable. This helps to resolve the seemingly contradictory findings in previous studies in which linear forms of the age variable had been used. Presumably there is some age bracket within which the propensity to export rises with age and beyond that the propensity predictably falls. It seems that in this study,

managers who are 65 years of age, or older, are less inclined to engage in exporting activities. Additionally, the greater the proficiency in Siswati, the local language, the lower the probability of the SME being an exporter, other things being equal. In other words, knowledge of the local language is not critical to successfully setting up an SME to export from Swaziland. And finally, those managers who perceive export sales to be more risky compared to domestic sales are also those who are more likely to engage in exporting, suggesting that the exporting SMEs are clearly risk-takers.

When the foreign trips variable is brought into the model it displaces the local-language proficiency variable, age of the manager and the risk variable from the model. Auspiciously, the greater the number of business-related trips taken out of the country, the more likely the SME is to be an exporter. A policy recommendation that arises instinctively from this finding is that official support, financial or otherwise, targeted towards currently non-exporting SMEs to attend business-related functions outside the country is more than likely to bear fruit in exporting.

Conspicuously absent in the final versions of the two variants of the logit model are the variables on number of years in business, volume of sales, educational attainment, share of females in the workforce, proficiencies in French and Portuguese, and perceptions about the effect of exporting on the profitability and cost of the business. The logical interpretation is that, in the presence of the other variables that were finally selected, these variables were not found by the logit model to be critical to the likelihood of an SME in Swaziland being an exporter. Amongst them, the education variable warrants a comment or two because it was expected to be a highly significant determinant of the export propensity of SMEs. In the ensuing commentary it would be beneficial to recall that the education variable captures/reflects the highest formal academic qualification of the manager.

An examination of the correlation matrix of the explanatory variables reveals that education is highly correlated with English language proficiency, number of employees and volume of sales. English and Afrikaans had their highest correlations (of 0.64 and 0.41, respectively) with education that had its highest correlation (of 0.68) with number of employees which, in turn, had its highest correlation (of 0.71) with volume of sales. The initial specifications of the model, in which education appeared simultaneously with the rest of the variables, produced the 'classic' symptoms of multicollinearity – high R-squares and low t-ratios. The remedial action of dropping superfluous variables where the non-significant variables were the natural candidates resulted in the rejection of education in the final versions of the model. The connotation here is that, in the logit model, education is dominated (or crowded out) by the variables with which it is highly correlated. This does not, however, diminish the importance of education in the scheme of things. It signifies that formal education becomes a superfluous variable for modelling if, presumably, it has served its purpose of imparting measurable relevant skills (e.g., excellent command of the English language) that are also being utilized as explanatory variables in the same model. In other words, education is antecedent to the variables with which it is significantly collinear. It is inconceivable that causality runs from sales or number of employees or English language proficiency to academic qualifications of the manager in this research context. Furthermore, it must be emphasised that skills pertinent to the conduct of successful export business (acquired through formal education or other means) are ultimately what matter rather than the academic qualifications *per se.*

Whereas education generally improves the human capital, a highly educated person does not necessarily make a successful business manager, let alone an exporter. This is the reasoning we proffer for the eventual non-selection of the education variable; and for that, the logit model must be commended.

In conclusion, we would like to caution that the upbeat findings of this research must be seen against the backdrop of the relatively small sample studied, the absence of potentially useful variables on which data could not be gathered (e.g., price and non-price competitiveness in the marketplace, training of the manager in export matters). Certainly, a much larger sample would give more robust results.

REFERENCES

Aaby, N. F. and Slater, S. F. (1989) Management Influence on Export Performance: A Review of the Empirical Literature 1978-88, *International Marketing Review*, Vol 6, No. 4, pp. 7-26.

Asia Development Bank (ADB) (1990), *The Role of Small and Medium-Scale Manufacturing Industries in Industrial Development*, Asia Development Bank, Manila.

Ali, A. and Swiercz, P. M. (1991) Firm Size and Export Behaviour: Lessons From the Midwest, *Journal of Small Business Management*, Vol 29, No. 2, pp. ??

Axinn, C. (1988) Export Performance: do Managerial Perceptions Make a Difference?, *International Marketing Review*, (Summer) pp. 61-71.

Beamish, P. W., Craig, R. and McLellan, K. (1993) The Performance Characteristics of Canadian versus UK Exporters in Small and Medium-sized Firms, *Management International Review*, Vol 33, No. 2, pp. ??

Birch, D. L. (1988) The New Economy: Trading Places, *Inc*., April, pp. 42-43.

Bilkey, W. J. and Tesar, G. (1977) The Export Behaviour of Smaller-Sized Manufacturing Firms, *Journal of International Business Studies*, Vol 8 (Spring-Summer) pp. 93-98.

Bonaccorsi, Andrea (1992) On the Relationship Between Firm Size and Export Intensity, *Journal of International Business Studies*, Vol 23 No. 4, pp. 605-635.

Calof, Jonathan (1994) The Relationship Between Firm Size and Export Behaviour Revisited, *Journal of International Business Studies*, Vol 25 No. 2, pp. 367-388.

Caughey, M. and Chetty, S. (1994) Pre-export Behaviour of Small Manufacturing Firms in New Zealand, *International Small Business Journal*, Vol 12, No. 3, pp. 62-68.

Cavusgil, S. T. and Zou, Shaoming (1994) Marketing Strategy-Performance Relationship: An Investigation of the Empirical Link in Export Market Ventures, *Journal of Marketing*, Vol 50, pp. 1-21.

Culpan, R. (1989) Export Behaviour of Firms: Relevance of Firm Size, *Journal of Business Research*, Vol 18, No. 3, pp. 207-218.

Flannery, R. and Shapiro, D. (1992) Taiwan: Taipei's Brave New World, *Asian Business*, Vol 28, No. 12, pp. 34-48.

Gemunden, H. G. (1991) Success Factors of Export Marketing: A Meta-Physical Critique of the Empirical Studies, in Paliwoda, S. J. (editor) **New Perspectives on International Marketing**, Routledge, London.

Griffiths, W. E., Hill, R. C. and Judge, G. G. (1993) **Learning and Practicing Econometrics**, John Wiley and Sons, Inc., New York.

Gujarati, D. N. (1995) **Basic Econometrics**, 3rd ed., McGraw-Hill, Inc., New York.

Heshmati, A. (2001) On the Growth of Micro and Small Firms: Evidence From Sweden, *Small Business Economics*, Vol 17, pp. 213-228.

Judge, G. G., Griffiths, W. E., Hill, R. C., Lutkepohl, H. and Lee, T-C. (1985) **The Theory and Practice of Econometrics**, 2nd ed., John Wiley and Sons, New York.

Katsikeas, G. S. and Piercy, N. (1993) Long -Term Export Stimuli and Characteristics in a European LDC, *Journal of International Marketing*, Vol 1 No. 3, pp. 23-47.

Kaynak, E. and Kothari, V. (1984) Export Behaviour of Small and Medium-sized Manufacturers: Some Policy Guidelines for International Marketeers, *Management International Review*, Vol 24, pp. 61-69.

Kaynak, E. and Kuan, K.W. (1993) Environment Strategy, Structure, and Performance in the Context of Export Activity: An Empirical Study of Taiwaneese Manufacturers, *Journal of Business Research*, Vol 27, pp. 33-49.

Keng, K. A. and Jiuan, T. S. (1989) Differences Between Small and Medium Sized Exporting and Non- Exporting Firms: Nature or Nurture, *International Marketing Review*, Vol 6, No. 4, pp. 27-40.

Lautanen, T. (2000) Modeling Small Firms' Decisions to Export – Evidence from Manufacturing Firms in Finland, 1995, *Small Business Economics*, Vol 14, No. 2, pp. 107-124.

Louter, P. K., Ouwerkerk, C. and Bakker, B. A. (1991) An Inquiry into Successful Exporting, *European Journal of Marketing*, Vol 25, No. 6, pp. 7-23.

Miesenbock, K. J. (1988) Small Business and Exporting: A Literature Review, *International Small Business Journal*, Vol 6, No. 2.

Moini, A. H. (1995) An Inquiry into Successful Exporting: An Empirical Investigation Using a Three-Stage Model, *Journal of Small Business Management*, Vol 33, No. 3, pp. 9-25.

Moini, A. H. (1998) Small Firms Exporting: How Effective are Government Export Assistance Programs?, *Journal of Small Business Management*, Vol 36 No. 1, pp. 1-15.

Naidu, G. M. and Rao, T. R. (1993) Public Sector Promotion of Exports: A needs-Based Approach, *Journal of Business Research*, Vol 27, pp. 85-101.

Philp, N. E. (1998) The Export Propensity of the Very Small Enterprise (VSE), *International Small Business Journal*, Vol 16, No. 4, pp. 79-93.

Public Policy Co-ordination Unit (1998) Synopsis of the Task Force Report on Economic Empowerment of Small, Medium and Micro Enterprises, Public Policy Co-ordination Unit, Swaziland.

Pyndyck, R. S. and Rubinfeld, D. L. (1991) **Econometric Models and Economic Forecasts**, 3rd ed., Mc-Graw Hill, Inc., New York.

Rabino, S. (1980) An Examination of Barriers to Exporting Encountered by Small Manufacturing Companies, *Management International Review*, Vol 20, No. 1, pp. 67-73.

Reid, S. D. (1984) Market Expansion and Firm Internationalisation, in Kaynak, E., editor, **International Marketing Management**, Praeger Publishers, New York.

Roy, D. A. and Simpson, C. L. (1981) Export Attitudes of Business Executives in the Smaller Manufacturing Firm, *Journal of Small Business Management*, Vol 19, No. 2, pp. ??

Seringhaus, F. H. R. and Rosson, P. J. (1991) **Export Development and Promotion: The Role of Public Organizations**, Kluwer Academic Publishers, London.

UNCTAD (1994) Technological Dynamism in Industrial Districts: An Alternative Approach to Industrialization in Developing Countries? United Nations Organization, Geneva.

UNCTAD (1998) Handbook on Foreign Direct Investment by Small and Medium-sized Enterprises: Lessons from Asia, United Nations Organization, Geneva.

UNCTAD (2000) Development Strategies and Support Services For SMEs: Proceedings of Four Intergovernmental Meetings, United Nations Organization, Geneva.

Walters, P. G. P. and Samiee, S. A. (1990) A Model for Assessing Performance in Small US Exporting Firms, *Entrepreneurship: Theory and Practice*, (Winter) pp. 35-50.

Weaver, K. M., Berkowitz, D. and Davies, L. (1998) Increasing the Efficiency of National Export Promotion Programs: The Case of Norwegian Exporters, *Journal of Small Business Management*, Vol 36, No. 4, pp. 1-11.

World Bank (1991) World Development Report 1991: The Challenge of Development, Washington, D.C., U. S. A.

Yaprak, Attila (1985) An Empirical Study of the Differences Between Small Exporting and Non-Exporting U. S. Firms, *International Marketing Review*, pp. 72-78.

RECASTING SMALL BUSINESS IN KOREA

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ABSTRACT

This paper challenges the conventional image of Korean small business as the traditional, backward, and helplessly exploited part of the dual economic structure. The Korean dirigiste state showed a pronounced financial policy bias toward its chaebol proxies during the 1960s and 1970s. While harsh and unsupportive policies caused disproportionate suffering for the nation's small business people, these relatively marginalized actors nevertheless proved as resilient, adaptable, and incrementally innovative as big business in the nation's late modernization. The hungry spirit of the first generation of small business owners in the aftermath of independence from Japanese colonial rule made them tough and dedicated entrepreneurs. The industries and areas of business engaged in by small entrepreneurs were often considered inefficient pockets of the economy, but like wild grass, they took root in these pockets and created value-added and increased efficiency, even if on a small scale, and thereby made the most of their opportunities. Financial policy became less unfavourable toward small business in the 1980s as a result of power shifts among competing coalitions and the winning coalition's consequent task of building paternalistic legitimacy in the eyes of society; in the process the composition of small business started to change. Largely unnoticed, second-generation small entrepreneurs capitalizing on technology-driven niche market strategies began to spring up. While big business is generally seen as the foundation of the "Korean miracle" of economic development, this paper argues that small firms, both old and new, were equally central to the miracle, offering alternative pathway to continued development in the post-1997 crisis era.

INTRODUCTION

This paper challenges the conventional image of Korean small business[1] as the traditional, backward and helplessly exploited part of the dual economic structure.[2] The Korean government showed a pronounced financial policy bias toward big business conglomerates or *chaebol* during the 1960s and 1970s. While harsh and unsupportive policies caused disproportionate suffering for the nation's small business people, some of these relatively marginalized actors nevertheless proved resilient, adaptable, and incrementally innovative.

The hungry spirit of the first generation of business owners in the aftermath of independence from Japanese colonial rule made them tough and dedicated entrepreneurs. The industries and

areas of business engaged in by small entrepreneurs were often considered inefficient pockets of the economy, but like wild grass, they took root in these pockets and created value-added and increased efficiency, even if on a small scale, and thereby made the most of their opportunities. Financial policy became less unfavourable toward small business in the 1980s as a result of power shifts between competing coalitions and the winning coalition's consequent undertaking of building popular support for its rule in the eyes of society;[3] in the process the composition of small business started to change. Largely unnoticed, second-generation small entrepreneurs capitalizing on technology-driven niche market strategies began to spring up. While big business is generally seen as the foundation of the "Korean miracle" of economic development, this paper argues that small firms, both old and new, were equally central to the miracle.

RECASTING KOREA'S SMALL BUSINESS

Even in 1995, Korea's medium-sized companies, or SMEs with 50-299 employees, constituted only 8.7 percent (8,368 firms) of the total.[4] Put differently, petty small businesses with less than 20 employees still represented 71.8 (69,023 firms) percent of all firms. Given that not all of the petty firms could be venture start-ups or leading medium-sized firms of tomorrow, one might argue that the general picture of small business in Korea remains petty, backward, and far from modern. However, evidence against such a conventional view of small business in the nation's more traditional industrial sectors suggests otherwise.

As of 1996, 65 percent of Korean small businesses were headed and managed by owner-managers.[5] The dominant presence of owner-managers and their control of company management as well as the relative scarcity of professional managers are frequently construed as indicators of pre-modern, backward, and anti-progressive elements in the country's small firms. Yet the tenacity, agility, hard work, and creativity of owner-managerscomprised the very source of small business strength and innovation, even if incremental. Such merits contrasted with large firm professional managers who suffered from "big business syndrome" such as cumbersome organizational decision-making and loss of vitality or flexibility in an otherwise formidable and resource-rich entity.

Most *chaebol* owners also shared humble beginnings as tough small entrepreneurs at liberation from Japanese colonial rule. Korea's utter economic backwardness led to a system of state-led economic development, or *dirigisme.* And without the existence of *pouvoirs intermediaires,* the plebiscitarian practice in obtaining access to state power was rampant in the country.[6] Obviously, not every entrepreneur could gain access to or benefit from the state. In this context, the so-called *inmack* or personal connection to the all-powerful state played a critical role in determining the success of big business enterprises in Korea, the kind that ultimately distinguished those firms that grew to behemoth size from those that did not-- due to lack of access to the means of growth.

Without Chung Ju Yung's clever exploitation of his political connections, nothing can fully explain the tycoon's success in turning his little automobile-repair shop opened in 1946 into the

Hyundai conglomerate of today. The company's initial capital was accumulated through Chung's younger brother, Chung In Yung, who used his fluent English to obtain lucrative construction contracts from the U.S. military command in Korea. Chung then solidified the firm's dominant position by winning President Park Chung Hee's personal confidence and favor: Chung became the president's most trusted agent for executing many of the regime's most ambitious investment projects such as the Seoul-Pusan Expressway and the world's biggest shipyard in Ulsan.[7]

Again, without considering how Kim Woo Choong took advantage of his personal ties to state power holders, one cannot fully account for the Daewoo group's meteoric rise from a tiny textile-exporting company in 1967 to one of the top *chaebol* in less than a few decades. That Chairman Kim's father had been a respected teacher of Park Chung Hee in his Taegu High School years was a significant factor in making the younger Kim a personal favorite of the former president. Moreover, Kim as himself a graduate of the elitist Kyongki High School could tap prestigious Kyongki connections; Kyongki graduates dominated the group's high-level management positions. Cashing in on this personal network, Kim's Daewoo recorded the fastest growth rate among all Korean corporations in the 1970s. During that frenzied development decade, the group engaged in a series of cheap debt-financed investment sprees into heavy industries and general trading, taking over many bankrupt or mismanaged firms-- following the president's wishes, of course. And in return for lucrative monopolistic or oligopolistic investment licenses, huge tax breaks, and privileged access to bank credits, the business entrepreneur generously contributed to the regime coffers.[8]

Interestingly, Vincent Brant's anthropological case studies of small enterprises in Korea corroborates the view that the nation's small business owners were not necessarily less entrepreneurial than big business, but simply lacked comparable connections to powerful figures.[9] In diseased *dirigiste* development, what critically distinguished between *chaebol* entrepreneurs and ordinary small business people was access to extremely profitable monopolistic product markets and government bail-out funds.[10] Such access was determined not by managerial competence or foresight, but by intimate links to state power holders.[11]

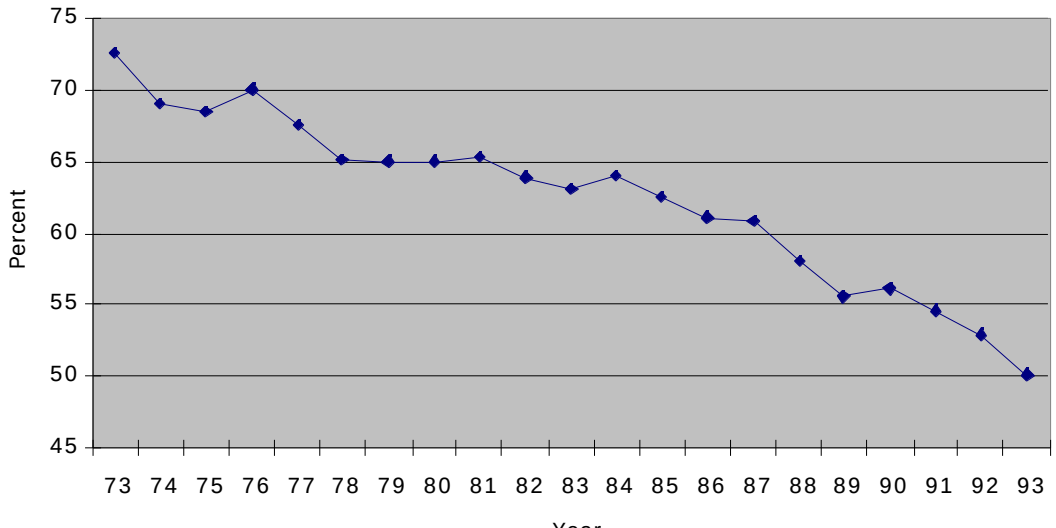
Those less connected had proportionately less access to various lucrative domestic markets, government contracts, procurement orders, or bank loans. Their relative deprivation was particularly severe during the 1960s and 1970s, a period that crowned the principal-proxy nexus between state and *chaebol*. During the period, Korea's financial policy bias became increasingly pronounced in favor of *chaebol*.[12] Thus, sustaining the level of small business' share of all establishments, employment, and value-added was in and of itself a feat in such an environment. And as Figure 1 below demonstrates, the development of small business over time was reflected in the relative decline of big business share in Korea's manufacturing value-added.

The areas of business they could be engaged in had to be less capital-intensive, more subsistence-driven, and thus less efficient than those of larger enterprises. But first-generation small business people were no less tough, devoted, hard working, and ready to take risks and seize business opportunities. They were willing to work endless hours for even a modicum of return and bear

many privations to make something of their small businesses. Given the vivid memory in the people's mind that even the nation's top *chaebol* had started from scratch only a generation ago, the sentiment that "anybody can do just about anything" still prevailed. The nation's low development level and its backward and inefficient small industries also meant that much room existed for small entrepreneurs to make relatively easy efficiency and productivity gains. It was in such sectoral pockets of inefficiency that they took root, incrementally increasing efficiency and contributing to the nation's GDP.

Korea's financial policies began to discriminate less against small business in the early 1980s.[13] In tandem with the policy shift, the fabric of small business also changed. Those with college and white-collar backgrounds replaced those with less educated, blue-collar backgrounds as the more prominent small business founders. As a vestige of the traditional Confucian social structure, the best and the brightest had flocked to the civil service, legal profession, or academia. When President Park's modernization campaign broke that spell, top college graduates entered business, but they preferred the prestigious career of progressing up a *chaebol*. However, some discernible changes were in the offing by the 1990s, with more and more technological and managerial talent opting to establish independent, niche market-oriented enterprises, if not venture start-ups, rather than becoming the "organizational man" of a large firm. In more traditional industrial sectors as well, old small livelihoods evolved into new enterprises, or faced elimination by more modern, innovative, and light-weight players. Let me illustrate this point by looking at one of Korea's oldest traditional markets-- called Dongdaemun or East Gate.

Figure 1. Trend of the Big Business Share in Manufacturing Value-added



Source: Cha Dong-se and Kim Kwang-suk, ed., *Hankukkyongje Pansegi* [The Half Century of Korean Economy], (Seoul:

The origins of Dongdaemun Market may be traced back to 1905, when it started as a "modern" market then-called Kwangjang specializing in textiles.[14] After the devastation of the Korean War, street peddlers returned and turned military uniforms and blankets into clothes in the now

renamed Peace Market. Dongdaemun Peace Market became a thriving national hub of clothes manufacturers and wholesalers in the 1960s, as a multitude of small sewing companies clustered around it to produce low-priced, relatively fashionable clothes. By the late 1990s, 27,000 little shops of Dongdaemun market, which owned or had ties with over 20,000 factories around the area, successfully transformed the place into one of the nation's hottest shopping and tourist attractions. Daily business transactions exceeded 10 billion *won*, and informal exports alone by domestic and foreign suitcase traders amounted to $1 billion per year.[15]

The secret to success was clustering, or sectoral and geographical concentration of enterprises.[16] Because the key problem of many small manufacturers was not necessarily their size but their isolation, as Sengenberger and Pyke have pointed out,[17] clustering facilitated specialization and divisions of labor among them; provision of customized machinery, spare parts, and just-in-time delivery of raw materials; pools of skilled workers and speedy services in finances and fashion design; plus a mixture of intense rivalry among themselves and cooperation especially vis-a-vis other contending markets. In the crucible of cluster, only those traditional merchants and clothes makers who successfully competed for customers and orders survived. Given the close proximity and collaboration among raw materials suppliers, clothes designers, producers and subcontractors, in fact, it took only a couple of days to produce, say, a modified version of an outfit once in contact with the idea from any of the world's top fashion shows.[18] Dongdaemun falls far short of leading global fashion, but it stays hot on the trail. With modern shopping malls, formally educated fashion designers, younger entrepreneurs, and former *chaebol* employees partaking of the cluster, whether Dongdaemun market will further evolve into a world-class pioneer in quality, design, and name brands is a test case of just how far SMEs will continue on their growth trajectory as the economy further opens space for them.

KOREA'S NEW SMALL, BUSINESS

Another area worth watching concerns venture firms, which along with more traditional SMEs have grown immensely in the last few years. They may offer key to Korea's ongoing economic revitalization in the aftermath of the 1997 financial crisis as well as providing a way to catch up to the segment of the society that was "left out" during the heyday of the HCI push.

In the wake of the nation's crisis, big business no longer seemed so grand. *Chaebol* owners' autocratic management style, octopus leg-style expansion, poor investments, and collusion with the state were all fingered as the culprit. Daewoo, the second largest *chaebol*, collapsed; the majority of the top 30 *chaebol* groups disintegrated, and even big commercial banks had to be bailed out with taxpayer money. As the too big to fail myth about top *chaebol* was shattered, so were the virtues of rapid diversification and market share maximization. It is thus worthwhile to take a detailed look at some of the more successful SMEs in order to garner what lessons can be gleaned-- in the hopes replicating and expanding such successes.

In fact, SMEs that focused on R&D and technology-driven quality, niche market specialization, productivity, and profit rose to new heights. In lieu of *chaebol* owners or chairmen, the small but

world's leading makers of tents, motorcycle helmets, nail clippers, and ultrasound systems now became honoured guests at the Blue House, the presidential mansion.[19] They solidified their product competitiveness and technological lead in specialized niche markets. Jinwoong, for example, controls 65 percent of the U.S. market and 35 percent of the global market for tents, with annual sales of $400 million. Hongjin Crown, an unknown name in Korea, has captured 40 percent of the motorcycle helmet market in the United States. Daesung Metal, a rather obscure maker of nail clippers in Korea, has a 40 percent share of the global market. Medison, a leading medical equipment company, is the world's top manufacturer of low and medium-priced ultrasound systems. Daeryung Precision makes satellite video receivers (SVRs) with a 25 percent share of the global market.[20]

Leading medium-sized companies acquired their current fame not only for the scarce foreign exchange their exports generated during the 1997 crisis, but also for the rather novel way they made big money: through stocks or foreign direct investment. One of the highly celebrated examples was Locus, a telecommunicationsequipment manufacturer. Founded in 1990 with only 10 million *won* by Kim Hyung-Soon, a former doctoral student in Columbia's business school, Locus became Korea's top maker of computer telephony integration (CTI) systems in 1996 and sold a 38 percent share to Jardine Fleming Electra for $16 million in 1999.[21] Once Locus was listed in Kosdaq in November 1999, the company's market value was widely expected to reach 260 billion *won*. Even a traditionally labor-intensive manufacturer like Jinwoong, which never had equity or direct financing, made $50 million by offering a 90 percent share to Warburg Pincus in 1999.[22]

Star SMEs, however, were not born overnight in mid-crisis. Most of today's leading medium-sized companies got their start in the early 1980s when the government started to nurture a new generation of promising, technology-driven companies. These second-generation small business owners were better educated, usually with college degrees. Their business plans were based on technological innovation and niche market specialization. And more often than not they anticipated eventually raising funds or making a good deal of money in the stock market, at a time when a listing in the market seemed like a long shot for small firms.

Daeryung Precision's founder, Lee Hoon, is representative of the new cohort of small businesses.[23] Lee, a son of a small business owner, majored in applied physics at Seoul National University (SNU) and obtained an MBA from Columbia University. In 1982, at the age of 34, Lee started Daeryung Precision, an export, technology, and niche market-oriented SVRs manufacturer. Of the seven founding members, five were engineers engaged in research and development. Having started out as a small original equipment manufacturer for various North American companies, Daeryung had its ups and downs. But Lee believed that a technology-based niche market strategy would be particularly rewarding with the growth of the capital market in the future. Accordingly, he distributed 30 percent of stock shares to his six employees, and thereby sealed the bond among the founding members. The company was successfully listed in the stock market in June 1989. By 1998, Daeryung with 223 employees earned 217 billion *won* in sales and 1.7 billion in profits. It enjoyed a 50 percent North American market share, 25

percent in Europe, and 20 percent in the rest of the global SVRs market.

Mirae Industry, a semiconductor equipment manufacturer founded in January 1983, is probably one of the most popular examples of new SMEs in Korea.[24] Founder Chung Moon-Sool was 43 when forced to resign his post at KCIA in the aftermath of the military coup on December 12, 1980. Figuring that "no late starter can become a *chaebol* in Korea without resorting to corruption, personal favouritism, or speculation,"[25] Chung determined he would make products with a technological edge in an area of business where others were not engaged. In the rough process of trial and error, he went bankrupt in 1985 and seriously contemplated taking his own life. A "born-again debtor" entrepreneur, Chung then spent the next ten years successfully producing test handlers for semiconductor products, eventually listing his company in the stock market in 1996 and paying off all his debts. With over 35 percent of 300 employees working in research and development as of 1998, Mirae made an annual profit of 5 billion *won* from 17 billion in sales. Chung received the highest managerial award from the Korean Employers' Association along with two *chaebol* CEOs in November 1998, an honor rarely given to small business. Having invested $5 million in Lycos Korea Venture Fund, Chung became Korea's "godfather" of venture business.

The rise of innovative, second-generation SMEs did not just happen in the so-called new, hi-tech industries only, but in the more traditional ones as well. Jinwoong is such an example.[26] Lee Yun-Jae, a graduate of Yonsei University, started Jinwoong in 1979 to make higher quality, higher value-added tents. The challenge came in the 1990s when Korea's labor-intensive industries lost price competitiveness to Chinese and Southeast Asian manufacturers. Exploiting the trend of globalization to overcome financial and other limitations under *dirigisme,* however, Jinwoong adopted a two-pronged strategy: While attracting FDI and perfecting state-of-the-art technology and high value-added production at home, it moved low-end production to less developed countries. As of 1998, Jinwoong had 81 employees in Korea and 84 employees abroad.

Bumwoo is another small business that flexibly adapted to the changing environment in a traditional industrial sector.[27] Originally established in 1981 as a motorcycle parts company with 16 employees in Chinju, South Kyongsang province, by 1994 Bumwoo had developed into a respectable auto parts company with 70 employees. It showed over 30 percent growth in sales annually because founder Lee Chum-Bum was determined to accumulate capital and technology, by doggedly specializing in certain engine and transmission parts like shafts and gears and by making constant innovations in products and production processes. Since 1990, as a result of more rigorous quality control, ambitious investments in precision equipment, factory automation, and its own R&D lab producing domestic substitutes for various imported parts, the per capita value-added jumped from 16.1 million to 34.5 million *won,* and the defective product ratio decreased from 1.8 to 0.2 percent.

Some small firms joined the new wave by diversifying or transforming themselves into sunrise industries from declining traditional sectors, thereby creating new domestic markets and stimulating structural changes in the economy. A case in point is Youngbo Chemical, founded in

December 1979 in Taejon, South Chungchong province by Lee Bong-Joo, who had been operating a coal mining company since the early 1970s.[28] Sensing the centrality of petroleum and the inadequate supply of petrochemical products like plastic gourds and vessels in Korea, Lee had been travelling through Germany and Japan to visit companies in related industries. Believing in the growth potential of polyolefin foam products in automobile and boxcar interiors as well as the construction materials market, Lee concluded licensing agreements with various Japanese firms including Furukawa Denzo, Hitachi, Toray, and Sekisui. Lee's flexibility in introducing new technologies and products from Japan, practising customer-oriented marketing and management, and devoting an increasing share of sales to R&D (3.35 percent by 1998) paid off over time. By 1998, Youngbo with 238 employees enjoyed 75 percent of the domestic poly foam market, exported 38 percent of its output, and competed head-on with Japanese products. Youngbo recorded 3 billion *won* in profit out of 37 billion in sales in 1998, about one-third less than what it made the previous year, but still a very decent performance in the wake of the nation's financial crisis.

Namyang Industry, created in 1980 in Pusan with 30 employees, was yet another SME that successfully ventured into new territory.[29] Park Yun-So's small business had been in construction materials production, but it could not thrive in the highly competitive, cyclical construction industry dominated by well-capitalized and powerful firms. His search for a new and small niche market landed on sea-borne fire-safety equipment. He luckily learned that Korea imported all its sea-borne fire-safety equipments, as manufacturing them required high technological standards and rigorous quality specifications. The problem was that no one in Korea had the technological know-how, nor were foreign manufacturers interested in sharing it. In line with the company motto of "challenging the infinite possibility," Namyang acquired stamps of approval from SOLAS(Safe of Life at Sea) and USDOT (US Department of Transportation) as well as KS (Korean Standard). With less than 100 employees it gained a 30 percent global market share by 1993, earning 20 billion *won* in domestic sales and $20 million in exports.

What distinguished the new generation of small business people from the old was better education, preference as well as capacity for technology-driven niche market businesses over traditional brick-and-mortar ones, and viewing the capital market as an alternative source of funding and profit. First, by 1983, almost half of small business owners received a college education or beyond.[30] Although no systematic data on the earlier period were available, educational attainment in the 1980s remarkably improved over previous decades.[31]

Second, by 1995, Korea caught up with Japan and the U.S. in terms of R&D spending as a percentage of GDP (almost three percent).[32] In particular, Korea's leading medium-sized businesses, which stood at the forefront of the new wave of "modern," creative and technology-oriented, flexible and innovative, adaptive and niche market-driven SMEs, invested at least, if not well over, three percent of their sales.[33] As a result, the number of independent in-house research centers operated by small firms jumped to 2,278 by 1997, up from 708 in 1991.[34] As demonstrated by the SME cases examined above, the three percent of sales spent on R&D often went a long way for small firms, as they tended to engage in a narrow range of businesses, exploit

economies of scope, and focus R&D effort on specifically applicable technologies or concrete product innovation.

Third, Korea's second-generation small entrepreneurs sensed a bigger chance of realizing their dreams through the burgeoning capital market. Even with little capital, if they gained competitiveness in a niche market, the changing capital market would bring a tremendous boon to them in the otherwise *chaebol*-dominant economy. Such promises of future profits and employee stock options provided a strong incentive structure for small firms to invest in long-term business strategies and technology-based product innovation and market creation. By the 1990s, so-called small "venture" businesses became a buzzword and focal point in both private and public policy circles. Particularly noticeable was the growth of Korea's over-the-counter Kosdaq stock market for small and venture firms. Thanks in part to the government's increased financial support, tax breaks, and relaxed listing requirements, Kosdaq recorded a phenomenal expansion in the second half of 1999. At year end, over 2 trillion *won* traded per day on Kosdaq, and its market valuation almost reached the 100 trillion *won* mark, nearly one-third of the big business-dominant Korea Stock Exchange.[35]

Although high tech ventures in computers and digital telecommunications(34 percent of the total) constituted Kosdaq's top-flight companies, many other venture firms in more traditional sectors also flocked to Kosdaq.[36] At the end of 1999, the officially recognized venture companies numbered over 5,000. Many of these "venture" companies, especially internet-based ones, have yet to post solid operating profits. And according to a Bank of Korea report, household borrowing which soared in 1999 by 19 trillion *won* from the previous year was driven by frenzied stock market investment, raising concerns about the sustainability of Korea's "new economy."[37] The Kosdaq bubble did burst in April 2000 and has been undergoing an adjustment and stabilization process, but clearly, venture firms as well as leading medium-sized companies became as important and indispensable as big business to the nation's industrial structure and competitiveness.

CONCLUSIONS AND SOME POLICY IMPLICATIONS

Korean SMEs have come a long way as sources of industrial power more important than heretofore credited. Although the state's policy bias against small businesses has been changing, its support of them remains far from full-fledged or adequate. And even if the government is fully committed to small business promotion, there are limits to what the top-down state can cost-effectively do for a myriad of small firms in an increasingly globalizing economy. In terms of government support for SMEs, therefore, nurturing clusters, industrial districts, and collaborative networks-- rather than merely increasing subsidies for individual firms-- seems like the most plausible and promising path.

Dongdaemun is not the only successful cluster in Korea. Some of the existing and dynamically growing clusters include the fashion and apparel valley in Taegu, shoe-making district in Pusan, fiber optics and telecommunications industrial district in Kwangju, bio-industrial districts in

South Cholla province, and Yangjae-Poi Valley for software and other venture businesses. The Dongdaemun cluster certainly became a pioneer and benchmark for Korea's clothes manufacturing and distribution industry. But the concept of industrial districts was not new to other industries, as the origins of some of them could be traced as far back as the export-led industrialization drive of the 1960s. As of 1996, in fact, there existed 28 national industrial districts, 150 provincial industrial districts, and 19 other industrial districts, whose combined total employment and production amounted to 925,070 persons and 171 trillion *won,* or over one-third of the nation's manufacturing employment and almost one-half of manufacturing production, respectively.[38]

In all those national and provincial centers of job creation and value-added, small businesses have played a vital role. Once viewed as the atavistic remains of a pre-modern society, SMEs proved resilient, increasingly competitive, and capable of flexibly responding to changing markets and customer needs and demands. Once considered a nuisance or at best an object of social welfare, SMEs now assumed the guise of ventures at the cutting edge of the nation's technological and managerial development.

NOTES

1.The terms small businesses or small and medium enterprises (SMEs) used interchangeably in this paper denote manufacturing enterprises with no more than 300 employees in Korea, albeit with some exceptions allowed since 1992 for labor-intensive industries.

2.The dual industrial structure argument and its traditional image of exploited small business came most forcefully from Japan's Marxist political economists. Following in their footsteps, Lee Kyung-Eui became the biggest proponent of the Marxist paradigmatic perspective on small business in Korea. For more details on the perspective and literature, see idem., *Hankuk Chungsokiopeui Kujo* [The Structure of Korean Small Business], (Seoul: P'ulbit, 1991).

3.Hun Joo Park, *Dirigiste Development as Disease: The Political Sources of Financial Policy toward Small Business,* (forthcoming).

4.KFSB, *Chungsokiop Hyonhwang,* (1997), p. 81.

5.KFSB, *Chungsokiop Silt'ae Chosa Pogoso,* op cit., (1996).

6.See Reinhard Bendix, *Nation-Building and Citizenship,* (Berkeley: University of California Press, 1977[1964]). For an interesting work on the social consequences of

rapid industrialization in late developers, see Yong-Chool Ha,"The State, Industrialization and Social Consequences: The Emergence of Neo-familism in South Korea," typescript, (July 1995).

7.Seoul Economic Daily, *Hankukeui Inmack* [The Personal Connection in Korea], (Seoul: Hankook Ilbosa, 1992); *Chaebolkwa Kabol* [*Chaebol* and the Family Clique], (Seoul: Seoul Economic Daily, 1991); Park Yong Jung, "*Hankukeui Chaebolkiop ku Kummaeckkwa Inmack*" [The Financial and Personal Connections of Korean *Chaebol*], *Shindonga*, (July 1978).

8.Ibid.

9.Leroy Jones and Il Sakong, *Government, Business, and Entrepreneurship in Economic Development: The Korean Case,* (Cambridge: Harvard University Press, 1980), Appendix A.

10.Hun Joo Park, *Dirigiste Development as Disease,* op cit.

11.The persistence of this reality has critically limited the effectiveness of a variegated and otherwise radical array of corporate governance reform measures put in place in the wake of the 1997 financial crisis. The share of top *chaebol* owners' stock ownership has long been below ten percent on average, but no one thus far has challenged the owners' autocratic control or management style. For instance, Lee Kun-Hee, current Samsung Chairman and a son of the company's founder, controls only five percent of Samsung Electronics while foreign investors control over 40 percent. Particularly after the abolition of mandatory tender offer and the legalization of hostile M&As after the crisis, a takeover of the much-coveted Samsung Electronics became a real possibility. Yet such has yet to happen, not only because of a fear of possible loss of synergy effect that comes from being linked with other group subsidiaries, but also because the son of the founder is supposed to enjoy better access to state power holders.

12.Ibid., chs. 4 and 5

13.Ibid., esp. ch. 6.

14.The following section on Dongdaemun Peace Market heavily draws on Kim Yang-Hee and Koo Bon-Kwan, "*Chaerae Euiryusijangeui Puhwalkwa Sisajom*" [The Resurrection of Traditional Clothing Market and Its Implication], Samsung Economic Research Institute, (October 1999); my interviews.

15.Dongdaemun market, together with Namdaemun (South Gate) market, handled 30 percent of the nation's wholesale transactions in clothing.

16.On the vitality of small business clusters or industrial districts, see Michael Piore and Charles Sabel, *The Second Industrial Divide*, (N.Y.: Basic Books, 1984); David Friedman, *The Misunderstood Miracle*, (Ithaca: Cornell University Press, 1988); Whittaker, *Small Firms in the Japanese Economy*, op cit.; W. Sengenberger and F. Pyke, "Small Firm Industrial Districts and Local Economic Regeneration: Research and Policy Issues," *Labour and Society*, 16:1, (1991); Richard Locke, *Remaking the Italian Economy*, (Ithaca: Cornell University Press, 1995); Hubert Schmitz, "collective efficiency: Growth path for small-scale industry," *The Journal of Development Studies*, (April 1995); Gary Herrigel, *Industrial constructions: The sources of German industrial power*, (N.Y.: Cambridge University Press, 1996); John Humphrey and Hubert Schmitz, "The Triple C Approach to Local Industrial Policy," *World Development*, 24:12, (1996).

17.Sengenberger and Pyke, "Small Firm Industrial Districts," op cit.

18.It took several months for large, upscale department stores to design and produce a new line of clothing.

19.*Financial Times*, internet version, March 10, 1999.

20.Shin Hyun-Am and Kim Jae-Yun, "*Kanghan Chungsokiopeso Paeunun Chihye*" [Gaining Wisdom from Strong Small Business], *CEO Information*, Samsung Economic Research Institute, (February 1999).

21.See their website www.locus.co.kr; *Maeil Kyongje*, January 27, 1999; *Chosun Ilbo*, September 3, 1999.

22.*Far Eastern Economic Review* (hereafter cited as *FEER*), July 29, 1999, pp. 36-37.

23.My discussion of Daeryung Precision heavily draws on Financial Supervisory Commission's (FSC) corporate data; Ban Byung-Gil, et al., *Hankookkiopeui Segyehwa Chonryak Saryeyongu* [Case Studies on Corporate Korea's Globalization Strategy], (Seoul: Shinwon, 1996); various media reports including *Hankook Kyongje*, August 1, 1997 and June 26, 1999; and my interview on October 25, 1999.

24.The following section on Mirae draws on FSC's corporate data; Lee Chang-Woo, *Venture Management*, (in Korean), (Seoul: Maeil Kyongje, 1999); various media reports including *Shindonga*, (January 1998), *Hangyoreh*, April 26, 1999, and *Electronic Newspaper*, July 12, 1999.

25.Quoted in *Hangyoreh*, April 26, 1999.

26.The following draws on FSC corporate data; Ban, et al., *Hankookkiopeui Segyehwa Chonryak Saryeyongu*, op cit.; various media reports including *Maeil*

Kyongje, July 21, 1999 and *FEER,* July 29, 1999, pp. 36-37.

27.This section on Bumwoo draws on Moon Woo-Sik et al., *Case Studies of Innovative SME Management,* (in Korean), (Seoul: KDI, 1994).

28.The discussion on Youngbo draws on FSC's corporate data; *Maeil Kyongje,* December 22, 1997; and interview with Lee Bong-Joo on October 3, 1999.

29.See Moon et al., *Small Business Case Studies of Innovative Management,* op cit.

30.KFSB, *Chungsokiop Silt'ae Chosa Pogoso* [Survey Report on the State of SMEs], (various issues).

31.As of 1944, for instance, the nation's college graduates had totalled 29,438 persons, or 0.1 percent of the population. The proportion of those with tertiary education impressively rose to 5.0 percent by 1955, 6.9 percent by 1965, 9.5 percent by 1975, 16.0 percent by 1980, 35.6 percent by 1985, and 54.6 percent by 1995. *Maeil Kyongje,* December 27, 1999; Noel McGinn, et al., *Education and Development in Korea,* (Cambridge: Harvard University Press, 1980); KEDI, *Educational Indicators in Korea,* (Seoul: KEDI, 1996).

32.*OECD Science, Technology and Industry Scoreboard 1999.*

33.See Shin and Kim, "*Kanghan Chungsokiopeso Paeunun Chihye*" op cit.

34.KFSB, *Chungsokiop Hyonhwang* [The Current State of Small Business], (Seoul: KFSB, 1998), p. 144.

35."The Pros and Cons of the Kosdaq Bubble Argument," (in Korean), www.cfe.org.

36.The government launched a bold campaign to increase the number of venture companies to 40,000 by year 2005, employing 1.2 million people and representing 18 percent of GDP. *Seoul Kyongje,* January 12, 2000; *Joongang Ilbo,* January 14 and 26, 2000; *Maeil Kyongje,* January 20 and 31, 2000; *FEER,* February 3, 2000, pp. 38-40.

37.Cited in *Chosun Ilbo,* January 31, 2000.

38.See http://kicox.or.kr:9000; KFSB, *Chungsokiop Hyonhwang,* op cit.

THE ETHICS OF SME'S AND SUSTAINABLE DEVELOPMENT

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ABSTRACT

The existence and development of humankind (including SME's) depend increasingly on its capability to maintain the sustainable development. It requires a more broadly - holistically / systemically conceived definition of business operation and new behaviour. Hence, SME's (as a specific group of business systems) must reconsider and restructure their behaviour and their ethics. In Slovenia, the current development includes structural and legal changes for creation of modern market economy, which is very much influenced by Adam Smith and his "invisible hand". Smith spoke about interdependence called altruism as a general background of the market economy with the invisible hand of the profit motive. But the market is not ethical/altruistic, the market does not care for the long-term development, and hence the market cannot assure sustainable development on its own. Therefore, the idea of invisible hand goes up in smoke and we see that the one who decides is the managers (in general) and owners in SME's. Then we can shift our attention from a principle-based moralizing about sustainable development to a very practical issue what motivates owners of SME's for or against sustainable development.

Keywords: SME, ethics of interdependence, invisible hand, sustainable development

INTRODUCTION

The developed societies of the last two centuries are notably designated by business systems. Called with different names, such as firm, enterprise, company, venture, undertaking, they became one of the most influential institutions of modern age. The great majority of business systems are SME's. It is almost impossible to reach any goal in the society without engaging also the SME's. This holds true also of achieving the goals of sustainable development (Potocan, 2000; Rebernik, Mulej, 2000).

The basic problem lies in the fact that a business system (of all types, sorts and kinds) "*per se*" is an empty legal shell (and/or organizational structure). That is also true for SME's. It is the owners (individual or team) that define goals of the SME and the operations of SME (as a process of finding and exploiting business opportunities) that make the SME efficient, effective and successful (Kirzner, 1973; Casson, 1982; Hebert and Link, 1989; Drucker,

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1990; Timmons, 1994; Bygrave, 1994; Prigogine, 1997; Affuah, 1998; Rhinesmith, 1999; Daft, 2000).

SME is a product of owners/managers endeavour to exploit the business opportunity and to capitalize on it. Management of SME's is a very important part of entrepreneurship process. Management of SME's is a complex process, and the entrepreneur who runs it has to play many different roles (Drucker, 1990; Daft, 2000; Magretta, 2000). There is no guarantee that the entrepreneurship efforts will be allocated in a way that follows the innovative and constructive image we usually have of management. Not every entrepreneurship is aimed at development; it can be also unproductive or destructive (Drucker, 1990; Baumol 1990, 1993; Magretta, 2000; Potocan, 2000). Unproductive entrepreneurship refers to the performing of entrepreneurship activities that enrich the entrepreneurs, but do not increase the wealth of a society. In some cases, they may even play a destructive role (apart from the entrepreneurship of military dictatorships, destructive wars, etc.), especially when they obstruct the dissemination of technological knowledge and other inventions and innovations.

If it holds true that the existence and development of SME's should depend increasingly on their capability to contribute to sustainable development in their environment then the behaviour of owners/managers who are the core of SME's is to be examined more closely.

THE SUSTAINABILITY OF SMEs

Numerous definitions of sustainable development are well known, but they mutually differ in terms of their applied concepts, approaches and goals (UN, 1992; Harman, Porter, 1997; WCDE, 1998; Rebernik, Mulej, 2000). Therefore, we selected the definitions, which are most frequently mentioned both in theory in practice and read as follows (UN, 1992):

- "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (UN, 1992; p. 43)
- "...sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investment, the orientation of technological development, and institutional change are made consistent with future as well as present needs." (UN, 1992; p. 9)

The presented definitions point to the significance of the coordination of common goals of the future human activities that aim at ensuring equal possibilities of meeting the needs of both the present and the future generations. The idea of the global sustainable development can be applied to the activities of SME's, provided that we adjust its starting points, principles and characteristics to the specific requirements and needs of business operation (Harman, Porter, 1997; Potocan, 1998; Rebernik, Mulej, 2000). In this contribution, we discuss only a part of the problems of adjustment, i.e. the process of incorporating the general goals of the existence and development of humankind into business goals. The acceptance of sustainable development in SME's depends on the argumentative justification of its possible benefit for business targets and for the economic performance (results) to be achieved (Harman, Porter, 1997; WCED, 1998).

In the adapting of goals of SME's concerning its own sustainable development to the societal goals concerning sustainable development, we use the dialectically systemic approach to understanding of the World (as a whole) and of its phenomena in the objective reality (e. g. economic operations) (Potocan, 1998; Potocan, 2000). Based on the dialectically systemic approach, the SME can be defined as dynamic and relatively open SME systems, which are closely linked with their environment / environments (e.g. economic, natural, technical, social). In order to consider and manage them on a requisitely holistic basis, one needs to use a system of all essential viewpoints (Mulej, 2000).

Thus, in the modern conditions of operation, the adequacy of the SME systems operation also substantially depends on a simultaneous realization of the goals of their internal environment (business system) and on the external environment (public interest). The definition of the internal and external (social, economic, natural) environments depends on both subjective and objective factors and implicitly soft and fuzzy (Potocan, 2000).

SME systems try to adjust their operational goals to the public interest; they even accept certain goals of their social and business environment as their own. Thus, SME systems can also partially introduce the goals concerning the global sustainable development into their own operation, since the goals based on the public interest are the same (or very similar) as the general ones of the humankind's sustainable development. The SME systems also try to appropriately meet the customer requirements and needs, which increases the importance of their indirect economic objectives of business activities. This group of goals can also cover other goals, which in the first place are not set for the economic reasons (e.g.: ecological, social, cultural); however, their implementation also, indirectly at least, influences the economic results of business systems. This is one more way for a business system to introduce the goals of the global sustainable development into its own functioning.

From the above statements it can be established that the functioning of the World as a whole and of its parts, e.g.: SME systems, is based on similar global goals (universal laws) of living. On this basis, we can form specific goals for the specific levels of operation, which must be harmonized with the sustainable development and related to general goals. In this way, the SME systems support their own existences well enough, if they can carry out their business operations: purposefully (efficiently and effectively), respectably (reasonably from their business behavior aspect), ethically (morally appropriate from the aspect of their responsible attitude towards their social and natural environment) and innovatively (creating and gaining new benefits from novelties). The objective of SME systems is, therefore, to achieve "adequate" economic results within a requisitely holistic care and responsibility for the natural and social environment (Potocan, 2000; Rebernik, Mulej, 2000; OECD, 2000).

The introduction of the idea of sustainable development into operation of SME systems requires the SME systems (and their owners/managers who are the core of SME systems) to reconsider and restructure their behaviour (e.g. their ethics) at all levels and in all areas of their activities. With the other words, we need new ethics – ethics of interdependence (of owners/managers) for sustainable development and the resulting survival (Potocan, 2000; Rebernik, Mulej, 2000; OECD, 2000).

ETHICS OF INTERDEPENDENCE AS A PRECONDITION FOR SUSTAINABLE DEVELOPMENT

But what are ethics and ethics of interdependence? In general terms ethics enables us to distinguish right from wrong (Singer, 1993; Ulrich, 1997; etc.). Empirical researchers consider *ethics* as a synergy of behaviours, which tend to be preferred in a society or community, as a social group, for long enough periods of time to come to be kind of codified (Singer, 1993; Ulrich, 1997; Wilson 1998). *Moral rules* result, as a formal next step. They co-create a *culture,* be it the one of social sub-groups, of organizational units, of organizations as wholes, or the one of regions, nations, social classes, professions. Thus, something, which is originally an individual attribute, comes to be *objectified* as a component of the objective conditions (i.e. external to single individuals). It becomes a part of broader requirements imposed over the individuals, and tends to return, in this way, back to individuals as a part of their *values,* i.e. their emotional perception of the objective needs or requirements they face. Thus it enters (or re-enters) the individual's starting points, which influence perception, definition of preferences, their realization in the form of goals, later on tasks, procedures of realizing the tasks etc. It means, that for any human activity ethics is equally essential as professional knowledge and skills. We have even found all three of them mutually interdependent (Potocan, 2000; Rebernik, Mulej, 2000, Mulej, 2000).

Our own experience tends to practically confirm the observation made by Wilson (1998) saying that researchers find that the *ethical norms* have been *changing* in an evolutionary process based on the *interplay of biological and cultural factors*. This finding may hold true and explain many things, some of which may be quite relevant in the context of this contribution, such as ethical principles of each type of society:

1. Ethical principles of pre-industrial societies are based on their experience that the *solidarity of the extended family (and community) helps them survive, and does so better than the ethics of the individualistic competitiveness of the industrial and post-industrial societies / communities.*
2. When we discuss the transformation from pre-industrial to industrial society we must take into account Adam Smith's contribution. Smith is often regarded as the father of economics, and his writings have been enormously influential. In his 1776 book "An Inquiry into the Nature and Causes of the Wealth of Nations" Smith set out the mechanism by which he felt economic society operated – e.g. invisible hand (Smith, 1776). But not only this. Smith presupposed that the *ethics of altruism* would help people overcome their natural selfishness, which was and is making them forget about solidarity and interdependence, once they feel that a narrow individualism would help them better than solidarity. Nowadays, altruism is no more appealing than it used to be to most people in A. Smith's times. But it can well be replaced by ethics of interdependence (Kajzer, Mulej, 1998; Potocan, 2000; Rebernik, Mulej, 2000).
3. *Democracy* expresses ethics of equal legal rights of all men and women, who are covered by its *definition of the entitled members / participants of the democratic processes*. Nowadays, in the advanced parts of the world, at least, the political

democracy no longer includes a selected part of society. It is also completed up by economic, organizational, family, local community and similar kinds of democracy, in order to channel the human creativity away from causing too much trouble, etc. When ethics of interdependence is overseen, tunnel vision enters the scene again, and a new kind of trouble surfaces. But ethics of interdependence is an overseen topic (See: Jenklin, 2001).

All mentioned cognitions present a basis for creation and definition of a new ethics – e.g. ethics of interdependence (Kajzer, Mulej, 1998; Mulej, 2000). *Ethics of interdependence is* a precondition of interdisciplinary co-operation, which is a precondition of the requisite holism, if the object under consideration is looked upon with a (dialectical) system of viewpoints, which requires more than one discipline / profession / viewpoint.

Let us brief a case! The Slovenia was *latecomer to the industrialization*. She passed, under the labels of communism and socialism, the period of the early industrialization. Her government maintained a lot of solidarity, which is an old form of interdependence. This period is over now, legally. *New issues* are showing up, similar to the one put by A. Smith:

1. How can interdependence survive in the new period, if no ethics of interdependence is learned?
2. How can a late comer's economy survive, if no severe competition is learned?

Slovenia is only lately *freeing entrepreneurship.* The private owner of an enterprise (of any legal type – such as SME) changes his or her culture toward the one of creative ambition along with the changing of his or her market environment and resulting pressure over his or her operation.

Freeing of entrepreneurship, supporting the modern market relations, meeting all criteria according to which OECD (OECD, 2000) analyses countries, this might be a summary of preconditions for Slovenia to become more entrepreneurial than so far. This is much easier to say than to do. *Ethics of interdependence is a tacit precondition in such criteria. And it also proves hard to attain*.

The definition of the role and importance of ethics of interdependence for sustainable development presents the basis for its implementing in the operation of SME systems. But, in the process of implementing its principles we are faced with some crucial questions: Why is ethics so important for management and/or owners/managers? Who/what creates the necessary conditions for the ethics of interdependence and/or the sustainable development? What is the role of managers (or owners) in implementation of sustainable development (and its ethics of interdependence)? What are the benefits of sustainable development (and its ethics of interdependence) for managers (or owners)? Can the invisible hand do enough on its own?

"THE INVISIBLE HAND" OF SME's OWNERS AND/OR MANAGERS

When discussing the sustainable development, we need to have in mind that for achieving economic growth and development, it is important to 'correctly' allocate the efforts of entrepreneurs (Rebernik, 1997; Potocan, 2000). Sometimes entrepreneurs are free to select, where to allocate their entrepreneurial talents, visions, efforts, and managerial knowledge and skills. In this case they may allot it to any of the Schumpeter's innovative activities: the introduction of a new good, the introduction of a new method of production, the opening of a new market, the conquest of a new source, or the carrying out of the new organization of an industry (see: Schumpeter, 1934).

Because the supply of entrepreneurial and managerial skills in any society is limited, it is important for the development of a society to determine which activities will have priority. Why should managers of SME's be more interested in the introduction of new goods than in carrying out the new organization of an industry, if not because of the present "rules of the game"? The rules of the game, which prevail in a certain society at a particular time, determine the motivation, values, and calculations of entrepreneurs about where to invest their abilities and efforts. The rules of the game determine the structure of payoffs for entrepreneurial behaviour.

Managers of SME's that lead SME systems will act in a way that leads to sustainable development only when they are motivated (or forced) to do so. It is widely believed that the *invisible hand* (Smith, 1776) of market forces compels entrepreneurs to react according to market circumstances. They are lead by a profit motive, and more liberal are the rules of the game more profit can be harvested and more successful is the SME system and the economy as a whole. But what about the forgetting about the "side-effect" of the "external economies"?

The behaviour of SME system can be explained with the invisible hand idea only as long as we look at SME system mechanically and impersonally (with no owners/managers). The market by itself is supposed to establish conditions for the SME systems to work effectively, not only efficiently. But the market does not care for the long-term development and is not always ethical from the viewpoint of sustainable development, and hence the market alone cannot assure sustainable development.

It is obvious that the sustainable development issues cannot be solved with the help of invisible hand. The invisible hand is powerless because decisions in SME systems are taken by owners/managers who are not necessary benevolent and socially responsible. The *invisible hand* concept has already been criticized decades ago by A. Chandler (Chandler, 1977). He stated that the *visible hand of managerial hierarchies* of big trans-national corporations has replaced the *invisible hand of markets.*

When we discuss Smith's invisible hand, we must take into account, that Adam Smith did also speak about *altruism* as a general basis for the market economy (Smith, 1776). It seems that he has been misread: market allows suppliers to flourish when they satisfy

their customers better than their competitors do. Hence, the invisible hand requires *ethics of interdependence.* Altruism, co-operation and trust are the core ethical values of an ethical individual and of the *ethical firm*. The latter is aware of obligations not only to its owners and shareholders, but to other stakeholders as well (to direct and indirect ones). Taking into consideration the *law of requisite wholism* (Rebernik, Mulej 2000), such a firm behaves at the same time in a competitive and co-operative and/or interdependent way, linking competition with co-operation and/or interdependence.

CONCLUSION

In the process of implementing principles of sustainable development within SME system we are therefore faced with some crucial questions: What is the sustainability of SME systems? Who/what creates necessary conditions for sustainability? How to define the adequacy for its implementation? What is the role of owners/managers (and its ethics) in implementation of sustainable development? How to assure adequately of behaviour of owners/managers for the development to be sustainable? What type of behaviour of owners/managers we need for implementation of sustainable development? Why classical definition of invisible hand is not appropriate for modern economics conditions?

The success of a SME system depends on managerial actions taken by people within organization who are in charge of decision-making. When the rules of the game in a given society are not set to motivate owners/managers to take care of sustainable development, why should they behave in such a way? Let us ask:

- *Because of profit?* Is it profitable to nurture the environment and quality of life?
- *Because of the fear of punishment?* How often SME's and people that lead them are punished for acts against sustainable development?
- *Maybe it is fame and glory?* Is the sustainable development popular, bringing public recognition?

When we recognize that the one who decides in a SME is the owner/manager, the attention is shifted from a principle-based moralizing about sustainable development to a very practical issue what motivates owners/managers for or against sustainable development. When talking about the need for an ethical behaviour of SME systems that contributes to sustainable development in reality, we actually have to talk about the need and motivation of owners/managers to behave in such a way.

The invisible hand is therefore very visible. It is the hand of owners/managers, especially of those in SME's. If the rules of the game don't force them to act in favour of sustainable development, all we are left with is to count on their *ethics*. Is not only economies that keep a society integrated, it is also religion, polities etc (Ulrich, 1997; Wilson, 1998).

REFERENCES

1. Affuah, A. (1998), *Innovation Management: Strategies, Implementation, and Profits*. Harvard Press, New York.
2. Baumol, W. (1990), Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy*, Vol. 98, No. 5.
3. Baumol, W. (1993), *Entrepreneurship, Management, and the Structure of Payoffs*. MIT Press, Cambridge.
4. Bygrave, W. (1994), *The Entrepreneurial process*. In: Bygrave, W.: The Portable MBA in Entrepreneurship. Wiley, New York.
5. Casson, M. (1982), *The Entrepreneur: An Economic Theory*. Barnes and Noble, Totowa.
6. Chandler, A. (1977), *The Visible Hand: The Managerial Revolution in American Business.* Harvard University Press, Cambridge.
7. Daft, R. (2000), *Management*. The Dryden press, Philadelphia.
8. Drucker, P. (1990), *The New Realities*. Harper and Row, New York.
9. Harman, W., Porter, M. (1997), *The New Business of Business*. Berret-Hoehler, San Francisco.
10. Hebert, R., Link, A. (1989), In Search of the Meaning of Entrepreneurship. *Small Business Economics*, Vol. 1.
11. Jenlink, P. (2001), Activity Theory and the Design of Education Systems. Systens *Research and Behavioral Science*, Vol. 18, Number 4 (pp. 345 – 361).
12. Kajzer, S., Mulej, M. (1998), Systemtheoretisch fundierte Ethik als Ueberlebungskonzept in turbulenten Zeiten der Innovativen Wirtschaft und Gesellschaft. In: Schwaninger, M. (Hrsg.) (1999): *Ueberlebungskonzepte für turbulente Zeiten.* Jahrestagung 1997 der GSW e.V. Humblot, Berlin.
13. Magretta, J. (2000), *Managing In The New Economy*. Business Review Book, New York.
14. Mulej, M. (2000), *Basics of Systems Thinking (Applied to Innovation Management).* Faculty of Economics and Business, International program "FEBA".
15. Organisation for Economic Co-operation and Development - OECD (2000), *Framework to measure sustainable development.* OECD, Paris.
16. Potocan, V. (1998), Synergy and integration processes in business. *Management*, 1997, Vol. 2, Num. 2.
17. Potocan, V. (2000), Economic reasons opposing Bertalanffian thinking in practice: the law of requisite holism. In: REBERNIK, M., MULEJ, M. (ed.): Proceeding of STIQE 2000. Maribor: Institute for Entrepreneurship, 2000 (pp. 187-200).
18. Prigogine, I. (1997), *The End of Certainty*. The Free Press, New York.
19. Rebernik, M. (1997), Beyond Markets, Hierarchies, and Ownership-mania in Transitional Countries. *Systems Research and Behavioral Science*, John Wiley, Vol. 14, No. 3.
20. Rebernik, M. (2000), Anticipatory Inadequacies of Entrepreneurship Theory and Business Economics. *International Journal of Computing Anticipatory Systems*, Vol. 4, No. 1 (pp. 315-332).
21. Rebernik, M., Mulej, M. (2000), Requisite holism, isolating mechanisms and entrepreneurship. *Kybernetes*, Vol. 29, No. 5/6.

22. Rhinesmith, S. (1999), *A Manager's Guide To Globalisation*. Erwin, Chicago.
23. Singer, P. (1993), *Practical Ethics.* Cambridge University Press, Cambridge.
24. Ulrich, P. (1997), *Integrative Wirtschaftsethik: Grundlagen einer lebensdienstlichen Oekonomie.* Verlag Paul Haupt, Stuttgart, Wien.
25. Schumpeter, J. (1934), *The Theory of Economic Development*. Harvard University Press, Cambridge.
26. Smith, A. (1776, edition 1937), *An Inquiry into the Nature and Causes of the Wealth of Nations*. Random House, New York.
27. Timmons, J. (1994), *New Venture Creation*. Irwin, Homewood.
28. UN (1992), *The Rio Declaration on Environment And Development*. UN, Rio de Janeiro.
29. Wilson, E. (1998), Die Zehn Gebote Liegen in den Genen. Das biologische Fundament der Moral. *Neue Zuercher Zeitung.* Zeitfragen. 12/13. Sept. 1998, No 211, P. 85.
30. World Commission on Environment and Development (1988), *Our common future on environment and development*. Oxford University Press, Oxford.

THE ROLE OF TRAINING AND SKILLED LABOUR IN THE SUCCESS OF ASIAN SMALL AND MEDIUM SIZED ENTERPRISES

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ABSTRACT

The ability of small and medium sized enterprises in developing nations in Asia to evolve technologically is frequently constrained by a variety of environmental factors that are beyond their control. In many cases, it is necessary for the strategy of SMEs to be aligned with the international supply chain strategies of multinational firms, who can provide the expertise needed for technological upgrading by SMEs, and with the development strategies of their own nations. If SMEs are to attract business as original equipment manufacturers or component suppliers for MNCs, they generally need to possess access to skills before they can get contracts. As SMEs often lack the knowledge and resources to engage in training programs, however, their success in upgrading themselves technologically may depend crucially on subsidised educational and training infrastructure provided by their governments.

INTRODUCTION

The role of local firms in supply chain management has been a matter of concern for many years. For example, a metaphor of a formation of flying geese has been used to describe the process by which technology transfers to firms in developing countries by multinational corporations (MNCs) could lead to accelerated economic growth (Hatch and Yamamura, 1996). In theory, a lead nation (perhaps Japan) initially guides the flock in a V-shaped formation, with the other, less developed, economies flying behind. In time, however, the other nations will (it is claimed) catch up, and the V will become a straight line in which all of the nations are on a economic par. The same metaphor may be applied to an international supply chain in which a lead firm, a transnational corporation from an advanced country, provides the bulk of technological knowledge and design and marketing expertise while suppliers in less developed countries (LDCs) fill less demanding roles. As a result of spillovers and local learning, however, the suppliers (usually small and medium sized enterprises [SMEs]) will upgrade their own expertise to the point at which they will have skills comparable to those of the lead MNC. At this point, the local suppliers from the developing countries will be able to compete independently in international markets.

The positioning of firms in international supply chains is closely related to their pre-existing skill levels. While an American firm may choose to locate some of its R&D activities in Europe and Japan, as IBM has done, or a Japanese firm may locate some of its design facilities in the USA, as Toyota has done, the general practice has been that the location of other activities – in particular, manufacturing – is based largely on relative levels of labour force productivity. Under this regime, MNCs locate various activities in their international operations according to the cost of local labour in relation to its productivity levels. As a

result, suppliers of inputs involving relatively high levels of technological sophistication will be sought in countries that *already* have good stocks of skilled labour. By contrast, MNCs are most likely to concentrate activities for which technical skills are unimportant and wages are correspondingly low in countries without a substantial existing pool of skilled workers.

Supply chain management is not only a matter of the competitiveness of firms, but also of countries. MNCs frequently have a number of nations to choose among when deciding where their activities should be located, and the availability of infrastructure may be a substantial determinant of the competitiveness of firms, especially small and medium sized enterprises. In this paper, I discuss the importance of training and skills on the competitiveness of SMEs from developing economies in the international supply chains of MNCs. My argument is that a reasonably high level of skilled labour must be available *before* a country becomes attractive as a location for suppliers of inputs of even moderate technological sophistication. This, however, requires an investment in training that is beyond the resources of most SMEs, especially since the payoff period is relatively long. As a result, in order for a country to improve the position of its small and medium sized enterprises in international supply chains, it is necessary that governments provide resources to assist in the upgrading of skills. This, however, should not be done by government bureaucracies operating in isolation, but requires strong coordination between governments and the private sector in determining what sorts of training programs are likely to be most effective.

THREE RELATED SETS OF STRATEGY

The international distribution of production results from the interaction of strategies formulated on three levels: (a) by multinational firms that provide much of the coordination for international supply chains; (b) by national governments that compete with each other for the location of economic activities; and (c) by firms in each country, who are again competing for business. Each of these levels of strategy formulation has its own goals and limitations which, taken together, have an overwhelming influence on the distribution of investment and jobs.

Supply Chain Strategies of MNCs

Increasingly, the terms "international supply chain" and "globalisation" are beginning to acquire genuine significance. Whereas in the past MNCs often operated virtually independently in several countries, without much exchange of inputs between their various national businesses, growing numbers of firms are assembling components from many parts of the globe. This trend has been inspired by several important trends. These include:

1. World Trade Organization (WTO) regulations that make it harder than in the past for nations to regulate the degree of local content in goods and services produced or sold within their borders. This has made it easier for firms to implement international sourcing strategies without having to overcome substantial barriers to trade.

2. Reduced transportation costs that make it cheaper for firms to take advantage of economies of scale.

3. More flexible design and process technologies that allow firms to customise products for local markets while still retaining a substantial core of common components that are used in many versions internationally.

Taken together, these changes now both encourage and permit multinational firms to spread their operations in ways that would have been too costly until recently. As tariffs are lowered and quantitative restrictions phased out, firms have greater options to coordinate their international activities in order to take better advantage of economies of scale and of local comparative advantages. This change has been reinforced by continuing reductions in transport costs that make it possible for MNCs to move components around the world both *cheaply* and *quickly*. In the past, for instance, the ability of Australian manufacturers to supply foreign markets was restricted by "the tyranny of distance". Now, each day Robert Bosch airfreights 3-4 tonnes of electronic components made in Australia to its plants on other continents, and General Motors regularly airfreights a component as heavy as engines from Melbourne to be used in cars assembled in Europe. Finally, because flexible design and process technologies are permitting firms to be both global and local in their product offerings, they are in a better position than ever before to take advantage of worldwide sourcing without sacrificing economies of scale.

MNCs need to consider a bundle of factors when deciding where to locate each of their activities. But the factor that probably receives the most attention from the public and from economists – labour cost – is among the hardest to define. Low wages do not mean low labour costs because unskilled workers in developing nations often have very low levels of productivity. In fact, for many types of activities, it is virtually impossible to operate in low wage economies because workers with the necessary skills and educational background are in short supply and MNCs find that it does not pay to make up for deficiencies by providing basic training at their own expense. This problem threatens to become increasingly severe as technical sophistication grows (Thurow, 2000).

Supply Chain Strategies of Developing Countries

Countries have various motives for wanting to attract activities by multinational corporations. The most obvious is merely to generate employment, but as long as it is based on low skills and low wages, this course is unlikely to lead to economic development as measured by increases in *relative* per capita incomes. Competing on low wages alone may perpetuate underdevelopment and poverty.

Whenever possible, countries want to attract investment that will lead to improvements in their current technological levels and, more importantly, ones that will make *future* improvements in technological knowledge, per capita incomes, and relative standards of living easier to achieve. To do this, a developing country often finds it cheapest and quickest to import knowledge through foreign direct investment (FDI) by multinational firms.[1] Therefore, it is common for LDCs to try to achieve an initial technological leap by targeting entry into mature industries in which technologies are well established and proprietory knowledge is no longer important (Amsden, 2001), but in which there is scope for staking out high value adding positions.[2]

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[1] Policies on FDI do vary. Whereas Singapore and Thailand have been eager to attract investment by multinationals, Korea preferred to develop its skills internally, through locally-owned firms (Chiu *et al.*, 1997; Kim, 1997).

[2] As Burstein (1984) points out, the value of knowledge to its originators decays as it spreads. But, this loss in appropriability for the originators increases the value for others, who were previously outsiders, by reducing the investment they must undertake to acquire knowledge that was once proprietary.

In attempting to improve the technological status of their industries, developing countries are in competition with each other for the attention of the multinational firms that have both the money and the knowledge that the LDCs need (Dunning, 1997; Thurow, 2000; Bellak, 2001). Of the many poor nations in the world, only the ones that offer the best infrastructure are likely to attract investment in activities that offer immediate technological upgrading. In Lester Thurow's (2000, 20-1) words,

> Put bluntly, multinational companies possess a variety of factors that developing counties must have if they are to participate in the global economy. … the nation-state is increasingly having to become a platform builder to attract global economic activity to locate within its borders.

For their part, firms tend to slot their supply chain activities on the basis of existing levels of education and training in different countries. Thus, countries with low wages but low skill levels receive investment in labour intensive stages of production, while countries with higher levels of skill are more likely to receive FDI support for more sophisticated activities that offer higher value added than they normally produce at present. Because higher levels of technological sophistication provide better prospects for future technological upgrading, it is vital that, as soon as they can, developing countries secure their initial positions on (what they hope will be) an "escalator" to improvements in *relative* as well as absolute prosperity in years to come.

Supply Chain Strategies of SMEs in Developing Economies

Although the role of governments in providing infrastructure and shaping basic policy is important, local firms must provide much of the hands-on initiative to manage supply chain membership. Here, I concentrate primarily on the activities of smaller firms that might join multinational supply chains.

In economies based on private ownership, the majority of important decisions on investment and the use of resources are made at the firm level. Enthusiastic firm-level involvement in innovation is necessary to achieve efficient utilisation of innovations since assimilation of new codified knowledge usually requires the acquisition of tacit knowledge through the use of equipment and ideas alike.[3] This is something that can be best (perhaps can only be) undertaken in on-the-job contexts within firms that use trial-and-error methods to master new technologies. Assimilation must therefore be rooted in firm-level, shop floor activities directed by managers who understand the benefits involved. In the case of the adoption of foreign technlogies, for example, Pack (2000, 71-72) believes that the recent success of Newly Industrialised Economies (NIEs) such as Korea, Singapore, and Taiwan, has been grounded in three interrelated *firm-level* factors:

> (1) [The firms'] openness to foreign knowledge and their ability and willingness to tap international technology markets; (2) the pressures brought to bear on firms to increase their productivity to continue to increase exports rather than to use the knowledge obtained to extract rents from the domestic economy, thus creating a demand for foreign technology; and (3) the high productivity of foreign technology as

[3] As Shi (1998) has documented for China, the incentives involved in acquiring equipment, on the one hand, and learning how to use it efficiently, on the other, are quite separate and may require different government policies.

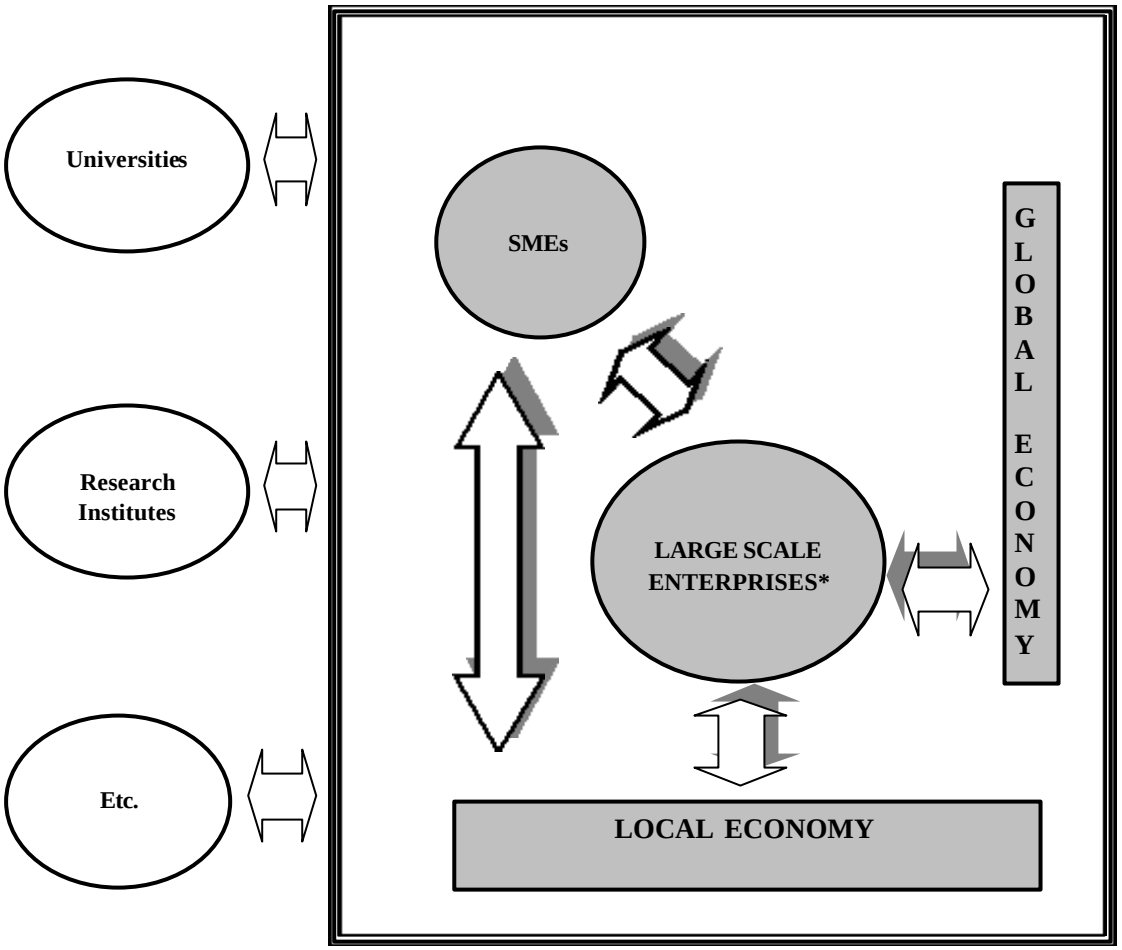
its dissemination and successful use were enhanced by an educated domestic labor force.

But alertness to opportunities at the level of the firm may not ensure macroeconomic success. According to Amsden (2001, 3), "Three [sets of] generic technological capabilities that nurture knowledge-based assets may be distinguished: *production capabilities* (the skills necessary to transform inputs into outputs); *project execution capabilities* (the skills necessary to expand capacity); and *innovation capabilities* (the skills necessary to design entirely new products and processes)". Firms in developing economies (indeed, innovating firms in all economies) generally need to strengthen all three types of capabilities. As a rule, however, it is not feasible for firms in developing economies to achieve capabilities at the highest levels because they are not in a position to operate at the cutting edge of technology. While it is possible for firms from developing economies to generate high-technology knowledge and skills eventually, as in the Korean semiconductor industry (Kim, 1997), this is time-consuming and is not achieved in one large jump. Moreover, as has been recognised for centuries, private incentives may not lead to results that provide maximum benefits to society as a whole. Because the private returns to investment may be less than the social returns, there is a serious risk of "market failure", causing private investment in some projects to fall short of overall social needs. Investments in sponsoring the generation and diffusion of knowledge – for instance, funding R&D, education and training programs, and other forms of investment in human capital – are especially subject to shortfalls from a national standpoint because of spillovers and other difficulties in ensuring that the benefits from any investment are captured by those who provide the funding.[4] As a result of market failure, it is generally conceded that there are important roles for governments to play in influencing investment decisions in knowledge-based areas in order to avoid serious social shortages (Martin and Scott, 2000).

Summary

The actual location of international supply chain activities results from the interaction of these three sets of strategies. Multinational firms seek to find the best locations for each type of activity depending on costs, reliability, and similar factors. Developing nations want to encourage employment and exports and, more importantly, they want to attract FDI that will enhance their current levels of technology acquisition and lead to continuous increases in technological sophistication in the future. Finally, local firms of all sizes in developing countries want to gain a share of the action as contractors for MNCs and ultimately, perhaps, as independent competitors. For many countries, however, the ability of their firms – and most especially SMES – to gain advantageous positions in international supply chains depends on the competitiveness of their infrastructure in comparison to the infrastructures of other developing nations. If a nation is to advance technologically in relative terms, it needs to provide MNCs with easy access to a skilled and educated labour force who can then receive cheap and rapid on-the-job training to become productive workers.

[4] Externalities arising from spillovers in research, and in learning in general, have been elevated to a principal engine of economic development in the New Growth Theory. See, for example, Romer (1990). Virtually all books on the economics of education (e.g. Sheehan, 1973; Belfield, 2000) also emphasises the importance of externalities in education and the consequent need to treat it as a public good in order to avoid underinvestment from a social (as opposed to a private) standpoint.



*** Both MNCs and Locally Owned LSEs**

Figure 1

FLOWS OF SKILLS AND KNOWLEDGE INTO AND WITHIN THE BUSINESS SYSTEM

This is illustrated in Figure 1,[5] in which SMEs are shown to rarely receive skills and knowledge *directly* from the Global Economy, but get them instead through the intermediation of large scale enterprises (LSEs). The LSEs may be either foreign-owned firms or large local firms that are engaged in joint ventures or strategic alliances with MNCs or are able to afford to buy technology. Otherwise, as the Figure shows, SMEs must rely on locally-generated skills and knowledge. But, because SMEs are frequently unable to gather the resources to improve their own skills and knowledge sufficiently to earn attractive positions in international supply chains, governments of developing nations need to offer assistance to the SMEs if the governments are to meet their own strategic goals.

GLOBALISATION AND SKILL LEVELS

The effects of increased trade and international dispersion of manufacturing activities on the demand for skills are widely known. A recent study by the International Labour Office (ILO) has charted the effects of globalisation on the economies of several nations[6] at different stages of economic activity. Broadly speaking, employment based on natural resource endowments often involves low skill levels and is poorly paid, as in Chile (Torres, 2001a). On the other hand, the technological changes associated with increased trade in manufactures are strongly biased towards high-skilled jobs and against low-skilled ones (Edwards, 2001; Torres, 2001b).

Clearly, education and skills occur in many types and on many levels. Emphasis may be put on improving access to primary, secondary, or tertiary education; on training workers for semi-skilled or highly skilled jobs (or on providing very little training at all). Training may also be general or it may be firm-specific to various degrees, which will influence the ability of workers to (a) transfer their skills to other jobs in other companies or even other industries, and (b) their ability to set up as entrepreneurs, running SMEs of their own. Again, the appropriate patterns of training and education depend on the strategies being followed by multinational corporations, by nations, and by local firms in the developing nations.

- *Multinational firms:* MNCs are willing to pay for the development of general skills to a limited extent, but they usually expect workers (both their own and employees of local suppliers) to already have received a basic level of training. Beyond that MNCs are willing to pay for firm or industry specific training of workers. They may also need workers with engineering and scientific training, especially process engineering knowledge, but their requirements are limited because most of their more sophisticated R&D activities are likely to be performed in facilities in more developed economies.

- *Developing nations:* In the case of LDCs that want to attract industries that will assist development – industries demanding higher levels of technological inputs than are currently common – the relative levels of skills and education required depend on the positions of individual firms in supply chains. Therefore, the greater the level of technological sophistication that they are looking for, the higher the levels of education and skills that they will need. Realistically, however, countries at early or intermediate stages of development cannot expect to attract firms needing the highest levels of technology, but at best will have to settle for supply chain activities at intermediate levels of sophistication (Amsden, 2001). Additionally, they may attract limited technical

[5] This diagram was inspired by a drawing by Professor Suvit Maesinsee and subsequent discussion with Dr. Patarapong Intarakumnerd.

[6] Bangladesh, Chile, Republic of Korea, Mauritius, Poland, South Africa and Switzerland.

development activities, perhaps for customising products to meet local needs. Therefore, LDCs do need to assure a modest supply of process and development engineers and scientists, but their most important need in making an initial push towards accelerated technological evolution is the provision of skilled labour that is suitable for firm-level training by multinational firms.

- *Local firms:* Although some local firms may seek independent development paths, the technological progress of both large scale and of small and medium size enterprises in developing economies is often tied to their ability to tap into networks established by MNCs. Large scale enterprises may be able to achieve status as original equipment manufacturers (OEMs), while SMEs may become component suppliers either to the

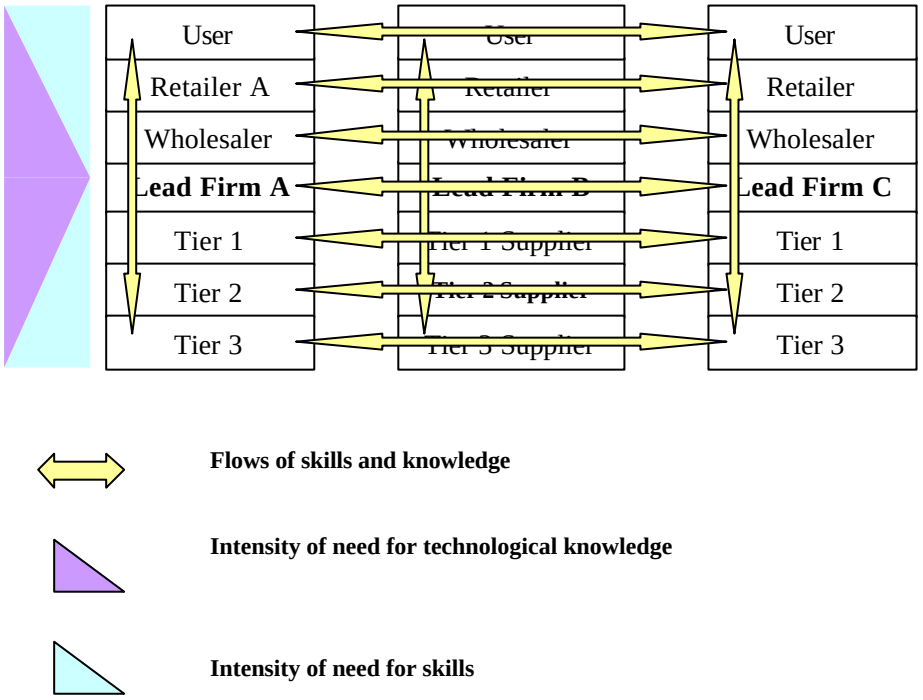


Figure 2

SKILL AND KNOWLEDGE FLOWS WITHIN SUPPLY CHAINS AND THROUGHOUT A SECTOR

OEMs or directly to the MNCs. In either case, they will depend primarily on attracting skilled labour and a much smaller numbers of engineers

Therefore, as Figure 2 shows, the types of skills and education needed by different firms in LDCs vary systematically.[7] Lead firms, many of which may be multinationals, have the greatest need for technological knowledge, but many of the relevant activities are probably located in branches in developed nations and imported into LDCs. Lower tier producers and distributors – in other words SMEs – are more heavily reliant on skills.

In short, LDCs need to have stocks of skilled and educated labour in order to attract investments by multinational firms that will improve their technological standing and promote future technological improvements.[8] In the earlier stages of development, however, the greatest demand will be for skilled rather than for highly educated labour. Nevertheless, in addition to the small proportions of educated workers needed by MNCs, OEMs and their local suppliers, educated workers will also be needed in local institutions in developing economies, especially in universities and government research institutes.

MATCHING SUPPLY AND DEMAND

But how can a developing country generate a skilled and educated workforce to attract investment by MNCs and get on the escalator to continuing growth and technological evolution? Both Figures 1 and 2 give a prominent place to multinational (lead) firms as sources of technological knowledge that can then spread throughout a developing economy – to locally owned LSEs and SMEs. As I have argued, however, while multinationals may be willing to pay for the acquisition of training for specific needs, they are not able to make up for basic deficiencies in a country's infrastructure. Put simply, other things being equal, it is cheaper to find another country to invest in than to put money into general skills that the MNC itself might not benefit from because of labour mobility.

Others would argue that private firms will necessarily seize any worthwhile opportunities, and that there is no need to assist them. To some observers, technological updating and economic development are seemingly uncomplicated. Pack (2000, 87) contends that,

> At the present time, it would appear that government-supported efforts to identify technology are not likely to be needed in the nontechnology-intensive sectors.[9] If one firm succeeds in this enterprise, it will serve as a beacon to other firms in industry encouraging them to emulate its effort. In these sectors, given the ease of access to technology, one can expect quick imitation once the new methods have proved profitable in the LDC.

To achieve this initial breakthrough, Teece (2000, 123) argues that, "the disadvantages associated with poor market and asset positions can be readily overcome if there is the organizational commitment to do so, and the allocation of resources is made (relatively modest) [sic] to license-in technology."

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[7] In developed countries, of course, SMEs may also be havens for technological sophistication at the highest level, but this is much less likely to be true in developing economies.

[8] Mathews and Cho (2000) refer to this as "skills leverage".

[9] "Non-technology intensive sectors" include the mature industries such as automobiles and consumer electrical products that have formed the foundation for further development in the NIEs.

Such arguments, however, assume away some very real barriers faced by firms attempting to acquire the skills needed to begin technological updating. Firstly, they imply that knowledge about which technologies to license and about the mechanisms involved in licensing are available at low cost to firms in developing economies, whereas search costs may be a major obstacle facing firms that are largely lacking in technological expertise and market-based connections. Secondly, the arguments give short-shrift to the problems and associated costs that the *assimilation* of new technologies entails. Because of their "poor market and asset positions", these barriers are very hard for firms in developing economies to overcome on the basis of their own capabilities. As a result, both pioneering and follower firms in developing economies may need substantial help in acquiring skills and knowledge *before they can make effective use of market-based institutions.*

Assumptions underlying the incentive structures used in neoclassical models are based on behaviour in developed economies and are often not appropriate for formulating policies to be implemented in developing economies. This is not because firms in developing countries are influenced less strongly by profit-seeking and rent-seeking motives, but because their environment often makes it more difficult for them to take effective action on the basis of their incentives. This is especially true in the case of profit-seeking activities. It is clear that one of the biggest problems is that there can be multiple market failure. Suitable firm-level incentives may not be implemented because of shortages of funds available to SMEs – the old adage that "it takes money to make money" is often true, especially when there is likely to be a substantial time lag between the point of investment and when returns begin to flow. To the extent that owners of SMEs lack savings, they must rely on capital markets to finance investments in R&D, training, and other knowledge-based activities. Even in countries with well-developed capital markets, funding for this type of endeavour is hard to come by as banks are unwilling to assume the risks involved in financing investments in activities when security is hard to find (knowledge, being intangible, cannot be repossessed in case of non-payment) and the outcomes are, virtually by definition, highly uncertain.[10] Raising funds is even harder for SMEs in developing countries without good capital markets. As a result, governments are (if only by default) a vital source of funds for investments in knowledge-based activities in developing economies.

A second neoclassical assumption concerning firm-level incentives that is less appropriate for developing than developed economies is that firm owners and managers already have enough knowledge to be able to make properly informed investment decisions. The acquisition of appropriate knowledge is difficult even in technologically-sophisticated economies because it is not always clear where to look for reliable and up-to-date concepts and data (Robertson, 1998). The problem is even greater when the level of existing technological knowledge that searchers (owners and managers) possess is highly limited because this may restrict their ability fully to appreciate the nature of a firm's needs and the opportunities that are available. When this occurs, managers may find it hard to act on the basis of their incentives because they lack the skills to locate information and to sort among the various types of knowledge that are on offer.[11] This problem was identified long ago by John Stuart Mill (1975[1859]) when he argued that uneducated people (potential primary school students or their

[10] At least at the level of the individual firm, even if the prospects for the industry as a whole are stable and promising.

[11] In addition, their relative lack of knowledge of where to look and what to look for increases the search costs of firms in developing economies in comparison to those in developed economies. The latter are more likely to be part of well established networks that provide shortcuts when searching (Granovetter, 1985; Rogers, 1995).

unschooled parents) are not qualified to judge the value of education. More recently, Lall (2000) has listed a variety of special features that distinguish the learning needs of firms in developing economies from those assumed in neoclassical models. In common with Stiglitz (1987), Lall (2000, 17) contends that firms must "learn how to learn" about modern technologies or else they "may not be able to predict if, when, how, and at what cost they would learn enough to become fully competitive". Knowledge is never fully codified,[12] and therefore latecomer firms cannot escape investments in time and money in order to learn the tacit elements in mastering a technology. This is a costly process but, until the challenge is met, latecomer firms cannot operate efficiently in competitive markets. Thus, governments can help firms in developing economies to learn and to learn-to-learn by simplifying knowledge acquisition processes and reducing the expense involved in order to bring their learning capabilities closer to those of firms in developed economies.

Because MNCs cannot be relied upon to provide *basic* training infrastructure and because local firms (particularly SMEs) often lack the knowledge and financial resources to provide any substantial training themselves, much of the responsibility for organising programs to provide skills falls on the governments of developing countries because they have the best potential access to the knowledge and the other resources that are needed to build an environment that is attractive to FDI in activities that will lead to technological upgrading and subsequent significant economic development.

Figure 3 illustrates the position in which governments of developing nations are often placed if they want to fulfil their strategies of technology upgrading and participation in global supply chains.

- They need to support the development of a suitable institutional infrastructure, including primary, secondary, and further education for workers in skilled trades as well as tertiary educational institutions and perhaps government-financed research centres.[13]

- Governments may also need to provide support for further firm-based training, especially for locally-owned firms, to help them to develop additional skills needed to operate as parts of global supply chains.

It is vital, however, that governments do not act unilaterally. Their goal should not be to control economic development, but to provide incentives for private sector activities that lead eventually to self-sustained technological uptake and growth. Hence a first step towards developing guidelines for government involvement in skill development is to determine what sorts of incentives businesses will respond to in given circumstances. The goal of the exercise is to bring the various types of strategies together by aligning the incentives of businesses and government policymakers, as well as aligning the outcomes achieved by firms with the broader priorities of economic development.

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[12] This is especially true for complex processes. While a sonata by Beethoven may be totally codified in that not only the notes, but the tempi and other aspects of performance are laid out in the score according to well-known conventions, it is doubtful if even the most expert pianist could achieve an optimal level of performance without practising the work in order to mentally and physically assimilate the implications of the score.

[13] Governments also need to provide other types of institutions such as strong and appropriate legal frameworks and regulations for corporate governance, but these fall beyond the scope of this paper.

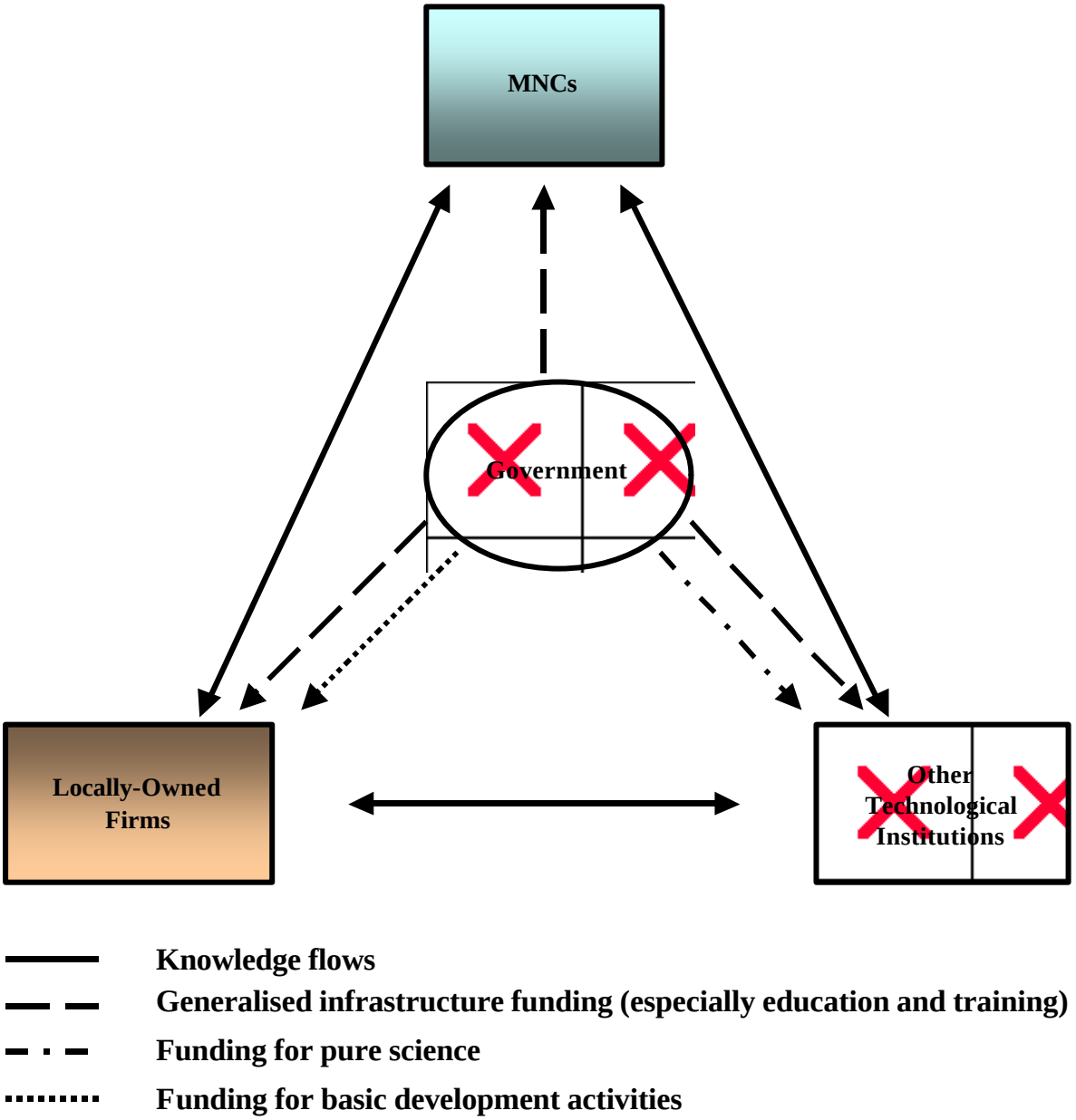

Figure 3

PRINCIPAL FLOWS OF KNOWLEDGE AND FUNDING

INTERVENTION AND INCENTIVES

Providing Incentives for Foreign Firms

When assessing the incentives needed to influence the roles that MNCs assign to developing nations in their global supply chains, it is necessary to remember that, because their strategic objectives are different, MNCs often respond to different incentives than is true of local firms. There is no doubt that foreign firms may contribute substantially to raising levels of technology in developing countries, especially when they use process and product technologies that are more advanced than those widely available in the host countries. Simply through their presence, for example, multinational companies (MNCs) can provide a demonstration for local entrepreneurs and workers of the benefits of more productive technologies. To the extent that they require local suppliers of intermediate inputs (and, in particular, suppliers that are locally-owned), they can provide both incentives for technological updating and potential access to the technological and management knowledge that the suppliers need to operate efficiently . In short, spillovers from MNCs can add substantially to the skill levels of emerging economies and promote economic development. In some cases, this can form a cornerstone for government economic strategy, as in Singapore in the 1990s, where "the industrial development strategy … can best be characterised as one emphasising government facilitation of MNC induced technological learning" (Wong, 1998, 131).[14]

Although MNCs have undoubtedly had an important presence in most developing economies in Asia in recent decades (Yusuf and Stiglitz, 2001),[15] their circumstances are different from those of locally-based firms. For a start, particular operations of MNCs are often footloose and subject to being moved according to worldwide criteria that are beyond the control of individual governments. Secondly, it is not entirely clear that MNCs are always eager to sponsor spillovers into the local economy, for fear of giving indigenous firms the eventual ability to diversify their skills and become competitors in international markets (Hatch and Yamamura, 1996). Finally, because of economies of scale and differing factor costs, the geographical diversity of MNCs does not always translate into an even spread of functions across the world. Despite arguments that "R&D have traversed from being rooted solely in a few advanced Western countries, particularly the United States, to a prevalent spread around the globe" (Loh, 1998, 43), developing economies are unlikely to attract substantial R&D[16] activity from MNCs in the near future. R&D operations are often capital intensive and require substantial numbers of very highly educated personnel. Far from dispersion, the tendency in many industries has been for the generation of R&D clusters in recent years, as firms have banded together in industrial districts in order to be close to other companies with similar research programs (Swann *et al.*, 1998; OECD, 1999). MNCs with research

[14] Whether this has led, as planned, to substantial leakages of learning to indigenous Singaporean firms, however, is not clear (Chiu, *et al.*, 1997; Wong, 1998). See also, Hobday (1995).

[15] Although levels of foreign direct investment have varied across countries and time periods, and some Asian countries have adopted policies that discourage FDI while others have encouraged it (Jomo, 2001).

[16] In the sense used here, "R&D" entails basic research activities and developmental engineering to pioneer substantially new products or processes. The contention is that basic research by MNCs is most unlikely to be undertaken in economies such as Thailand's and that "development" will generally involve modifications to products and processes already developed substantially in other locations. This does not, of course, imply that the development activities of MNCs in Thailand are not of value, but only that their scope is likely to be truncated, particularly (as will be argued in the next section) in comparison to the development activities of indigenous firms.

operations in Europe, Japan, or North America have little reason to set up further laboratories to conduct basic research and complex development projects – with expensive duplications of equipment and a proliferation of communications channels among engineers and scientists. For the most part, all that is justified in developing economies is small operations to fine tune products and processes to fit local conditions – to conduct development activities on an *ad hoc* basis, to serve special local market requirements. Taken together, these factors lend some support to Amsden's (2001, 191) assertion that, "In practice, by the year 2000 foreign firms operating in [developing economies] had invested *almost nothing* in innovation insofar as the local expenditures on R&D were virtually nil" (emphasis in original).

From a policy standpoint, these observations suggest that MNCs should receive support to help them to establish and maintain small development facilities in developing nations but that they should not be funded to build larger R&D establishments. Secondly, they should be eligible, like locally-owned firms, to receive funds for upgrading the skills of their workforce. The most important thing that governments can do for MNCs, however, is to supply the infrastructure of skills needed to attract their investment in the first place.

Providing Incentives for Locally-Owned Firms

Locally-owned firms in developing economies are generally less mobile than MNCs. For the most part, they have not developed foreign operations and do not need to think in terms of maximising returns across an international portfolio of assets. Hence, their time horizons in regard to investments in their home economies may be substantially longer than the time horizons of MNCs seeking low factor costs in an unstable international climate. The workforces of indigenous firms are also locally-based. Any investments made in their education and training are therefore likely to remain within the country and be available for other uses no matter what happens to their current employers.

I have argued that firms (generally SMEs) in developing economies lack the intellectual assets to make informed decisions on knowledge-based inputs, and that they also lack the resources needed to acquire those intellectual assets. I have also argued that relying purely on market-based mechanisms to provide incentives to firms in LDCs is, at best, a slow process and an uncertain one. Therefore, in order to grasp opportunities to gain advantageous positions for their firms in global supply chains, governments in developing nations frequently need to make use of their ability to concentrate financial and human resources in order to create a pool of resources to *complement* (not to replace) the resources in the hands of the firm themselves. The combined resources in the hands of firms and governments could then be used for technological upgrading. Thus, while private incentives for efficiency and effectiveness would remain, access to requisite start-up resources would be available more readily and, equally importantly, more quickly than through unaided market-based mechanisms.

An incentive program for locally-based firms does not mean giving funds to all applicants. To be eligible for assistance in skill upgrading, the first requirement is that the industries chosen offer good prospects for generating sustained growth and on-going technological improvement. To take this route, governments must determine which endeavours are most promising in terms of servicing the needs of both domestic and export markets, and in promoting development by (a) raising the standards of technology employed beyond those commonly used in the economy, and (b) providing a basis on which newly-acquired technological skills can proliferate over time to other sectors of the economy (that is, act as leading sectors) (Robertson, *et al.*, 2001) rather than becoming dead-ends that offer one-off

increases in prosperity. A second major consideration is that the firms that are offered incentives be able to use the money wisely. Firms that receive aid must be both competent and honest.

Above, all when providing incentives for training and the upgrading of skills to allow local firms to join global supply chains, governments must *listen to the owners and managers of those firms* and avoid "one-size-fits-all" policies. This is especially true in helping firms to nurture the tacit knowledge needed to make efficient use of new codified technologies. As Lall (2000) has argued, enterprise-level technology capability development hinges on many influences. For example, different technologies have different learning requirements. Programs tailored to the needs of one industry are therefore unlikely to be totally suitable for firms in other industries, as a result of which generic educational and training programs may need to be supplemented with courses with more narrow aims. At the firm level, the acquisition of tacit knowledge may not suited for formal courses at all. Nevertheless, since it is expensive to acquire tacit knowledge, firms may need grants to cover their losses while they experiment in order to reach adequate levels of market competitiveness.

CRITERIA FOR SKILLS DEVELOPMENT

The premise that underlies the analysis presented here is that, with a few exceptions, firms in developing economies do not have the resources they need to upgrade their process and product technologies, especially over a reasonable period of time.[17] In particular, SMEs (the backbone of most economies whether developing or developed) lack both the knowledge required to make informed decisions and the financial resources to acquire that knowledge and to invest in new technologies once they have traced out a reasonable strategy. In countries with low per capita incomes, governments offer the best (and perhaps also the most equitable) prospects for concentrating the funds needed to surmount these barriers. In contrast to private-sector firms, governments have taxation powers and an ability to provide employment opportunities for educated people to create centralised reservoirs of technological knowledge. These reservoirs can then be tapped by private firms without severe and unnecessarily duplicative search costs.

But, of course, not all knowledge is equally valuable (Stinchcombe, 1990) from either a private or a social point of view and it would be extravagant to collect all of the knowledge and information available on the chance that it might someday prove useful. Public resources are limited, and in any case the aim canvassed here is to not to create an omniscient and omnipotent public bureaucracy to replace private entrepreneurship at the micro level, but rather to devise ways of helping private businesses (especially SMEs) to enhance their internal technological capabilities. Because resources are scarce, governments have an obligation to spend money as wisely as they can – which means that they need to establish priorities in helping private firms. From this it follows that, as private firms need help in making informed decisions on investments in technology but scattergun approaches to distributing grants are wasteful because not all firms are equally worthy of receiving funds, governments must develop criteria ("targets") for selecting the candidates that are most likely to offer substantial social returns to any grants handed out.

[17] Unaided market forces may, in a neoclassical sense, work well in the long run but, as Keynes pointed out in his famous jibe, "In the long run, we are all dead".

To aid in the selection of programs that deserve government assistance, Table 1 provides a tentative set of guidelines that might be considered when distributing funds to firms to encourage training programs and build up skill levels for participation in global supply chains. The guidelines suggest that criteria should look at three major factors: The desirability of the industries in which participation is being sought; the ability of individual firms to use subsidies wisely, and the nature of the particular activities for which subsidies are being provided. Taken together, they can help to designate target areas for investments in training that would advance supply chain participation.

Table I

Criteria for Investment in Skills Development for Global Supply Chain Participation

For Choosing Desirable Industry Sectors:

Levels of technology higher than those currently common in the local industry but not cutting edge in order to permit (1) technology upgrading when the LDC enters the sector but at a level that can be accommodated with achievable (if still substantial) investments in further training; (2) ready access to technical knowledge that is already codified; (3) an ability to upgrade technology capabilities for process engineering and limited R&D development (localisation of the product); (4) no need to engage in extensive basic R&D locally in the initial phases (although this may come later, as in Korea, after markets have been established).

Substantial existing markets, preferably both international and domestic, to permit increased exports and import substitution.

A comparative advantage in non-technological factors of production.

Limited competition from firms in other developing nations to avoid potential glutting of the market.

Where possible, a willingness on the part of existing MNCs who are in the industry to operate in a given developing country and to give business to local suppliers, etc. at positions in their global supply chains that would allow local firms to engage in initial technological upgrading and lay the foundations for further upgrading in the future.

(In general, this implies moving into mature industries at positions in their supply chains that do not rely simply on low factor costs – e.g. of labour and raw materials – but also provide entrees to technological sophistication beyond those currently prevailing.)

For Choosing Desirable Firms:

Local firms: *Eligibility requirements to receive incentives should be based on*:

(a) introduction of updated (but not cutting-edge) technologies; (b) operating in industries with good commercial prospects; (c) demonstrated commercial probity of owners and

managers; (d) sufficient initial technical capabilities within firm to support upgrading; (e) potential for transferring knowledge and skills to other firms and industries.

MNCs: *Eligibility requirements to receive incentives should be based on*:

(a) each MNC introducing more sophisticated (although probably not cutting-edge) technologies than are currently in general use; (b) that these technologies offer good prospects for diffusion to other industries (act as leading sectors), thereby spreading technological upgrading; (c) "good citizenship" in the sense of a high probability that firms receiving incentives will adhere to local laws and regulations.

For Choosing Desirable Activities:

That they require levels of technological skill above those currently common.

That they be flexible and potentially applicable to a variety of firms and industrial sectors in order (1) to promote potential indigenous entrepreneurship by those who are trained and wish to go into business independently, and (2) to avoid workers becoming so highly specialised that the value of their skills is destroyed if their initial employer fails for some reason.

That they can be taught locally (and to local workers) at a reasonable cost and in a reasonable span of time.

CONCLUSION

Economic development has virtually always proceeded from *prior* investments in the education and skills of a workforce, with increased technological sophistication in jobs following later. In many ways, this is not a pleasing message for developing countries that have a panoply of pressing problems and very limited resources. There can be no doubt that education and training are not only expensive, but that their payoff periods are long. Other, more immediate, uses for resources may be more attractive politically. This is especially true if governments of LDCs believe that they can use direct investment by multinational corporations to generate economic development with substantial local investment.

This position is based on a dangerous illusion, however, and cannot be sustained. MNCs are unlikely to locate sophisticated activities in nations whose workers do not already have the basic skills needed for internationally competitive performance. Moreover, local suppliers (especially SMEs), who would be enlisted in the global supply chains of multinational firms, often lack the knowledge and resources to finance all of their own training needs. To achieve development, the governments of LDCs need to join with MNCs and with local firms to determine the types of training and other infrastructure that are needed while allowing scope for entrepreneurial direction on the part of the private sector.

REFERENCES

Amsden, Alice H. (2001). *The Rise of "The Rest": Challenges to the West from Late-Industrializing Economies* (New York: Oxford University Press).

Belfield, Clive R. (2000). *Economic Principles of Education* (Cheltenham: Edward Elgar).

Bellak, Christian (2001), "The Contribution of (Large, 'Western') Multinationals to the Catching-up of (Small, 'Eastern') Countries", in Dominick Salvatore, Marjan Svetlièiè and Jož e P. Damijan, eds., *Small Countries in a Global Economy: New Challenges and Opportunities* (Basingstoke: Palgrave).

Burstein, M. L. (1984), "Diffusion of Knowledge-Based Products: Applications to Developing Economies", *Economic Inquiry*: 22, 612-632.

Chiu, Stephen W. K., Ho, K. C., and Lui, Tai-Lok (1997). *City States in the Global Economy: Industrial Restructuring in Hong Kong and Singapore* (Boulder: Westview).

Dunning, John H. (1997), "Globalization, Technological Change and the Spatial organization of Economic Activity", in John H. Dunning, *Alliance Capitalism and Global Business* (London and New York: Routledge), Ch. 7.

Edwards, L. (2001), "Globalization and the Skills Bias of Occupational Employment in South Africa", *South African Journal of Economics*: 69, 40-71.

Granovetter, M. (1985), "Economic Action and Social Structure: The Problem of Embeddedness", *American Journal of Sociology*: 91, 481-510.

Hatch, Walter and Yamamura, Kozo (1996). *Asia in Japan's Embrace: Building of a Regional Production Alliance* (Cambridge: Cambridge University Press).

Hobday, Michael (1995). *Innovation in East Asia: The Challenge to Japan* (Cheltenham: Edward Elgar).

Jomo K. S. (2001), "Rethinking the Role of Government Policy in Southeast Asia", in Joseph E. Stiglitz and Shahid Yusef, eds., *Rethinking the East Asian Miracle* (Oxford: The World Bank and Oxford University Press), 461-508.

Kim, Linsu (1997). *Imitation to Innovation: The Dynamics of Korea's Technological Learning* (Boston: Harvard Business School Press).

Lall, Sanjava (2000), "Technological Change and Industrialization in the Asian Newly Industrializing Economies: Achievements and Challenges", in Linsu Kim and Richard R. Nelson, eds., *Technology, Learning, and Innovation: Experiences of Newly Industrializing Economies* (Cambridge: Cambridge University Press), 13-68.

Loh, Lawrence (1998), "Technological Policy and National Competitiveness", in Toh Man Heng and Tan Kong Yam, eds., *Competitiveness of the Singapore Economy* (Singapore: Singapore University Press), 40-80.

Martin, Stephen and Scott, John T. (2000), "The Nature of Innovation Market Failure and the Design of Public Support for Private Innovation", *Research Policy*: 29, 437-447.

Mathews, John A. and Cho, Dong-Sung (2000). *Tiger Technology: The Creation of a Semiconductor Industry in East Asia* (Cambridge: Cambridge University Press).

Mill, John Stuart (1975 [1859]). *On Liberty*, in *Three Essays* (Oxford: Oxford University Press).

OECD (1999). *Boosting Innovation: The Cluster Approach* (Paris: OECD).

Pack, Howard (2000), "Research and Development in the Industrial Development Process", in Linsu Kim and Richard R. Nelson, eds., *Technology, Learning, and Innovation: Experiences of Newly Industrializing Economies* (Cambridge: Cambridge University Press), 69-94.

Page, John M. (1994), The East Asian Miracle: An Introduction", *World Development*: 22, 615-625.

Robertson, Paul L. (1998) "Information, Similar and Complementary Assets, and Innovation Policy", in Nicolai J. Foss and Brian J. Loasby, eds., *Economic Organization, Capabilities and Co-ordination: Essays in Honour of G. B. Richardson* (London: Routledge), pp. 261-288).

Robertson, Paul L., Pol, Eduardo, and Carroll, Peter (2001), "Technological Diffusion through an Historical Lens", paper presented to the Eindhoven Conference for Innovation Studies, September.

Rogers, E. M. (1995). *Diffusion of Innovations*, 4th edition, (Free Press, New York).

Romer, P. M. (1990), "Endogenous Technological Change," *Journal of Political Economy*: 98, 5, pt. 2, S71-S102.

Sheehan, John (1973). *The Economic of Education* (London: George Allen & Unwin).

Shi, Yizheng (1998). *Chinese Firms and Technology in the Reform Era* (London: Routledge).

Stiglitz, Joseph E. (1987), "Learning to learn, localized learning and technological progress", in Partha Dasgupta and Paul Stoneman, eds., *Economic Policy and Technological Performance* (Cambridge: Cambridge University Press), 125-153.

Stinchcombe, Arthur L. (1990). *Information and Organizations* (Berkeley and Los Angeles: University of California Press).

Swann, G. M. Peter, Martha Prevezer, and Stout, Donald (1998). *The Dynamics of Industrial Clustering: International Comparisons in Computing and Biotechnology* (Oxford: Oxford University Press).

Teece, David J. (2000), "Firm Capabilities and Economic Development: Implications for the Newly Industrializing Economies", in Linsu Kim and Richard R. Nelson, eds., *Technology, Learning, and Innovation: Experiences of Newly Industrializing Economies* (Cambridge: Cambridge University Press), 105-128.

Thurow, Lester C. (2000), "Globalization: The Product of a Knowledge-Based Economy", *Annals of the American Academy of Political and Social Science*: 570, 19-31.

Torres, Raymond (2001a). *Towards a Socially Sustainable World Economy An Analysis of the Social Pillars of Globalization* (Geneva: International Labour Office).

Torres, Raymond (2001b). *Republic of Korea* (Geneva: International Labour Office).

Wong Poh Kam (1998), "Upgrading Singapore's Manufacturing Industry", in Toh Man Heng and Tan Kong Yam, eds., *Competitiveness of the Singapore Economy* (Singapore: Singapore University Press), 115-142.

Yusif, Shahid and Stiglitz, Joseph E. (2001), "Development Issues: Settled and Open", in Gerald M. Meier and Joseph E. Stiglitz, eds. *Frontiers of Development Economics: The Future in Prospective* (Oxford: The World Bank and Oxford University Press), 227-268.

MANUFACTURING SECTORAL GROWTH IN THE USA AND JAPAN: RELEVANCE TO SMEs, ORGANIZATIONAL INNOVATIONS (OIs), AND RECENT ECONOMIC GROWTH

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ABSTRACT

Although economic growth is inherently linked with the structure and nature of SMEs (e.g. their number, industry concentration, size, degree of outsourcing, etc), as this has been shown in the existing literature, OIs [1], more generally, are the context in which SMEs operate and hence OIs ought to be more closely examined in order to further understand the complex process of economic growth and the particular impact of SMEs on the latter. In this paper, a detailed comparison of the growth of manufacturing sectors in the USA and Japan is used as an indirect way to demonstrate the following proposition. Although SMEs have played a positive role in the postwar economic Japanese miracle, they are not a sufficient force for a sustainable economic growth, as the recent protracted recession in Japan shows. It is only when technological innovations and in particular OIs take place in the economy that this type of growth is possible, as this is also demonstrated in the recent American prolonged economic growth.

INTRODUCTION

The importance of SMEs in contributing to economic growth has been emphasized in many papers and books (e.g. *Acs et al*, 1998). Sanidas (2002b) has provided some evidence on the links between SMEs, organizational innovations (OIs)[2], and economic growth across OECD countries with particular reference to Japan and the USA. In this paper, a close comparison between the manufacturing sectors in these two countries reveals that there is evidence that the recent American economic survival and the recent Japanese protracted economic downturn can be related to the existence of OIs, and that the relative importance of SMEs in the two countries is only a contingent factor necessary but not sufficient for economic growth.

OIs are the context in which SMEs operate and hence OIs ought to be more closely examined in order to further understand the complex process of economic growth and the particular impact of SMEs on the latter. In this paper, a detailed comparison of the growth of manufacturing sectors in the USA and Japan is used as an indirect way to demonstrate the following **proposition**. Although SMEs have played a positive role in the postwar economic Japanese miracle, they are not a sufficient force for a sustainable economic growth, as the recent protracted recession in Japan shows. It is only when technological innovations and in particular OIs take place in the economy that this type of growth is possible, as this is also demonstrated in the recent American prolonged economic growth.

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[1] Examples of OIs are: production and distribution forms such as the factory system or the integration of mass production and distribution; the management structure of the firm such as the M-form; the production process from the organization point of view, such as the just-in-time (JIT) process; the organization of the shop floor, for example according to scientific management; clusters of SMEs, etc. See beloow and references for further details.

[2] For a good summary of OIs historically see Sanidas, 2002a.

Another way of expressing the above proposition is to make the following remark. The same SMEs, which played a positive role in generating a fast industrial growth in Japan during the 1970s and 1980s, have not been able to sustain a similar growth during the prolonged recession of the 1990s and probably the 2000s. A brief analysis of the number of SMEs and their corresponding employment shows that only a very slight increase in the size of firms is taking place in the 1990s in Japan, despite a substantial drop in the total number of SMEs and corresponding employment due to the negative effects of recession (see Table 1). Similarly for the USA, but in the opposite direction, the same SMEs, which played their role in generating a rather poor industrial growth in this country during the 1970s and 1980s, have been able to induce a much faster growth during the 1990s and probably the 2000s. Consequently, the explanation in these two opposite phenomena for the two countries can only be explained by referring to other factors such as the OIs. Effectively, Sanidas, 2001 provides extensive evidence that the imitation of the just-in-time cum quality control (JIT/QC) holistic system (an OI) by an increasing number of American manufacturing firms and sectors in the last 15 years or so has significantly contributed to the revival of the American economy during this period.

Table 1 Japan: recent developments in establishments, employment and size

	Total manufacturing			Automobiles sector			TVs and radios sector		
Year	Est/ts	Empl/nt	Size	Est/ts	Empl/nt	Size	Est/ts	Empl/nt	Size
1990	436	11173	25.6	11184	789	70.5			
1991	430.4	11351	26.4	11201	829	74			
1992	415.1	11157	26.9	10997	812	73.8			
1993	413.7	10885	26.3	11098	800	72.1			
1994	382.8	10416	27.2	10467	788	75.3	8887	434	48.8
1995	387.7	10190	26.3	10648	767	72	8628	427	49.5
1996	369.6	9990	27	10126	769	75.9	7944	408	51.4
1997	358.3	9835	27.4	9963	769	77.2	7885	406	51.5

Sources and notes: UNIDOb, 1996 and 2000. 'Est/ts' stands for number of establishments; 'Empl/nt' stands for number of employees'; 'size' is the number of employees per establishment. For the sector of 'TVs and radios' it is not possible to have consistent data for the whole period in the Table.

In order to properly evaluate the importance of OIs and SMEs, the comparison between American and Japanese manufacturing sectors will take place in sections 1 and 2 for various periods between 1960 and 1998 and for the variables of real output and TFP. In section 3 the recent protracted Japanese economic downturn is analyzed in the light of OIs and other relevant issues. In section 4 OIs are compared with technical innovations (TIs) in the two countries. In section 5, two leading sectors in Japan and the USA, namely semiconductors and personal computers bring more evidence to the propositions of this paper.

Before starting the sectoral analysis it is necessary to briefly provide some definitions for OIs and TIs. The definition of technology provided by an international institution, the United Nations Centre on Transnational Corporations (UNCTC), in 1983 is revealing:

> *"…Technology may be embodied in the form of capital goods, such as machinery, equipment and physical structures; or it may be disembodied in such forms as industrial property rights, unpatented know-how, management and organization* (my emphasis), *and design and operating instructions for production systems…"* (UNCTC, 1985, p. 119)[3].

A key feature in this study is to separate embodied from disembodied in the definition of technology. Hence, OIs make part of disembodied technology (according to the above definition of the UNCTC). The term technical innovations (TIs)[4] is coined to refer to embodied technology.

[3] Also quoted in Dicken, 1998, p. 248.

[4] Good examples of TIs are the innovations of semiconductors, use of aluminum in many products etc.

Five sections constitute this paper. The first section presents a detailed sectoral comparison between the USA and Japan in terms of real output. The sectoral comparison in terms of TFP and real output from 1960 to 1985 is undertaken in the second section. The period 1987 to 1997 is examined in the third section, in which some explanations of the recent Japanese economic downfall are provided. In order to separate more effectively the role of OIs and TIs in the process of sectoral growth, section four examines the performance of three key sectors. Finally, section five examines two other key sectors in terms of OIs. The role of SMEs in all this sectoral comparison will be indicated whenever necessary.

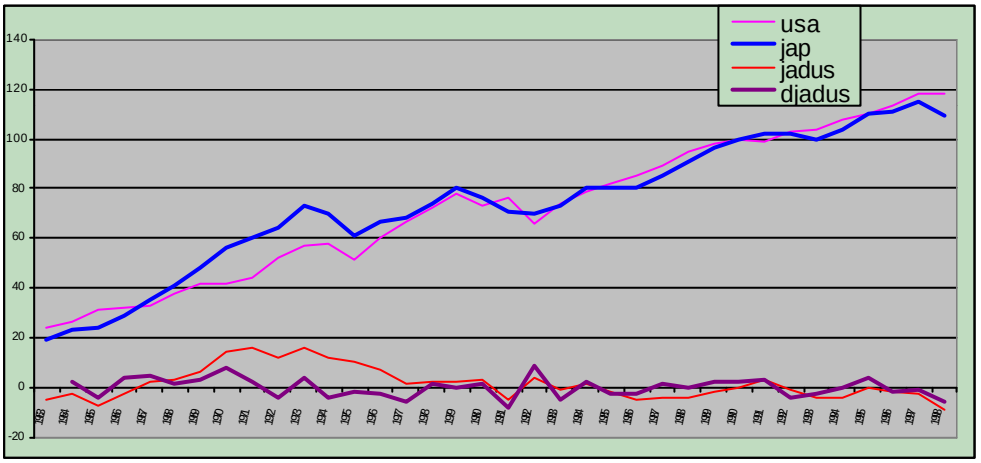
1 Analysis of the American and Japanese Series of Manufacturing Sectoral Real Output

1.1 Analysis from 1963 to 1998

The following Figures 1 and 2 show the growth patterns of real output for the USA and Japan from 1963 to 1998, for two manufacturing sectors (another sector is shown further below and the remaining sectors are shown in Appendix A1). Also on the same graphs, two more variables are shown, namely the first difference of the two indexes of industrial production (called 'jadus'), and the second difference of the two indexes (called 'djadus'). These last two series offer a way of detecting stationarity and cointegration, which in turn can be used to conclude whether a given sector followed the same pattern of growth or not through time in the two countries. A formal test of cointegration was also carried out for each pair of sectoral series to confirm these conclusions (some of these tests for the 'non-ferrous metals' sector are shown in Appendix A2).

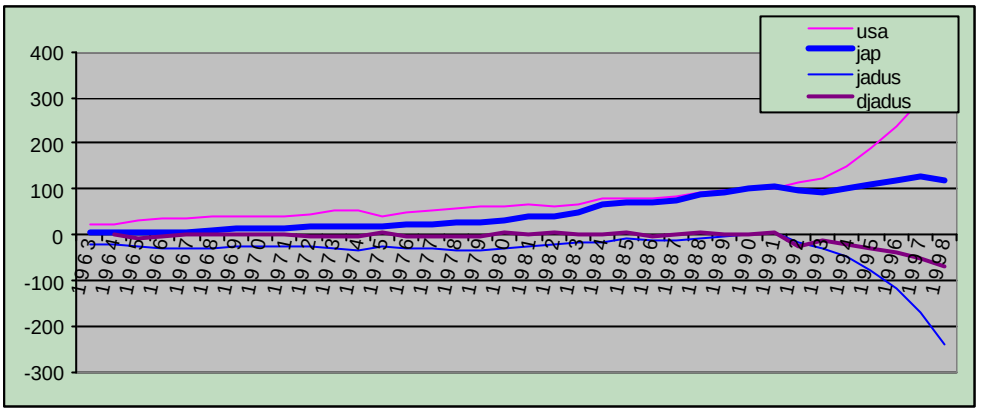
From these Figures we can draw some interesting conclusions. First, for almost every sector, the Japanese growth was very strong up to the mid 1970s (the catching-up stage with the USA), and then it slowed down, and finally decreased in the 1990s. However, over the whole period, the Japanese growth rates have been higher than the American ones in most sectors as Figure 4 shows. Table 2 summarizes the relative strength of each sector's growth between the two countries.

Figure 1 Industrial Chemicals



Source: Based on UNIDO, 1999.

Figure 2 Electrical Machinery



Source: Based on UNIDO, 1999.

Table 2 Growth Rates in Real Output from 1964 to 1998, Industry differences

Category (1) American growth was higher than that of Japan	**Category (2) American growth was close to that of Japan**	**Category (3) American growth was lower than that of Japan**
1. Beverages	1. Food	1. Other Chemicals
2. Textiles	2. Industrial Chemicals	2. Petroleum Refineries
3. Wood	3. Rubber	3. Miscellaneous Petroleum and Coal
4. Furniture	4. Pottery and China	4. Iron and Steel
5. Printing	5. Glass	5. Non-Ferrous Metals
6. Plastic	6. Other Non-Metal Minerals	6. Fabricated Metals
7. Non-Electrical Machinery		7. Electrical Machinery
8. Others		8. Transport Equipment
		9. Professional and Scientific Equipment
		10. Apparel
		11. Leather
		12. Footwear
		13. Tobacco
		14. Paper

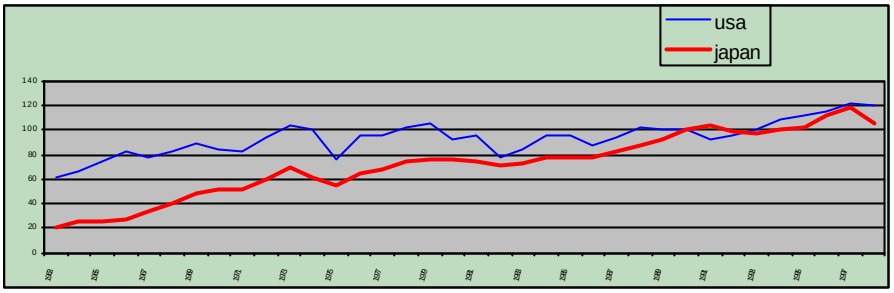
Source: Based on UNIDO, 1999.

For the first category, out of the 8 sectors, it is worth noting the substantial gradual decline of the main leading sector of the Japanese economy up to the 1930s (Minami, 1986), namely the Textiles. Also, it is worth noting the Non-Electrical Machinery (it includes computers) for which the Americans have always been the leaders (however, note that the higher American growth in this sector is not substantial). In the second category, it is worth mentioning the equal strength of the Industrial Chemicals and Rubber. In category (3) out of the 14 sectors almost all the heavy manufacturing industries have been more dynamic in Japan than in the USA during the whole period 1964 to 1998. It will be indicated in this study that it is precisely in these 'heavy' sectors that the Japanese firms, entrepreneurs and managers have been mostly innovative in terms of OIs. Overall, the Japanese growth rates have been higher or almost as high in 20 out of the 28 sectors considered.

Furthermore, and as the Figures (see this text and Appendix A1) for each sector show, the two national real output series for every industry need in most cases to be twice differenced in order to be cointegrated. This means that the two national economies have been following their own independent paths of growth. These paths have been much more dependent on their underlying historical background and their own OIs than their own TIs since Japan has always been in most

cases an imitator of foreign and especially American technology (see section 4 below). An example will demonstrate the evidence given by formal cointegration methodology. This example is based on the Non-Ferrous Metals industry, which shows a steadily faster growth of the Japanese sector than the American one during the period 1963 to 1998 as the Figures 3a and 3b exhibit.

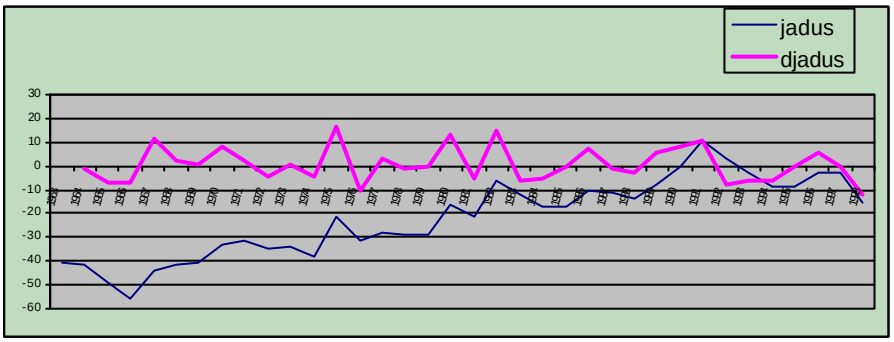
Figure 3a Non-ferrous metals, indices of industrial production



Source: Based on UNIDO, 1999.

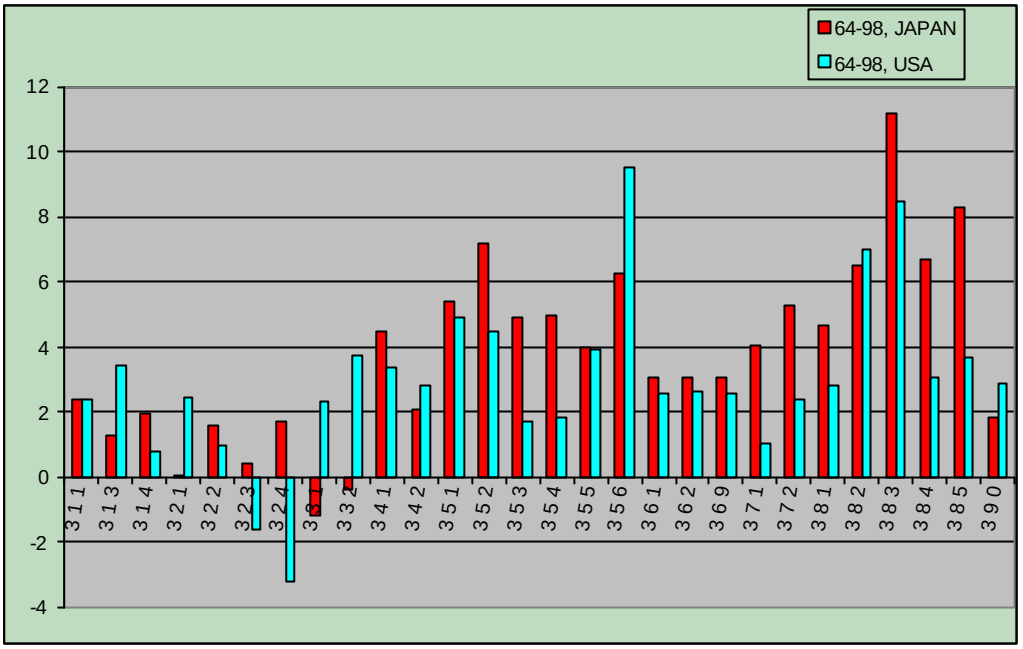
From Figure 3a we would expect no cointegration as the two national series grow in different speeds. Effectively, as the full printout shown in Appendix A2 indicates, all the appropriate tests such as the one based on maximum eigenvalue of the stochastic matrix confirm the non-cointegration of the two indexes of real output for non-ferrous metals. From Figure 3b we can conclude that the first difference between the Japanese and the American series of output ("jadus") is not enough to produce a stationary series; however, when "jadus" is differenced once more ("djadus"), then we have a stationary series; the unit root tests conducted for the four time series (the two original ones plus jadus plus djadus) confirm these conclusions.

Figure 3b Non-ferrous metals, first and second differences



Source: Based on UNIDO, 1999.

Figure 4 Real output, growth rates, for the USA and Japan, 1964-98

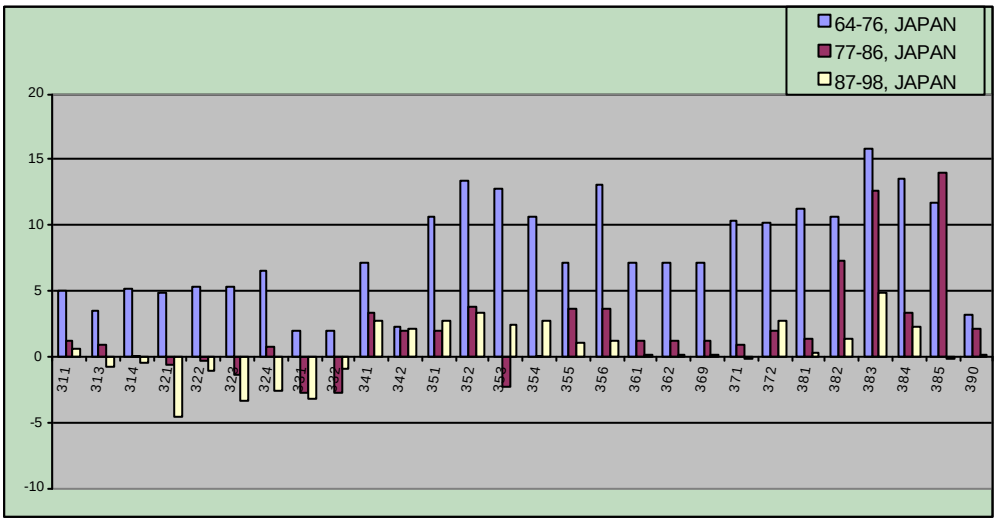


Source: UNIDO, 1999. Note: the code numbers of each sector are indicated on the x-axis. See Appendix A3 for the corresponding names.

1.2 Analysis of three sub-periods

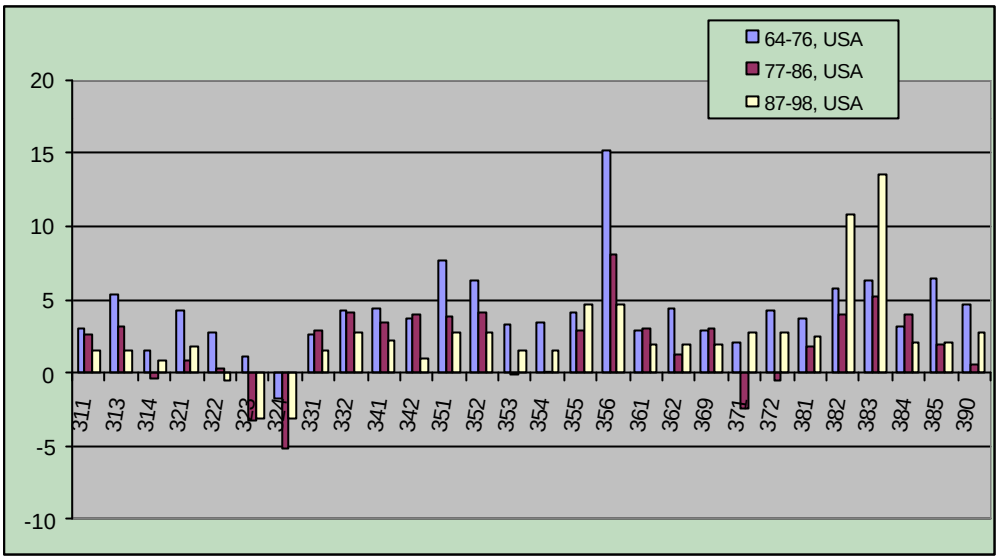
The period 1964 to 1998 will now be split into 3 sub-periods so that more appropriate conclusions can be drawn upon. These sub-periods are between 10 and 13 years long and each one of them includes a major depression (the two oil shocks plus the beginning of the 1990s). The Figures 5 and 6 show the changes in growth between the 3 sub-periods considered.

Figure 5 Japan, Real Output, growth rates, for 3 sub-periods



Source: Based on UNIDO, 1999.

Figure 6 USA, Real output, growth rates, for 3 sub-periods



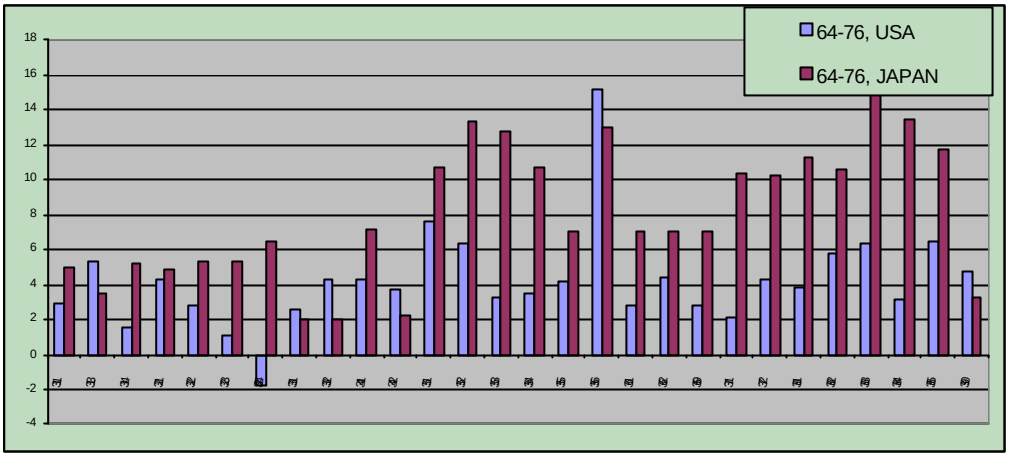
Source: Based on UNIDO, 1999.

From these Figures (5 and 6) it is worth making the following comments. For the USA, the period 1964 to 1976 saw the highest growth rates almost in all sectors, followed by the period 1977 to 1986, with the lowest growth rates occurring in the third period 1987 to 1998. However, there are some outstanding exceptions to these patterns. For the latter period, two industries are now leading the American economy, namely the Non-Electrical Machinery (mainly the computers component) and the Electrical Machinery (mainly the semiconductors component). These two sectors have been experiencing the highest growth rates (at least double the others) amongst all 28 industries during 1987-98 and higher growth rates than in the other two sub-periods. Also, during 1987-98 Iron and Steel has been strongly reviving, and Rubber continued its steadily high growth. It will be further emphasized in this paper that these currently leading sectors of the American economy have been more than any other sector following and imitating the Japanese OIs.

For Japan, it is remarkable how the two oil price shocks have slowed down almost all sectors considerably during the second period 1977 to 1986. The three exceptions to this pattern were the two Machinery sectors, especially the Electrical Machinery (in which the Japanese semiconductor sub-sector was booming during that period), and the Professional and Precision Instruments sector (in which the photographic equipment and the watches sub-sectors established themselves in the world). During the third sub-period 1987 to 1998, all sectors experienced a deep plunge, with the least affected sectors being the Electrical Machinery, the Chemicals, the Non-Ferrous Metals, the Petroleum, the Paper, and the Transport ones. Some explanations will be provided in section 3 regarding the Japanese manufacturing industries' protracted recession during the 1990s.

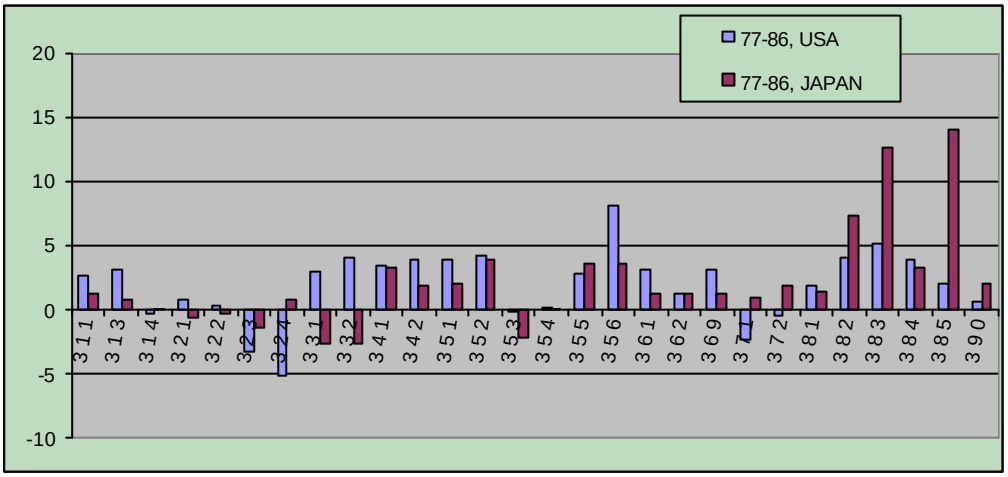
In addition, for each sub-period the growth rates are compared for each sector between the two countries (see Figures 7a, 7b, and 7c). Some remarks are necessary. First, during the period 1964 to 1976, only a limited number of industries showed a higher growth rate in the USA than in Japan (Beverages, Wood, Furniture, Printing, Plastic, and Others). Second, during both periods 1977 to 1986, and 1987 to 1998 the Americans did perform better than the Japanese in most industries. However, an interesting reversal took place between these two periods. Whereas, during 1977 to 1986 the Japanese grew faster in the three leading sectors of Non-Electrical Machinery, Electrical Machinery, and Professional and Precision Instruments, the situation was reversed during the period 1987 to 1998. This is an important finding and is further explored in Sanidas, 2001 where it was shown that when the Americans imitated the Japanese in terms of OIs they started performing like the Japanese (which means they grew very fast).

Figure 7a Real output, growth rates for the USA and Japan, for 1964-1976



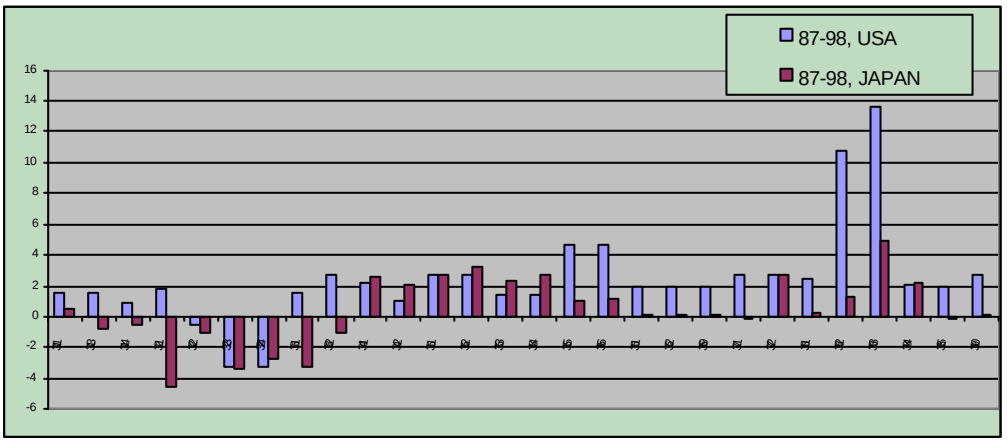
Source: Based on UNIDO, 1999.

Figure 7b Real output, growth rates for the USA and Japan, for 1977-1986



Source: Based on UNIDO, 1999.

Figure 7c Real output, growth rates for the USA and Japan, for 1987-1998



Source: Based on UNIDO, 1999.

Second, there are some sectors (chemicals, petrol, non-ferrous metals, and paper) for which the Japanese growth was still positive in the 1990s. It is especially remarkable for the chemical industries to have been growing strongly and continually during the whole period of 1963 to 1998, despite some criticisms. For example, Arora *et al* (1999) observed "…The availability of imported technology and the general backward state of the chemical industry itself enabled users – firms in downstream sectors - to play a more prominent role in the chemical industry…The *keiretsu* structure therefore exacerbated the tendency, caused by import protection, toward production at scales that were too small to be economic…" (p. 245). However, it was precisely the Japanese characteristics of the chemical industry organization –*keiretsu* structure, many producers, and high degree of product customization etc- that was the reason of the strong continuous growth of that industry. Furthermore, as it can be seen in Figure 1, that both the American and Japanese chemical sectors grew in the same or parallel way after the mid 1970s, despite substantial differences in OIs traits between the two countries.

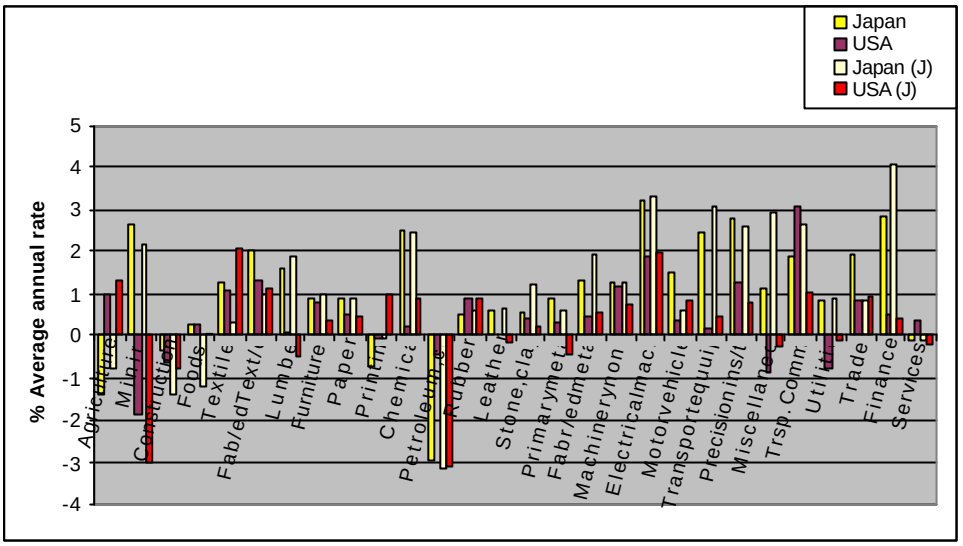
2 TFP and Real Output in the USA and Japan from 1960 to 1985

Figure 8 shows the average annual rate of change in TFP for Japan and the USA, for 28 2-digit sectors, from 1960 to 1980, as they have been calculated by two expert panels, namely, first by Jorgenson *et al* (1995), and second by Kuroda *et al* (1996). The methodology both panels used was quite similar and based on Jorgenson's work (e.g. 1990). The Figure shows, that there are some differences but not significant. Other similar work (for example, Denny *et al*, 1992) confirms these results. The main conclusion out of this comparison is the higher TFP in Japan than in the USA in almost all industries, the clear exceptions being the sectors of agriculture, construction, printing, petroleum, rubber, and services. Hence, the overwhelming majority of the manufacturing 2-digit sectors exhibited higher TFP growth rates for Japan than for the USA during that period.

Another conclusion out of this Figure is that both countries have been experiencing higher growth rates in TFP almost in the same sectors, namely the electrical machinery, precision instruments, non-electrical machinery, transport and communication, and fabricated metals. Japan's growth has been more pronounced in the chemicals, fabricated metals, lumber, leather, transport equipment, miscellaneous manufacturing, and finance.

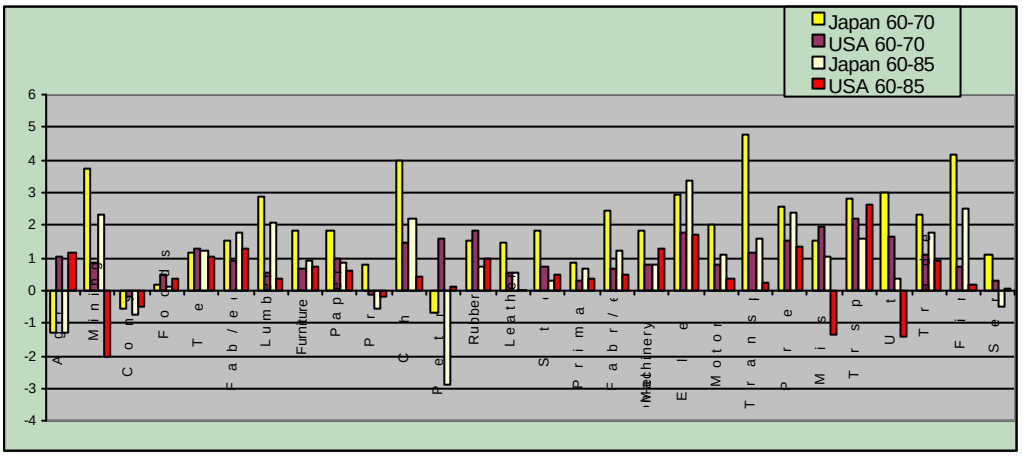
Figure 9 concentrates on the TFP growth rates from 1960 to 1970 and from 1960 to 1985, as calculated by Kuroda *et al* (1996). As expected, TFP was much higher in general for the former period in Japan because the 1960-1985 period included two major depressions due to the oil price shocks. On the contrary, these depressions did not affect the USA to the same extent (which is not a surprising result for this country on account of its large natural resources). Furthermore, the comments made for the Figure 8 are also valid also for this Figure.

Figure 8 TFP for 1960-1980, for both the USA and Japan



Source: Jorgenson *et al* (1995), and Kuroda *et al* (1996); Japan (J) refers to Jorgenson *et al* (1995).

Figure 9 TFP, 2-digit sectors, for 1960-70 and 1960-85, for both the USA and Japan



Source: Kuroda *et al* (1996).

Figure 10 shows the rates of growth of real output for Japan and the USA, for 1960-1985. These rates are consistent with the rates of TFP. It is striking how much higher are the Japanese growth rates both for real output and TFP.

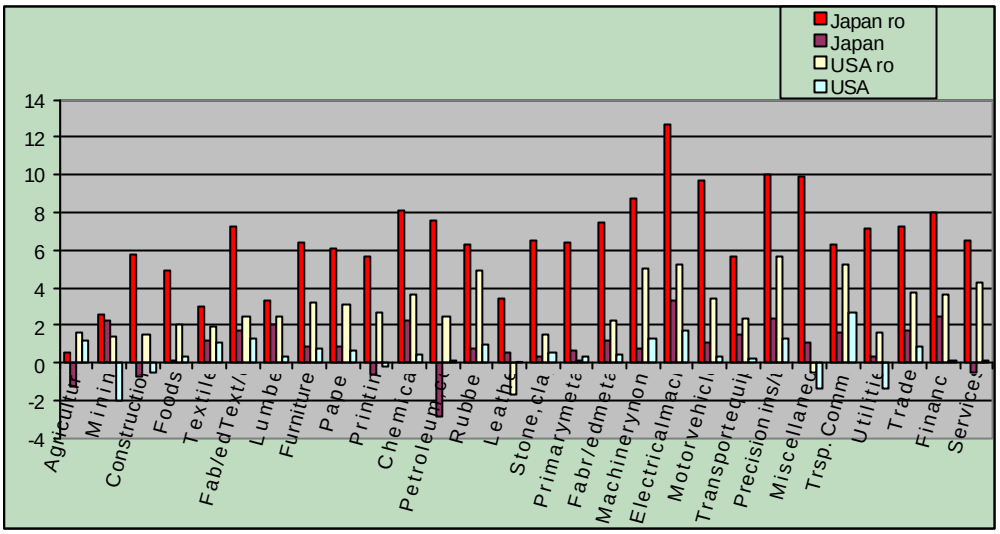
Why did the Japanese economy achieve such a high and sustained economic growth during 1960 to 1985, which was much higher than what the USA experienced during the same period? What role did the OIs play in this development?

The leading manufacturing sectors have been mainly the electrical machinery, motor vehicles, precision equipment, miscellaneous manufacturing, and to a lesser extent fabricated metals, chemicals and fabricated textiles. In all these principal industries (and others in general), the **quality** of the product has been the principal force through which the Japanese firms quickly penetrated foreign markets such as the American ones[5]. However, this statement about quality

[5] This openness started after WWII, contrary to Japan which kept being more protective of its infant industries until quite recently.

begs the question of why the Japanese firms achieved such reputation about quality in their products after WWII. The answer to this question lies in the OI of the JIT/QC system as many scholars have testified (e. g. Porter and Takeuchi, 1999; Womack *et al*, 1990; Abegglen and Stalk, 1985, and others). Here, it is worth reminding the reader that Japanese products were not always renown for their quality. On the contrary before WWII quality was rather absent in these products (for confirmation of this historical fact see Best, 1990; Odagiri and Goto, 1996; and Juran, 1995).

Figure 10 Real output and TFP, for 1960-85, USA and Japan



Source: Kuroda *et al* (1996).

In addition, Japanese firms had a good background of pre-conditions in order to produce several products of a very high quality. These pre-conditions were the existence of a cooperative focal firm specializing in its core competences, with a strong emphasis on human development, strong networks, and cooperation with a patriotic government. The new structure was the establishment of a practical spirit for quality products through the implementation of philosophies such as the TQC, the JIT and low inventories, the market penetration criterion in business, a new production process involving all these elements together, a large number of SMEs, and a strong domestic competition for many manufacturing sub-sectors under new more democratic institutions (for more details see Sanidasa, 2002, and Sanidasb, 2002).

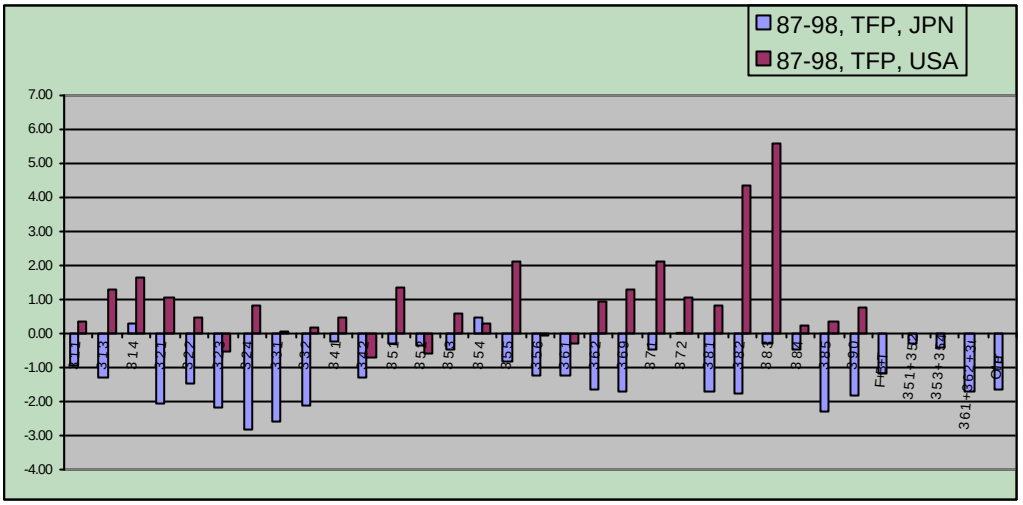
3 TFP and real output in the USA and Japan from 1986 to 1997: Explanations of the recent Japanese Economic Downfall

The following Figures (11 and 12) summarize the comparative data for TFP and real output between the two countries during the period 1987 to 1998. Clearly, these Figures show that Japan has been going through a deep recession during the last 10 years or so, especially in comparison to the USA. The manufacturing sectors that exhibited the least downfall are Non-Ferrous Metals, Transport, Electrical machinery, Chemicals, Iron and Steel, and Paper Products. A full examination and explanation of this recent Japanese economic diving cannot be undertaken here. However, in relation to this study some partial relevant views will now be offered.

If we have a look again at the graphs of sectoral manufacturing real output for Japan and the USA since 1963 (see Appendix A1), it is easily noticeable that many sectors in Japan stopped growing since a certain date prior to the recent recession. So, though for both these countries, Leather, Footwear, Apparel, and Tobacco have been declining or remained stagnant since the 1970s, many other sectors declined or remained stagnant only for Japan and not for the USA. These were Furniture, Wood Products, Textiles, and Beverages. In total, eight sectors out of the 28 3-digit manufacturing sectors have been performing poorly or even negatively. If on top of these

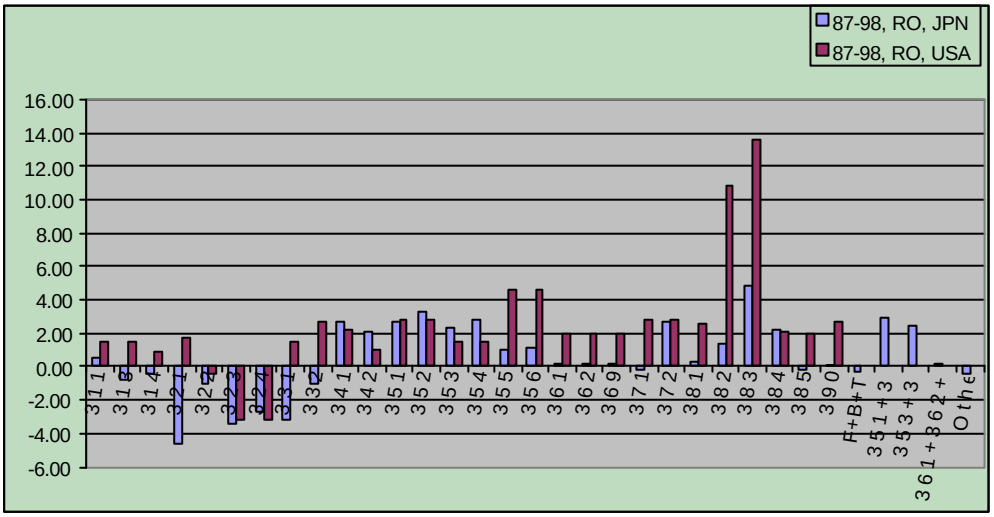
industries we add several service sectors notorious for their inefficiency in Japan (such as public services, and banks) then it becomes evident that Japan is still a dual economy. Thus, we have the leading sectors –transport, machinery- and their satellites –iron and steel, other metals etc- which have been the pioneering moving forces of the Japanese economic miracle, and on the other side we have all the remaining sectors in manufacturing and services which lag behind in performance and effectiveness.

Figure 11 1987-1998, TFP in Japan and the USA



Source: Based on UNIDO, 1999 for both countries; the capital stock data were obtained from NBER, 2000 for the USA, and from EPA, 2000, for Japan.

Figure 12 1987-1998, Real Output (RO) for Japan and the USA



Source: Based on UNIDO, 1999 for both countries.

Many scholars have made similar comments. Porter and Takeuchi (1999) have emphasized the micro-economic nature of recent Japanese failures. First, they stress "…the consensus over Japan's past success has come overwhelmingly from the robust growth of a relatively small number of industries…" (p. 67) such as semi-conductors, machine tools, steel and vehicles. In addition Japan's exports are dominated by a relatively small number of industries in "…automotives, consumer electronics, office machines, and production machinery. In huge areas of the economy there are few if any successful exporters, including chemicals, packaged goods, services, and health care…" (p. 72). Second, the same authors in their extensive study (1999, p. 78) remark:

> *"…Many of Japan's failures can also be traced to fragmented, inefficient, and anachronistic domestic sectors such as retailing, wholesaling, logistics, financial services, health care, energy, trucking, telecommunications, housing, and agriculture. By design, government policies have created two Japans: one composed of highly productive export industries, the other containing domestic sectors…The inefficient Japan drives up business costs across the board, weakening the competitiveness of the export industries…"*

From the OIs point of view, the same writers Porter and Takeuchi (1999) recognize the importance of JIT/QM in Japan's economic growth (p. 71):

> *"…The model of Japanese corporate success centers on the notion that a company can achieve both high quality and low cost by employing - and continuously improving - fundamentally better managerial practices. The idea is that companies compete by relentlessly staying at the frontier of best practice. This model is not an abstract theory but stems from extraordinary advances made by Japanese companies after the introduction of now well-known managerial practices, such as total quality management (TQM), lean production, and close supplier relationships…"*

However, still from the OIs view, the same authors pinpoint some relative weaknesses in Japan's organizational structures. These are various activities such as planning and control, finance, logistics, distribution, order processing, customer information, and after-sale service, information technology, the Internet, marketing, and office operations. Consequently, Porter and Tekeuchi (1999, p. 81) suggest that the "…companies must move from an exclusively egalitarian, seniority-driven model to one where doing things differently is rewarded in compensation, advancement, and opportunities for entrepreneurship…" In the book version of the just cited article, Porter *et al* (2000, p. 189) recommended that Japan must move beyond competition just based on quality products to competing on strategy and innovation that result in 'true profitability'.

According to Mroczkowski and Hanaoka (1998), the following changes have already been taking place in Japan:

1. Performance-based evaluation and rewards: by 1995, 75% of Japanese companies administered pay by competency and merit (and hence not by seniority), whereas in 1987 the relevant percentage was 54%, and in 1978 it was 42%. These figures are supported by other surveys as well.
2. Evidence of change in social values: Japanese employees' attitudes are moving away from loyalty to the company and towards identification with their profession.
3. Manipulation of working time: overall hours worked (including overtime) are being reduced in larger companies. Also the use of flextime systems is increasing. However, both these elements are not true for SMEs.
4. Early retirement: this means a job transfer to a subsidiary or affiliated company under less attractive conditions. Again SMEs lag behind the larger firms in implementing this policy (in 1995, 17% as against 40% respectively).
5. Lifetime employment and transfers: the "koyochosei" (employment adjustment) is now replaced by the "shukko" system (either temporary or permanent transfer to other companies).
6. Employment of women and foreigners: between 1992 and 1995 the proportion of women in management positions has doubled, although still low by international standards. Though attitudes of employers change rapidly, 40% of Japanese companies employ foreigners whose status is still inferior to that of Japanese workers.

The same authors (1998) predict that probably by 2010 the Japanese management system, at least in terms of human resources will be like the Western one. This prediction is based on surveys they conducted with Japanese company managers, academics, and management consultants. However, it seems too difficult to change a history of more than a 100 years within a frame of 10 to 20 years. I think Japan will emerge out of this new crisis (yet another one in the last two centuries) with a new organizational outlook, which will be a marriage between the old features and some new ones and hence it will not be just another Western country.

The analysis in this sub-section so far shows that Japan still has much to accomplish in order to be considered a fully developed country. We often forget that this country's enormous progress since WWII does not necessarily mean that problems of under development do not exist any more. The Japanese dual economic nature will eventually disappear, but until then many changes in terms of OIs must take place. This is consistent with one point of this paper, namely that OIs which are good for one country's economic growth are not necessarily good for another, and that OIs which are good in one historical stage of economic development are not necessarily good for another historical stage. This point is consistent with the contingency theory of management.

Several other authors have taken the same stand vis-à-vis my last remark. It is worth noting that almost 20years ago, Abernathy *et al* (1983), have expressed the same ideas and somehow predicted a Japanese downfall:

> *"…The modern Japanese system of production is not some manufacturing Nirvana, free of all tensions and problems that beset such systems elsewhere. It is the result of a set of deliberate choices and trade-offs and is appropriate not to every economic context imaginable but, rather, to the specific context of postwar Japan. If that country's social or political stability becomes problematical, if the work force ages too greatly, if expectations about living standards rise too quickly, if key industries cannot sustain their rate of growth, if- in short- changing conditions give the lie to the assumptions on which much of that production system rests, it will inevitably show the strain…"* (p. 84)

This extract hints on the contingency theory of management and the 'changing conditions' the authors just mentioned are actually taking place in the most recent decade in Japan. In brief, there are no leading or key sectors any more in that country (as my sectoral analysis has demonstrated above), the work force 'ages too greatly', the younger generation has higher expectations about living standards without the willingness to do the 'dirty' jobs any more, and the social and political stability is no longer so strong in Japan.

The importance of leading sectors in the present economic situation in Japan has been apparently a key issue in economic circles of that country according to Ito (1996, p. 236): "…Unless there is some structural reform, new industries will not emerge and the slow growth will continue. The appropriate kind of reform and the new leading industries that might emerge are debated intensively in Japan…" This author then examined several sectors, which might benefit from structural reform in terms of promoting competition: airlines, telecommunications and broadcasting, financial services, distribution, and agriculture and land use. The same author, like many others, also analyzed the importance of the share and land prices bubble and its collapse in explaining the long recession in Japan. Finally, it is worth noting the role of the globalization tendencies present in many Japanese firms and its consequences in terms of growth in Japan and in terms of changes in OIs such as the sub-contracting process. Ito (1996, p. 220) quotes some figures of employment that are very revealing of the globalization tendencies: the number of employees in the Asian and North American subsidiaries have substantially increased between 1990 and 1994, whereas Japanese manufacturing employment fell in a comparable way during the same period.

Regarding the sub-contracting system and subsequently the role of SMEs, there is gathering evidence that it undergoes substantial changes to accommodate for the very weak demand of consumer products. Turner (1994) observed that Japanese companies were sub-contracting more labor-intensive work overseas, particularly within Asia; also, he remarked that the *keiretsu* system was beginning to loosen up. However, we cannot as yet generalize; for instance Lincoln *et al* (1998, p.242) concluded, "…While some prominent keiretsu partnerships are indeed loosening, elsewhere the form is alive and well…", whereas some other writers took a more extreme stand, e.g., Sugiura (2002) talked about the meltdown of the automobile *keiretsu*, the metamorphosis of industrial agglomerations, and the weakening of the entrepreneurial spirit.

This type of suggestions is also present in other studies such as that of Tezuka (1997); this author also proposes that the intense competitive nature of many Japanese industries might be an impediment to economic growth. In addition, other radical changes are taking place in the last few years; for example, the competition with imports is intensified (Lux, 1997); also, Japan finally

'goes web crazy' (Rohwer, 2000). This new direction will certainly alter several economic structures as this last author comments.

> *"…Japan is what you might call a middleman economy, and if there is anything the Internet is great at, it's killing off middlemen. Whether it's banking, retailing, or health care, the Internet will lower transaction costs, reduce the number of workers, and streamline communications…"* (Ibid, p. 116)

All these changes and perhaps many others such as firing of employees (a rare phenomenon before this prolonged recession) are indicative that many new OIs will eventually emerge and probably new leading sectors will come forward. Thus, Lux (1997, p. 38) suggests: "…By combining the best of Western management with the best of Japan and the dedication of Japanese employees, companies that will be able to accomplish this transformation process successfully will become awesome competitors again…" Kono and Clegg (2001) also suggest a new hybrid Japanese model of management and production that will retain many existing features and adopt new ones such as horizontal alliances and a more flexible employment. Finally It must be added that the dilemma about whether the 'Western' or 'Japanese' overall system of production is superior is only a rhetoric question. As I had the opportunity to emphasize several times so far, what is 'good' in one country or in one period is not necessarily 'good' in another country or in another period (for instance, regarding OIs or TIs).

4 The Role of TIs in the USA and Japan since WWII

In this section a comparison of TIs in the two countries will be outlined (the analysis is far from being exhaustive). This comparison is more an account of what happened in Japan than in the USA, but since Japan has been mainly an imitator of technologies the comparison is rather implicit. Both nations adopted similar technologies almost everywhere, despite some lags and leads of a short duration, mainly because the Japanese firms copied the Americans substantially. This process of technical copying was accompanied by adaptations and appropriate changes to fit the local circumstances; however, the Japanese also introduced new products mainly in the electronics industry (see below) and in personal items such as crystal quartz watches and automatic cameras (cf. Kono and Clegg, p. 206). Thus, the conclusions of this comparison will further support arguments of this paper that differences between the rates of growth of American and Japanese industries are due to differences in OIs and not TIs since the TIs have been basically similar in the two countries in most cases. Consequently, as SMEs function within the context of OIs (for example, SMEs are very important in the context of the JIT/QC system implemented originally in Japan and recently in the USA, cf. Sanidas, 2001) they also follow the impact of OIs on the economy, either negatively or positively.

Before briefly analyzing some major industries in terms of TIs (and incidentally of OIs) it is worth mentioning six important aspects of the Japanese way of importing foreign technology (Odagiri and Goto, 1996, pp. 39-40).

1. Imported machinery and equipment helped many industries in a critical way to improve the product quality and productivity. Domestic machinery manufacturing then tried to reverse-engineer, by copying the imported capital until eventually they completely replaced it.
2. Japanese firms eagerly sought technological agreements primarily with the USA and also with European firms.
3. Consultants, mostly Americans, were hired to help to modernize the production processes.
4. The purchase of blueprints was also common.
5. Japanese companies often sent their engineers abroad to seek promising technologies.
6. Japan restricted direct investment (DI) until the gradual liberalization in the late 1960s and the early 1970s. However, even today, DI still remains at a relatively low level.

4.1 Iron and Steel industries

These industries in Japan like the others described in this sub-section (and generally like all industries) were initially protected by government measures until they took off. At the same time,

they were very competitive in their structure as oligopolies. This competition was one of the main reasons why some leading steel firms in Japan were the pioneers in introducing new imported technologies and subsequently improving on them substantially. Following Odagiri and Goto's (1996) account, some examples will illustrate the industry.

At the start of the 1950s, Kawasaki Steel decided to build a new large plant despite the fact that two-thirds of the existing furnaces were then idle in Japan. The real novelty of this plant was related not to TIs but to OIs in terms of location and layout. Whereas it was common to build an ironworks near a coal mine or an iron-ore mine, Kawasaki's entrepreneurial spirit (through its president) built the new plant near the huge market of Tokyo, and it made a layout such that movements of materials and half-made products were minimized. This OI was soon followed by the other steel producers in a very competitive oligopolistic market.

However, it was also TIs that made the Japanese firms the best in the world for the second half of the 20th century. In the first place, the new technology of basic oxygen furnace was imported from Austria, but it was soon found that there were major problems in operating such furnaces. These problems were resolved with some TIs introduced by the Japanese firms and in particular by the Yawata Company, which invented an oxygen converter gas recovery system that was soon adopted worldwide. Secondly, another technology known as continuous casting that was originally developed in Switzerland was imported by the Kawasaki firm who built a new plant with this technology in 1967, again pushed to take such a risky decision by the intense prevailing oligopolistic competition. By 1980, the process continuous casting had been adopted by 60% of the Japanese plants but only 20% of the American plants (Odagiri and Goto, 1996, p. 152). As these two authors remarked:

> *"…As a result of this and other innovations, Japan's productivity increase has outpaced that of other countries with companies starting to export technology and know-how in plant construction and operation to many countries, including both developing countries, such as Brazil, and developed countries, such as Italy and the USA. In 1974 receipt of royalties exceeded payments for the first time among Japanese industries…"*

These 'other innovations' of the above quote were not only TIs but also, and perhaps, mainly, OIs as these two writers emphasized. OIs included the active participation of workers in management and technical matters, so that firms attained company-wide involvement in productivity improvement. Florida and Kenney (1992) have analyzed some of these OIs in Japan and in Japanese direct investment in the USA; thus, the firm NKK, for example, pioneered the use of QC circles in the steel industry; the same authors have also stressed the differences between the American and Japanese TIs and OIs, for instance "…The US steel industry was the paradigmatic case of 'Taylorist' scientific management…In contrast, the Japanese steel industry developed a system of production organization and labor-management relations that harnessed workers' intellectual as well as physical capabilities…" (Ibid, p. 150).

4.2 Automotive industries

Cars were first developed by the Europeans at the end of the 19th century, but it was the Americans with Ford's mass production that popularized the car consumption in the 1910s and 1920s. The Japanese made many attempts to establish their own vehicle industry from the start of the 20th century (Odagiri and Goto, 1996), but it was only in the 1930s that they finally succeeded with Nissan and Toyota. Again, the technology was mostly imported or through reverse engineering adapted and probably improved. Odagiri and Goto, (1996) provide us with some details. Nissan, in their Yokohama plant before WWII bought the whole production equipment including jigs and tools as well as technology from the Graham-Paige Company in Detroit, and shipped them to Japan (this American company was the 14th largest auto producer in the USA but was planning to liquidate because of financial difficulties). Nissan repeated technology importation after WWII when it formed a tie-up with British Austin.

For Toyota, the story is similar to Nissan's but also more creative in terms of both TIs and OIs. One of its engineers stayed in The USA at Ford and other plants, and upon return to Japan he started to disassemble a Chevrolet engine and copy it in an experimental plant built within Toyoda

Automatic Loom. Eventually, Toyota decided to use many of Chevrolet's and Ford's parts and also buy many materials and components from outside suppliers. This was the origin of this company's supplier system. By 1938 Toyota had an R&D division, thus putting an official emphasis on its determination to create its own car technology. This took place much later after WWII with the Corolla model and so on.

The impossibility of foreign firms exporting to Japan or setting up production facilities within Japan led some of them to sell their technology to Japanese firms. Thus, Rootes (UK, producer of Hillman, later acquired by Chrysler and then Peugeot), Renault (France), and Willys-Overland (USA, producer of jeep, later acquired by American Motors and then Chrysler) consented to sell their technology to, respectively, Isuzu, Hino, and Mitsubishi. With these tie-ups started in 1952-3, the Japanese firms succeeded in complete domestic production within 5 years (Odagiri and Goto, 1996. p. 196).

These brief reports of some major car producers in Japan clearly show that the technology in both the USA and Japan was similar since the Japanese mostly imitated Western vehicle producers. Consequently, one can safely conclude that the success of the Japanese car industry did not lie in TIs but in OIs. Odagiri and Goto, 1996. p. 202 summed up the situation as follows.

> *"…The strength of the post-war Japanese automobile industry is probably most evident in the fields of production management and human resource management, including training programs and the TQC (total quality control) movement. Toyota's kanban and just-in-time production system and keiretsu supplier system are well-known…"*

4.3 Electrical and electronic industries

Table 2 shows the major electrical appliances introduced in the postwar era (Mowery and Rosenberg, 1998).

Table 3 Major Electrical Appliances Introduced in the Postwar Era

1950s	1960s	1970s	1980s
Refrigerator-freezer	Color television	Microwave oven	Home computer
Television	Dishwasher	Heat pump	Large-screen television
Clothes dryer	Central air conditioning	Trash compactor	Video cassette recorder
Automatic washing machine	Space heating	Food processor	Compact-disc player
Room air conditioner	Frost-free refrigerator-freezer		Home satellite receiver
	Waste disposal		

Source: Mowery and Rosenberg, 1998, p. 108

Although color TV was initially developed by the Americans and Europeans in the 1960s, the Japanese not only, once more, successfully imitated at the beginning, but they also introduced their own creations in terms of the Trinitron tube by Sony and a solid-state color receiver by Hitachi (Clark, 1987). Several other new products were developed in this industry, such as games machines, high quality LCDs and DVDs, as it is demonstrated below.

Although the Americans invented the transistor in 1947, it was only in 1955 that the Japanese succeeded in making a transistor themselves after some years of struggle especially in purifying silicon to almost 100%. Odagiri and Goto (1996, p. 166) quoted one of the Japanese 'inventors', Kikuchi saying: "…Some people say that the transistor was just a borrowed technology. I would like to say from my own experience that the transistor is a kind of thing that, if you can copy it, it in itself is a spectacular achievement…" Sony's transistor radio tells us a similar story. Though Sony had already developed and marketed tape recorders by 1952, it was not until it made the transistor radio another successful consumer product that this company became a household name and a multinational. At the beginning of production and marketing of this radio the ratio of defects was very high despite the huge efforts by Sony's Ibuka to technically improve the transistor quality; at the same time competition by other large producers became intense very soon. As Odagiri and Goto (1996, p. 168) narrated:

"…The only solution was to reduce defects. According to Ibuka, it was the instinct and insistence of a female production worker to scrutinize all the processes to find out the causes of defects. Following her suggestions, the engineers started the cumbersome task of testing every product at every point of the process and came to the conclusion that the use of antimony caused the problem. After several trials, they started using phosphorus instead and the yield rate greatly improved. This innovation helped Sony to solve both of the problems above and put the company in a more advantageous position in its competition against other larger rivals…"

Sony's case just briefly described also shows another aspect of interplay between OIs and TIs, that is, the workers' participation in improving the product and the production process, which is an OI, has a positive impact on TIs.

The integrated circuits (ICs) became a practical device around 1959 with the invention of solid-state circuits by the Texas Instruments, and the introduction of planar processing to interconnect circuit elements at Fairchild Semiconductors in the USA. Despite some new methods to bypass the planar processing by Hitachi and Toshiba, the semiconductor technology was initially developed in Japan because of the world's first electronic calculator introduced by Sharp in 1964 (Odagiri and Goto, 1996, p. 171) priced at US$1400. By 1969, Sharp had reduced its price to US$300 by using American large-scale ICs (LSI) (produced by Rockwell). Before this last version, Sharp had used Japanese metal oxide semiconductor ICs produced by Mitsubishi, Hitachi, and NEC. In 1971 there were at least 20 Japanese and several foreign firms (thus making a total of 33) producing a similar calculator to that one by Sharp. The calculator war eventually ended leaving only two survivors, Sharp and Casio.

However, as Odagiri and Goto (1996, p. 173) remarked: "…The Japanese suppliers had by then established LSI technology and their reliability in quality and delivery helped them to regain a position as the main suppliers of semiconductors to calculator producers…" For instance, in terms of quality, in a test of about 300,000 memory chips (bought from American and Japanese firms) conducted by Hewlett-Packard in the late 1970s, none of the Japanese lots was rejected because of failures, whereas the failures for American chips ranged from 0.11 to 0.19 per cent (Ibid, p. 274). As it was mentioned earlier, the quality control and just-in-time processes (JIT/QC) were the main weapons that Japanese firms had against the American technical superiority in order to establish themselves in world markets. Thus, once more, OIs seem to prove themselves as being very important in promoting industrial growth through leading firms.

Finally, regarding the origins of microprocessors, Intel in the USA was the innovator in 1971 with the 4004 model. Once again, the Japanese firms were the followers, though as Odagiri and Goto (1996, p. 173) remarked, it was also a Japanese engineer who helped Intel to develop the first two microprocessors, which triggered the PC (personal computer) revolution.

5 More evidence from two leading sectors

5.1 The Semiconductor Industry

(A story based on Langlois and Steinmueller's (1999, pp. 19-78) analysis of the world evolution of this industry).

This industry started with the invention of the transistor by American researchers in the Bell telephone Laboratories after WWII. This invention became innovation in business through AT&T's commercial applications and this company's policy to let the diffusion of the new technology to many other interested parties. Subsequent researchers and entrepreneurs gradually established what is known today as the 'Silicon Valley", a Marshallian industrial district in the 1950s. In the first place, the germanium metal was used for the transistor, but it was taken over by the silicon substance towards the end of the 1960s. During that time, the American Defense department was the main user. By 1960-61, the Americans were producing and consuming semiconductors about 10 times more than the Japanese, and 20 times more than the major European countries. Meanwhile, Japan through some governmental protectionist policies boosted the Japanese semiconductor industry, which thus, had an export surplus from 1956 to 1968. About 70% of this industry's market remained in consumer electronics such as transistor radio.

Then, the integrated-circuit (IC) era arrived. This era revolutionized the whole electronics industry and the whole economy eventually. This can be seen through the explosive way that IC grew in 30 years (from about 1960 to 1990): "…Transistor counts per IC increased from 10 to 4,000 in the first decade of the industry's history; from 4,000 to over 500,000 in the second decade; and from 500,000 to 100 million in the third decade…" (Ibid, p. 32). One of the impacts this new revolutionary technology had on the American semiconductor sector was that the vertically integrated American electronics companies that had led to the production of vacuum tubes, and that had been able to stay in the race during the discrete semiconductor era, became almost completely non-existent by 1975 from the top list of relevant leading firms. At the same time many relatively specialized new and smaller manufacturers entered the market; this was consistent with the strategy of 'core competences' (Prahalad and Hamel, 1990) as the authors Langlois and Steinmueller remarked (1999, p. 33).

Meanwhile, a parallel strong development of the computers industry helped IBM become the dominant firm not only in computers but also in semiconductors during the 1970s. Thus, in the USA, there was, besides the two giant captive producers AT&T and IBM, a cluster of many, small, highly specialized merchant firms, which focused on their core competences while expanding their technical abilities. All these companies faced two options, either to produce high volume standard products such as memories, or/and to produce differentiated products. For a time, they were able to do well with both sets of strategies.

However, during the period between late 1970s and late 1980s, the situation changed dramatically. Whereas in 1978, American sales of semiconductors and IC constituted 59% and 74% respectively of the world market as against 28% and 20% for Japan, in 1989 the corresponding figures were 43% (semiconductors), 45% (IC) for the USA and 48%, 47% for Japan. The authors (Ibid, p. 41) explained that since the profit margins of the American semiconductor (and IC) industry has always been relatively low, not enough investment was possible from retained earnings for a flexible and dynamic production path with serious ups and downs of economic activity. On the contrary, the Japanese firms being more vertically integrated than the American ones in this particular industry were able to mobilize internal capital resources to make the necessary investments to expand capacity and enhance manufacturing quality.

Indeed, the Japanese firms expanded their production of IC capacity in order to produce the emerging dynamic random-access memory (DRAM) market in very large quantities. This strategy was assisted by a strong internal end-use demand originating mainly from consumer electronics and to a lesser extent from telecommunications. This entire situation was further assisted by the active involvement of NTT (Nippon Telegraph and Telephone) and of MITI. Did the Japanese finally dominate the world semiconductor industry? (Meanwhile the Europeans were never able to threaten the American-Japanese supremacy in this field)

The answer is no. The American resurgence took place from the late 1980s and still runs its course. Despite the concentration of American firms on producing NMOS (negative metal oxide semiconductor) in the first place, they switched on to the more used CMOS (complementary MOS) with considerable success. Overall, "…What evidence is there that American firms improved their manufacturing productivity significantly?" the authors asked (Ibid, p. 49). Besides the indirect evidence that they held their market shares in a number of product segments,

> *"…There is also more direct evidence. One of the factors driving the success of Japanese firms in memory products in the early 1980s was the higher quality of the chips they produced. For Japanese chips, defect rates- the fraction of chips that prove to be defective – were probably half to one-tenth the rates for American products. By the second half of that decade, however, American firms had dramatically increased expenditures for quality control, imitating Japanese practices such as total quality management (TQM), greater attention to preventive maintenance, and automated process control and monitoring. By the early 1990s, American manufacturers had probably begun to match the defect levels of their Japanese counterparts. Intel reportedly reduced its defect rate by a factor of 10. There is also evidence that American firms have improved manufacturing yield rates and direct labor productivity since the early 1990s…"* (Ibid, p. 49).

Furthermore, the American semiconductor (and CI) industry (ASI) became gradually more narrow-product focused, and more specialized, building on existing competences in design (especially of logic and specialty circuits, such as the microprocessor unit (MPU). The increasing decoupling of design from production reinforced this specialization; at the same time, the ASI became more globalized.

Finally, the governments' role in shaping the new situation was positive but not significant to the point of being predominant. For instance, the American and Japanese authorities signed the Semiconductor Trade Agreement (STA) in 1986 to control prices and monitor outputs, which induced the MITI to create a mechanism to police and manage the Japanese cartel of chip producers. Eventually, for other reasons as well, that cartel collapsed. In the USA, the Semiconductor Manufacturing Technology Consortium (Sematech) mainly contributed in the enforcement of cooperation between the American chip producers, thus imitating again the "Japanese Model" of collaboration, cooperation, and coordination within the system of *keiretsus.*

Table 4 Differences between ASI and JSI

The ASI	The JSI
Smaller independent firms clustered in industrial districts	IC producers are also typically computer producers
Efforts concentrated in core competences	Failure to develop a vibrant domestic personal computer industry
Fragmentation and vertical specialization	More vertically integrated firms
Finer division of labor	Consumer-related applications
Wider network of capabilities	Memory-intensive chips production (e.g. DRAMs)
Burgeoning domestic personal computer industry and market	Mass production and low value per unit produced
Computer-related applications	No major consumer-related new products in the last 12 years or so
Design-intensive logic chips production (e.g. MPUs)	Intense competition between large producers, mainly *keiretsus*
High value per unit produced	The DRAMs market penetrated by other Asian countries (especially Korea, Taiwan)
Recent practices of TQC, JIT	Traditional practices of TQC, JIT

Source: Based on Langlois and Steinmueller's (1999)

The revival of the ASI can be gauged by considering the firm Intel, which became the largest IC producer in the world, with sales of $9.85 billion in 1994, $1 billion more than the second largest producer NEC of Japan. Intel's principal competitors are also American firms, such as Motorola, Cyrix and AMD.

Based on the same source, Table 4 summarizes the differences between the ASI (especially during its revival between the late 1980s and now) and the Japanese semiconductor industry (JSI). The emphasis in this Table is put onto various aspects of OIs.

5.2 The Personal Computer (PC) Industry and the Dell Computers Corporation (Dell CC)

(A story based on Thomson and Gamble's (2001, pp. C-132 to C-173) analysis of the evolution of this industry in the USA in the most recent period).

DELL CC is one of the most successful business stories in the USA in the last 20 years. It is also an excellent example of how an entrepreneur (M. Dell), his managers and his personnel have pioneered in introducing OIs (and not TIs) in order to become the industry's leader not only in the USA but also in the whole world. The initial OIs were marketing-oriented: Dell's new company in 1984 was able to sell IBM clones at about 40% below the price of an IBM PC; also, Dell sold his computers directly to large customers and eventually to individual customers through the internet. By late 1997, Dell had become the global industry leader in keeping costs down by achieving what Dell called a 'virtual integrated' firm- "…a stitching together of Dell's business with its supply

partners and customers in real time such that all three appeared to be part of the same organizational team…" (p. C-136).

Overall, Dell's three golden rules have become: (1) Disdain inventory, (2) Always listen to the customer, and (3) Never sell indirect. The first rule will now be closely scrutinized.

The companies, which started the PC industry in the 1980s, manufactured many of the components themselves, thus being at least partially vertically integrated. However, as the industry grew very rapidly, as TIs were introduced more frequently, the PC manufacturers could not keep pace with being experts on all fronts, thus more and more specialist firms emerged that could mass-produce cheaper and technologically advanced components. Consequently, vertical disintegration became more and more prevalent in PC producers. DELL CC's first steps consistent with its established rule to sell directly to customers have captured this tendency for vertical disintegration. All this entailed two fundamental features of this company: an extensive outsourcing and virtually no in-house stock of finished goods inventories. Dell's build-to-order policy has been working in all directions.

DELL CC established long-term relationships with its best suppliers, such as Intel and Sony, and laid the basis for JIT delivery of suppliers' products to Dell's assembly plants. At the same time, DELL CC itself practiced JIT, thus yielding major cost advantages and shortening the time it took for Dell to get new generations of its computer models into the marketplace. The authors Thomson and Gamble (2001, p. C-150) quoted Dell himself explaining the economics of minimal inventories.

> *"…If I've got 11 days of inventory and my competitor has 80 and Intel comes out with a new 450-megahertz chip, that means I'm going to get to market 69 days sooner. In the computer industry, inventory can be a pretty massive risk because if the cost of materials is going down 50% a year and you have two or three months of inventory versus 11 days, you've got a big cost disadvantage. And you're vulnerable to product transitions, when you can get stuck with obsolete inventory…"*

The results of this deliberate JIT philosophy are impressive: only a few days of inventory for some components and a few hours for others. In 1995, DELL CC averaged an inventory turn ratio of 32 days; in 1999, the ratio was 6 days' supply; the long-term goal is to reach a 3-day average supply. All these efforts have made DELL CC the low cost leader of the PC industry, and a high profit company.

Still regarding the JIT system, it is worth quoting the authors Thomson and Gamble (2001, p. C-147-48) about a change of the operations on the shop floor that generated a huge productivity increase. This quote shows in a very concrete manner a good example of the POM and its related kinetic costs as these were fully explained in the previous chapter.

> *"…Until 1997, Dell operated its assembly lines in traditional fashion, with each worker performing a single operation. An order form accompanied each metal chassis across the production floor; drives, chips, and ancillary items were installed to match customer specifications. As partly assembled PC arrived at a new workstation, the operator, standing beside a tall steel rack with drawers full of components, was instructed what to do by little red and green lights flashing beside the drawers containing the components the operator needed to install. When the operator was finished, the drawers containing the used components were automatically replenished from the other side, and the PC chassis glided down the line to the next workstation. However, Dell reorganized its plants in 1997, shifting to 'cell manufacturing' techniques whereby a team of workers operating at a group workstation (or cell) assembled an entire PC according to customer specification. The shift to cell manufacturing reduced Dell's assembly times by 75 percent and doubled productivity per square foot of assembly space…"*

DELL CC's OIs will now summarized so that a whole picture can be obtained.

- Build-to-order manufacturing
- Partnerships with suppliers
- JIT components inventories
- Direct sales to customers

- Award-winning customer service and technical support
- Pioneering use of the Internet and e-commerce technology
- Strong demand forecasting skills
- Comparative advertisements
- Team work at all levels
- Avoidance of hierarchical structures in governance

All these OIs (the TIs were almost absent) made DELL CC the leader in the PC industry surpassing previous leaders such as IBM and Compaq in a very short time. Now, DELL CC's main competitors are trying to imitate the leader by introducing their own JIT process, their build-to-order manufacturing and to speed new models to market. However, it is hard to duplicate Dell's approach, as previous cases in other industries have shown. Thus, as of mid-1999 Compaq's order-to-delivery time was approximately 12 days versus 3.1 days at Dell (Thomson and Gamble (2001, p. C-165).

To sum up this fascinating story, M. Dell started his company from zero in 1984 and today is the world leader followed by Compaq, IBM, Hewlett-Packard, Gateway, Toshiba, about 30,000 resellers of generic or 'house-label' PCs in North America alone and countless thousands more worldwide. All this was achieved by adopting or introducing OIs and virtually no TIs at all. Dell's story in the PC industry is similar to Toyota's story in the car industry, as far as the importance of OIs is concerned (that is, regarding the JIT/QC or LP system).

CONCLUSIONS

The analysis presented in this paper has attempted to show –in an indirect way, through a comparison between American and Japanese firms and sectors -that the same SMEs that played a positive role in the Japanese economic miracle during the 1970s and 1980s were not sufficient to restore the Japanese economy in the last 10 years or so. At the same time, the same American SMEs that did not perform well during the 1970s and 1980s did exceptionally well during the 1990s. It is thus proposed in this paper that the positive role of SMEs in economic growth can only be properly appreciated if examined within the context of OIs. The latter are the real moving force in accelerating manufacturing growth as it was shown in this study and in Sanidas, 2001.

Three more general conclusions can be drawn from this paper. First, during the period 1964 to 1998, the manufacturing sectoral growth in the two counties was quite different; the differences, as detected by graphs and some cointegration tests, were due to differences in the adopted OIs amongst other factors. Thus, during the 1960s up to the mid 1980s, most Japanese industries exhibited very high growth rates both in the real output and TFP, contrary to the American industries. This was primarily due to the high quality and low cost of many Japanese products, and hence it became easy for Japanese firms to penetrate national and foreign markets. This last conclusion is supported by the review of TIs in the two countries, which confirms the tendency by Japanese firms to imitate foreign TIs, though in some instances these firms dominated world markets by launching new products (mainly in the consumer electronics sector); thus, the common TIs used in the majority of both American and Japanese firms reinforces the conclusion that it was in the area of differences in OIs that a more comprehensive explanation can be sought for the substantial differences in manufacturing sectoral growth in real output and TFP between these two countries in the period between the 1960s and the mid 1980s. During this period, the most notorious Japanese leading firms were in the transport, electrical and electronics sectors, which all adopted the holistic JIT/QC system as the fundamental OI in their production processes.

Second, during the sub-period 1987 to 1997, the situation was reversed between the two countries in several ways. Whereas the machinery, both mechanical and electrical, industries led the American revival of the American economy, in Japan there was no leading sector for the first time in a long time in the Japanese economic history. The Japanese industries are still in a deep and prolonged recession since the beginning of the 1990s; a brief review of the reasons for this downfall seems to strongly indicate that the dual character of the Japanese economy, the

inexistence of leading firms and sectors, and a search for new OIs in the management of firms in Japan are the main factors that are contributing to this recession.

And third, more detailed accounts of two leading industries and their corresponding leading firms add more evidence of the importance of OIs in manufacturing sectoral growth as discussed in this paper. In particular, the outstanding importance of JIT/QC was recognized in these case studies.

REFERENCES

Abernathy W. J., Clark, K. B. and Kantrow, A. M. (1983), *Industrial Renaissance, Producing a Competitive Future for America*, Basic Books Inc. Publishers, New York.

Acs, Z. J., Carlsson B. and Karlsson C. (Eds), (1998), *Entrepreneurship, Small and Medium-Sized Enterprises and the Macroeconomy*, Cambridge University Press, New York.

Arora, A. A., Landau, R. and Rosenberg, N. (1999), "Dynamics of Comparative Advantage in the Chemical Industry", in Mowery, D. C. and Nelson, R. R. (Eds), *Sources of Industrial Leadership, Studies of Seven Industries*, Cambridge University Press.

Best, M. H. (1990), *The New Competition, Institutions of Industrial Restructuring*, Polity Press.

Clark, P. A. (1987), *Anglo-American Innovation*, Walter de Gruyter, Berlin

Denny, M., Bernstein, J., Fuss, M., Nakamura, S. and Waverman, L. (1992) "Productivity in Manufacturing Industries, Canada, Japan and the United States, 1953-1986: Was the 'Productivity Slowdown' Reversed?", *Canadian Journal of Economics*, **25** (3), pp 584-603.

Dicken, P. (1998), *Global shift : transforming the world economy*, Chapman, London

EPA (Economic Planning Agency), (2000), *Gross Capital Stock of Private Enterprises, 1983-1998*, Department of National Accounts, Economic Research Institute, February.

Florida, R. and Kenney, M. (1992), "Restructuring in Place: Japanese Investment, Production Organization, and the Geography of Steel", *Economic Geography*, **68** (2), pp 146-173.

Ito, T. (1996), "Japan and the Asian Economies: A Miracle in Transition", *The Brookings Papers on Economic Activity*, **2**, pp 205-272.

Jorgenson, D. W. (1990), "Productivity and Economic Growth" in E. R. Berndt and J. E. Triplett (Eds), *Fifty Years of Economic Measurement*, NBER, Studies in Income and Wealth, Vol 54, pp. 19-118, The University of Chicago Press, Chicago.

Jorgenson, D. W., Kuroda, M. and Nishimizu, M. (1995),"Japan-US Industry-Level Productivity Comparisons, 1960-1979", in Jorgenson D. W., *Productivity: vol. 2, International Comparisons of Economic Growth*, The MIT Press, Cambridge.

Juran, J. M. (Ed) (1995), *A History of Managing for Quality, The Evolution, Trends, and Future Directions of Managing for Quality*, ASQC Quality Press, Milwaukee, Wisconsin

Kono, T. and Clegg, S. (2001), *Trends in Japanese Management, Continuing Strengths, Current Problems and Changing Priorities*, Palgrave.

Kuroda, M., Motohashi, K. and Shimpo, K. (1996), "Issues on the International Comparison of Productivity: Theory and Measurement" in Chapter 2 of OECD's publication *Industry Productivity, International Comparison and Measurement Issues*.

Langlois, R. N. and Steinmueller, W. E. (1999), "The Evolution of Competitive Advantage in the Worldwide Semiconductor Industry", in Mowery, D. C. and Nelson, D. D. (Eds), *Sources of Industrial Leadership, Studies of Seven Industries*, Cambridge University Press.

Lincoln, J .R., Ahmadjian, C. L. and Mason, E. (1998), "Organizational Learning and Purchase-Supply Relations in Japan: Hitachi, Matsushita, and Toyota Compared", *California Management Review*, Spring, **40** (3), pp 241-264.

Lux, W. (1997), "Japanese Management Evolves Again", *Management Review*, June, **86** (6), pp 36-38.

Mowery, D. C. and Rosenberg, N. (1998), *Paths of Innovation, Technological Change in 20th-Century America*, Cambridge University Press.

Mroczkowski, T., and Hanaoka, M. (1998), "The End of Japanese Management: How Soon?", *Human Resource Planning*, **21** (3), pp 20-30.

NBER (National Bureau of Economic Research), (2000), *NBER-CES Manufacturing Industry Database*, E. J. Bartelsman, R. A. Becker, and W. B. Gray, June, NBER Internet Site: www.nber.org.

Odagiri, H. and Goto, A. (1996), *Technology and Industrial Development in Japan, Building Capabilities by Learning, Innovations and Public Policy*, Oxford University Press, Oxford.

Porter, M. E. and Takeuchi, H. (1999), "Fixing What Really Ails Japan", *Foreign Affairs*, May/June, **78** (3), pp 66-81.

Porter, M. E., Takeuchi, H. and Sakakibara, S. (2000), *Can Japan Compete?*, MacMillan Press, London.

Rohwer, J. 2000), "Japan Goes Web Crazy", *Fortune*, February 7, **141** (1), pp 115.

Sanidas, E. (2001), "The Successful Imitation of the Japanese Lean Production System by American Firms: Impact on American Economic Growth", Refereed Paper, *Proceedings of the Academy of International Business (AIB) South East Asia Region (AIBSEAR) 2001 Conference*, Jakarta, Indonesia, 4-6 July, CD.

Sanidas, E. (2002a),

Sanidas, E. (Forthcoming, 2002b), "On the Evolution of Organization of Firms, SMEs, and Economic Growth in the USA and Japan", in C. Harvie and Boon-Chye Lee, (Eds.), *Sustaining Growth and Performance in East Asias: The Role of Small and Medium Sized Enterprises*, Edward Elgar, Cheltenham.

Sugiura, K. (Forthcoming. 2002), "Japan: The Role of SMEs in the Mature Economy", in C. Harvie and Boon-Chye Lee, (Eds.), *The Role of SMEs in National Economies in East Asia*, Edward Elgar, Cheltenham.

Tezuka, H. (1997), "Success as the Source of Failure? Competition and Cooperation in the Japanese Economy", *Sloan Management Review*, Winter, pp 83-93.

Thomson, A. A. and Gamble, J. E. (2001), "Dell Computer Corporation: Strategy and Challenges for the 21st Century", in Thomson, A. A. Jr. and Strickland A. J. III, *Strategic Management, Concepts and Cases*, 12th edition, Mc-Graw-Hill/Irwin, Boston.

Turner, L. (1994), "Japan Suffers in the Slump", *International Management*, March, **49** (2), pp 30-32.

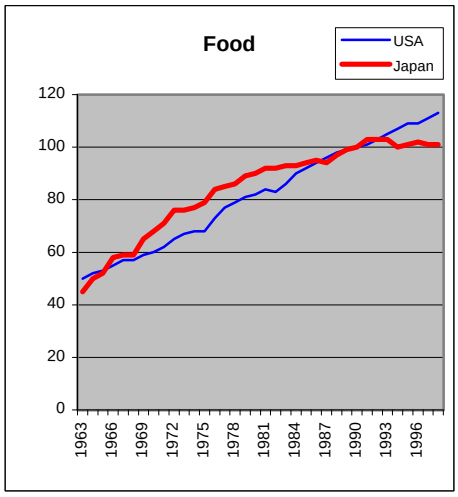
UNCTC (United Nations Centre on Transnational Corporations), (1985), *Transnational Corporations in World Development, Third Survey*, UN and Graham and Trotman, London.

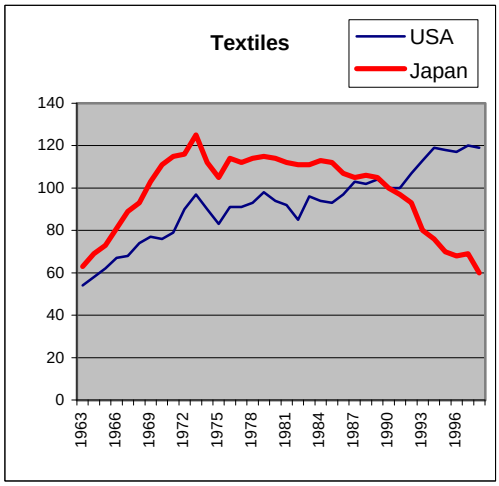
UNIDO (United Nations Industrial Development Organization), (2000a), *Industrial Statistics Database, 3-digit ISIC 2000*, CD.

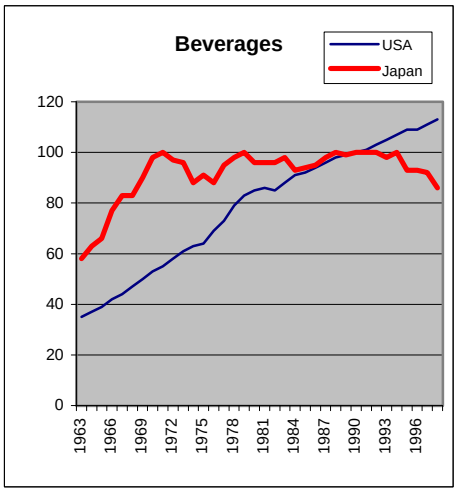
UNIDO (1996, 2000b), *International Yearbook of Industrial Statistics*, Vienna

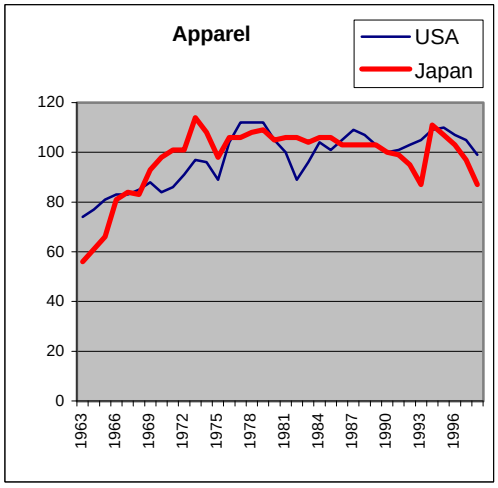
APPENDIX 6.A1:

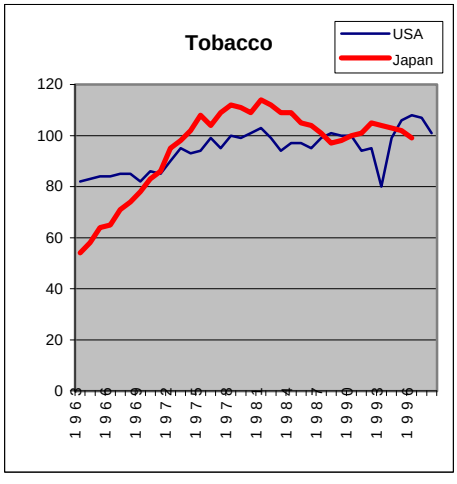
Indices of real output in 3-digit SIC sectors in the USA, 1963 to 1998

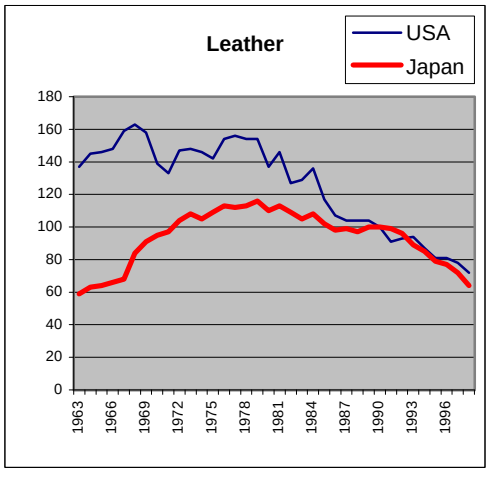












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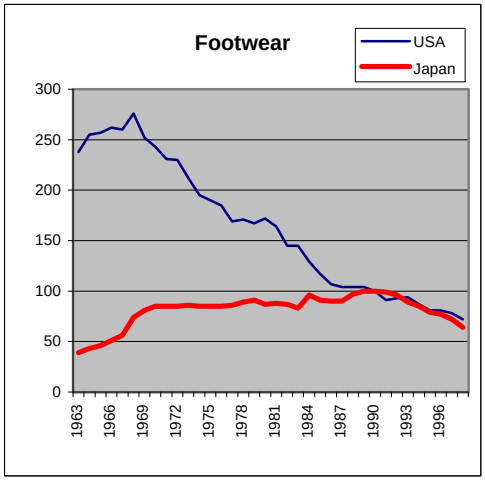

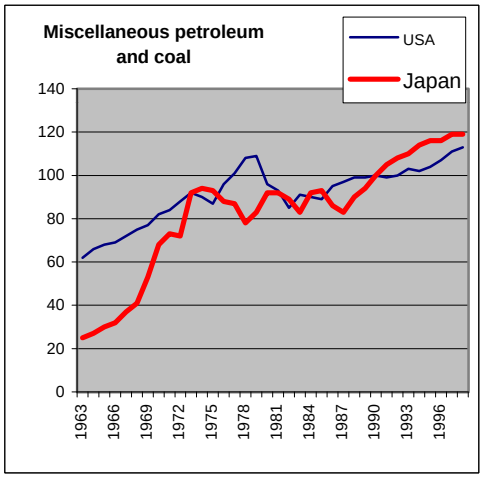

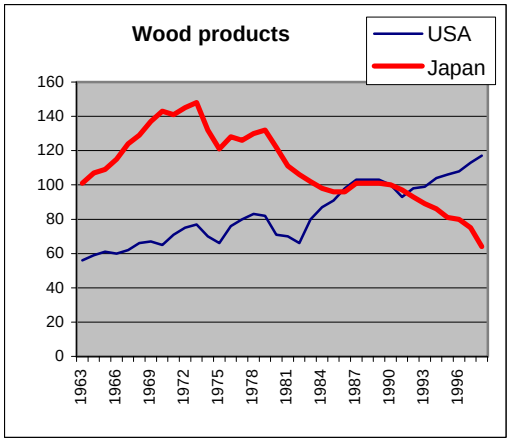

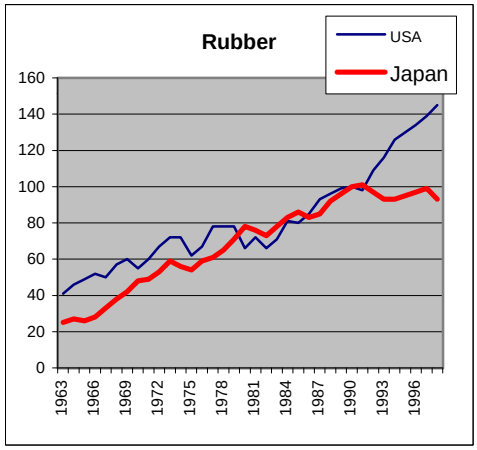

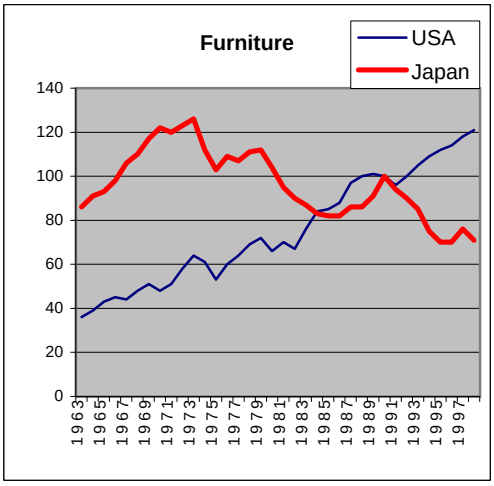

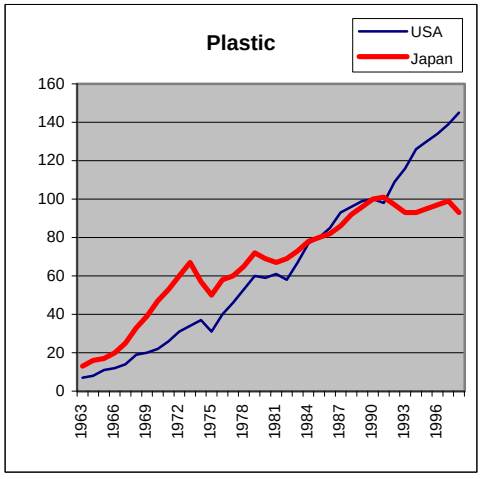

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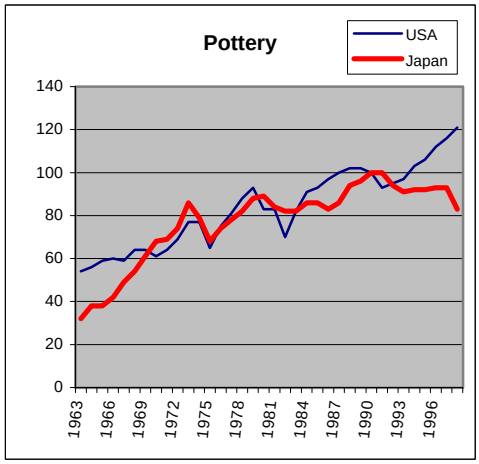

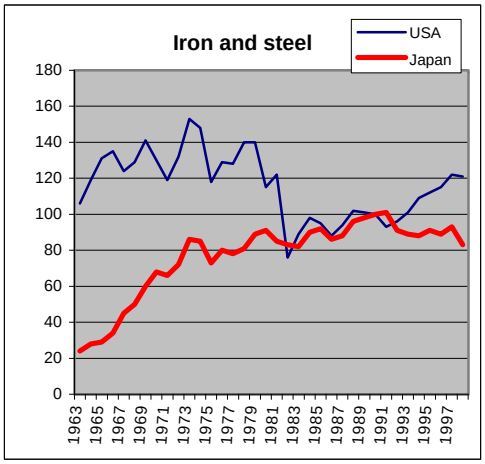

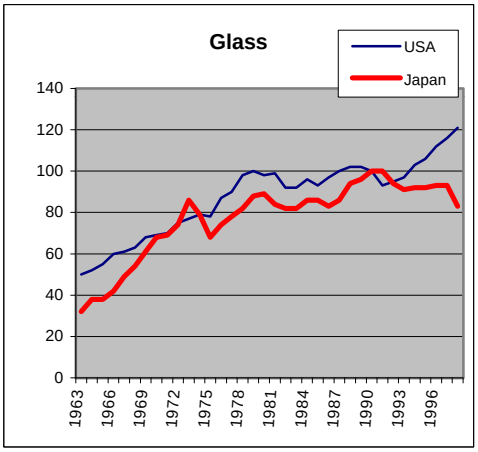

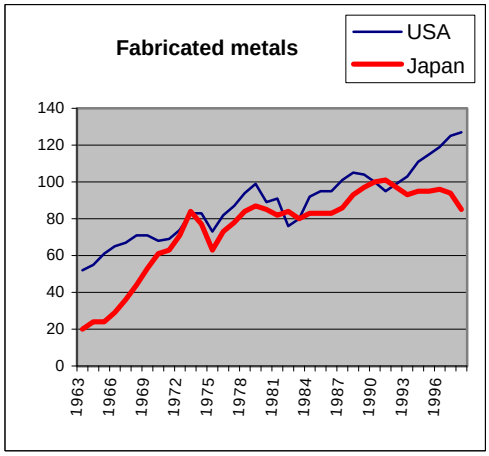

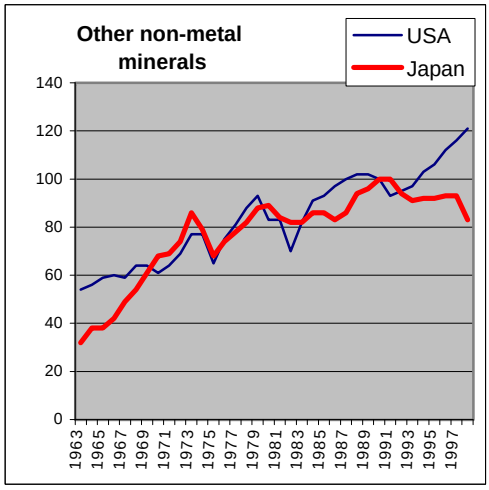

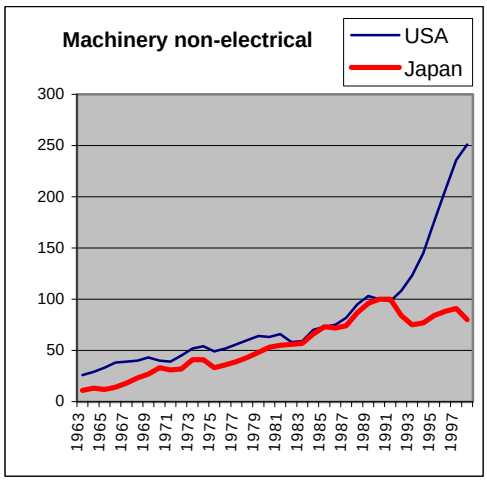

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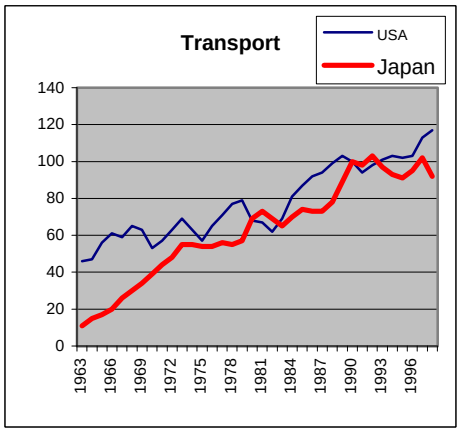
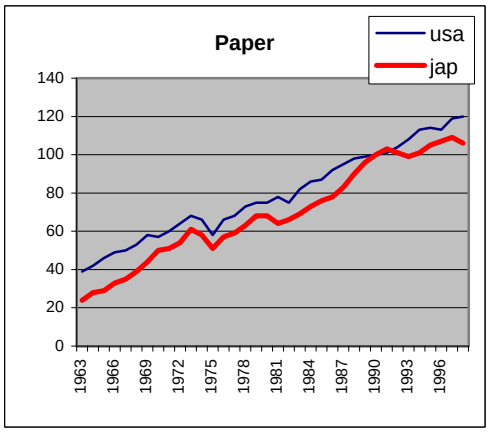
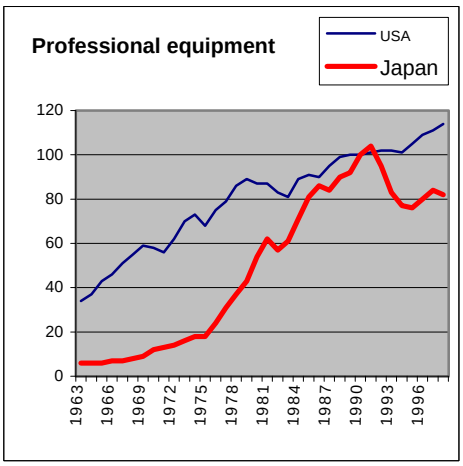
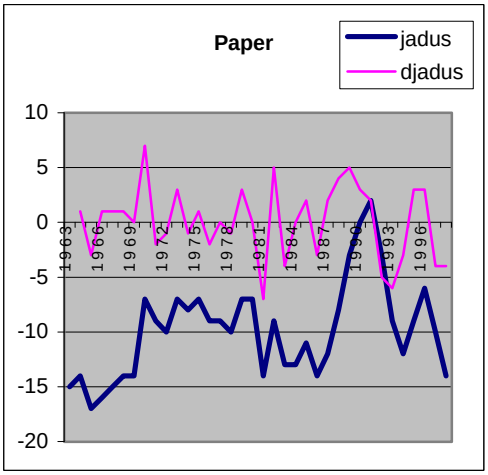
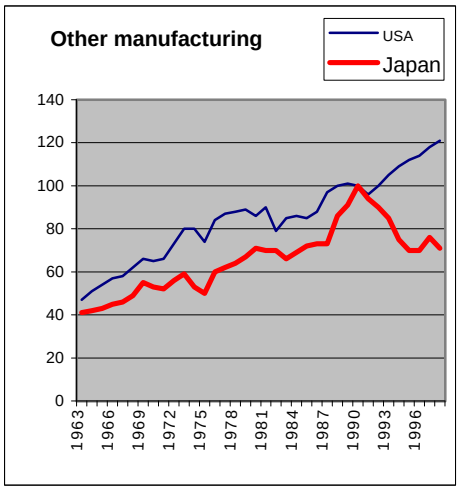
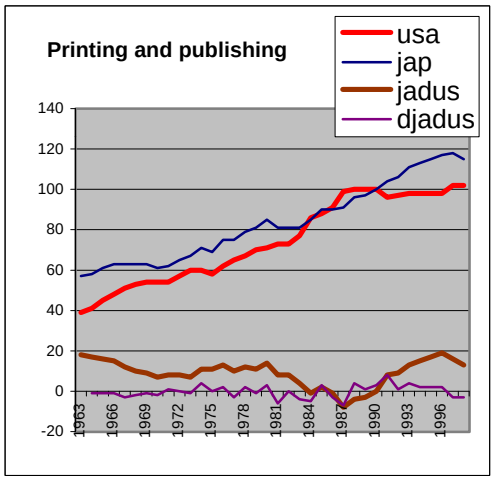






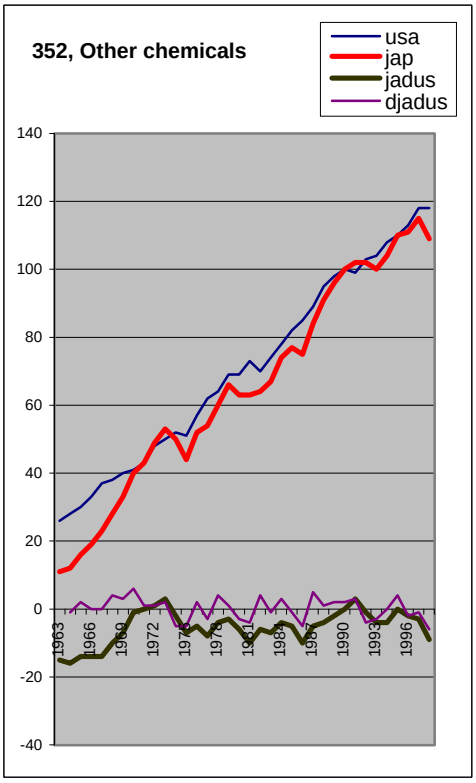


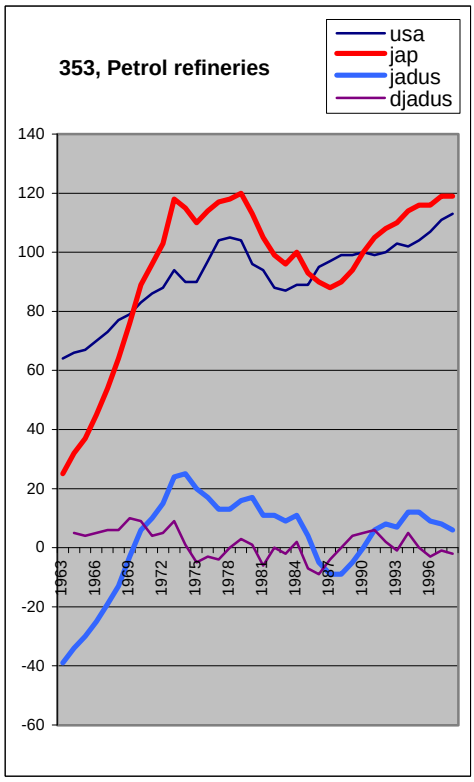




APPENDIX 6.A1:

Indices of real output in 3-digit SIC sectors in the USA, 1963 to 1998
cont…





APPENDIX A2 Tests for unit roots and cointegration

For the sector “Non-ferrous metals”

A] Unit root tests for variable USA

The Dickey-Fuller regressions include an intercept but not a trend

31 observations used in the estimation of all ADF regressions.
Sample period from 1968 to 1998

Test Statistic	LL	AIC	SBC	HQC
DF	-2.0274	-108.4781	-110.4781	-111.9121	-110.9456
ADF(1)	-1.6705	-108.4724	-111.4724	-113.6234	-112.1735
ADF(2)	-1.1805	-108.1228	-112.1228	-114.9908	-113.0577
ADF(3)	-84227	-107.6555	-112.6555	-116.2404	-113.8241
ADF(4)	-.71227	-107.4071	-113.4071	-117.7090	-114.8094

95% critical value for the augmented Dickey-Fuller statistic = -2.9591
LL = Maximized log-likelihood AIC = Akaike Information Criterion

SBC = Schwarz Bayesian criterion HQC = Hannan-Quinn Criterion

Unit root tests for variable USA

The Dickey-Fuller regressions include an intercept and a linear trend

31 observations used in the estimation of all ADF regressions.
Sample period from 1968 to 1998

Test Statistic	LL	AIC	SBC	HQC
DF	-3.0186	-106.1405	-109.1405	-111.2915	-109.8417
ADF(1)	-2.8184	-105.8907	-109.8907	-112.7587	-110.8256
ADF(2)	-2.3285	-105.8900	-110.8900	-114.4750	-112.0586
ADF(3)	-1.9179	-105.8690	-111.8690	-116.1710	-113.2713
ADF(4)	-1.7177	-105.8637	-112.8637	-117.8826	-114.4997

95% critical value for the augmented Dickey-Fuller statistic = -3.5615
LL = Maximized log-likelihood AIC = Akaike Information Criterion

SBC = Schwarz Bayesian Criterion HQC = Hannan-Quinn Criterion

B] Unit root tests for variable JAP

The Dickey-Fuller regressions include an intercept but not a trend

33 observations used in the estimation of all ADF regressions. Sample period from 1966 to 1998

Test Statistic	LL	AIC	SBC	HQC
DF	-1.7628	-100.1977	-102.1977	-103.6942	-102.7012
ADF(l)	-1.7876	-100.0085	-103.0085	-105.2533	-103.7638
ADF(2)	-1.9259	-96.0344	-100.0344	-103.0274	-101.0415

95% critical value for the augmented Dickey-Fuller statistic = -2.9528
LL = Maximized log-likelihood AIC = Akaike Information Criterion

SBC = Schwarz Bayesian Criterion HQC = Hannan-Quinn Criterion

Unit root tests for variable JAP

The Dickey-Fuller regressions include an intercept and a linear trend

33 observations used in the estimation of all ADF regressions. Sample period from 1966 to 1998

Test Statistic	LL	AIC	SBC	HQC
DF	-2.9427	-96.9774	-99.9774	-102.2221	-100.7327
ADF(1)	-3.4806	-95.3083	-99.3083	-102.3013	-100.3154
ADF(2)	-2.4837	-93.6186	-98.6186	-102.3599	-99.8775

95% critical value for the augmented Dickey-Fuller statistic = -3.5514
LL = Maximized log-likelihood AIC = Akaike Information Criterion

SBC = Schwarz Bayesian Criterion HQC = Hannan-Quinn Criterion

C] Unit root tests for variable JADUS

The Dickey-Fuller regressions include an intercept but not a trend

32 observations used in the estimation of all ADF regressions.
Sample period from 1967 to 1998

Test Statistic	LL	AIC	SBC	HQC
DF	-2.4976	-105.6847	-107.6847	-109~1504	-108.170S
ADF(1)	-2.2933	-104.6291	-107.6291	-109.8277	-108.3579
ADF(2)	-2.1649	-104.5057	-108.5057	-111.4372	-109.4774
ADF(3)	-1.9885	-103.7160	-108.7160	-112.3803	-109.9306

95% critical value for the augmented Dickey-Fuller statistic = -2.9558
LL = Maximized log-likelihood AIC = Akaike Information Criterion

SBC = Schwarz Bayesian Criterion HQC = Hannan-Quinn Criterion

Unit root tests for variable JADUS

The Dickey-Fuller regressions include an intercept and a linear trend

32 observations used in the estimation of all ADF regressions.
Sample period from 1967 to 1998

Test Statistic	LL	AIC	SBC	HQC
DF	-3.0638	-103.2447	-106.2447	-108.4433	-106.9735
ADF(1)	-2.3074	-103.1999	-107.1999	-110.1314	-108.1716
ADF(2)	-2.1433	-103.08S2	-108.0852	-111.7495	-109.2998
ADF(3)	-1.4563	-103.0516	-109.0516	-113.4488	-110.5091

95% critical value for the augmented Dickey-Fuller statistic = -3.5562
LL = Maximized log-likelihood AIC = Akaike Information Criterion

SBC = Schwarz Bayesian Criterion HQC = Hannan-Quinn Criterion

D] Unit root tests for variable DJADUS

The Dickey-Fuller regressions include an intercept but not a trend

32 observations used in the estimation of all ADF regressions. Sample period from 1967 to 1998

Test Statistic	LL	AIC	SBC	HQC
DF	-7.1986	-107.2957	-109.2957	-110.7615	-109.7816
ADF(1)	-4.9865	-106.9819	-109.9819	-112.1805	-110.7107
ADF(2)	-4.7891	-105.9027	-109.9027	-112.8342	-110.8744

95% critical value for the augmented Dickey-Fuller statistic = -2.9558
LL = Maximized log-likelihood AIC = Akaike Information Criterion

SBC = Schwarz Bayesian Criterion HQC = Hannan-Quinn Criterion

Unit root tests for variable DJADUS

The Dickey-Fuller regressions include an intercept and a linear trend

32 observations used in the estimation of all ADF regressions. Sample period from 1967 to 1998

Test Statistic	LL	AIC	SBC	**HQC**
DF	**-7.4789**	**-105.9851**	-108.9851	-111.1837	-109.7139
ADF(1)	**-5.2220**	-105.5991	-109.5991	-112.5305	-110.5708
ADF(2)	-5.0663	-104.3061	-109.3061	-112.9705	-110.5208

95% critical value for the augmented Dickey-Fuller statistic = -3.5562
LL = Maximized log-likelihood AIC = Akaike Information Criterion

SBC = Schwarz Bayesian Criterion HQC = Hannan-Quinn Criterion

E]Cointegration with unrestricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

35 observations from 1964 to 1998. Order of VAR = 1.
List of variables included in the cointegrating vector:
USA JAP
List of eigenvalues in descending order:

.26229 .070828

Null	Alternative	Statistic	95% Critical Value	90% Critical value
r = 0	r = 1	10.6473	14.8800	12.9800
r<= 1	r = 2	2.5712	8.0700	6.5000

Use the above table to determine r (the number of cointegrating vectors).

Cointegration. with unrestricted intercepts and no trends in the VAR
Cointegration LR Test Based on Trace of the Stochastic Matrix

35 observations from 1964 to 1998. Order of VAR = 1.
List of variables included in the cointegrating vector:
USA JAP

List of eigenvalues in descending order:

.26229 .070828

Null	Alternative	Statistic	95% Critical Value	90W Critical Value
r = 0	r>= 1	13.2185	17.8600	15.7500
r<= 1	r = 2	2.5712	8.0700	6.5000

Use the above table to determine r (the number of cointegrating vectors).

Cointegration with unrestricted intercepts and no trends in the VAR

Choice of the **Number of Cointegrating** Relations Using Model Selection Criteria

35 observations from 1964 to 1998. Order of VAR = 1.
List of variables included in the cointegrating vector:
USA JAP
List of eigenvalues in descending order:

.26229 .070828

Rank	Maximized LL	AIC	SBC	HQC
r = 0	-225.5383	-227.5383	-229.0936	-228.0752
r = 1	-220.2146	-225.2146	-229.1030	-226.5569
r = 2	-218.9291	-224.9291	-229.5951	-226.5398

AIC = Akaike Information Criterion SBC Schwarz Bayesian Criterion
HQC = Hannan-Quinn Criterion

APPENDIX A3

List of manufacturing sectors on a 3-digit basis with their code numbers

311 Food
313 Beverages
314 Tobacco
321 Textiles
322 Apparel
323 Leather
324 Footwear
331 Wood products
332 Furniture
341 Paper products
342 Printing and publishing
351 Industrial chemicals
352 Other chemicals
353 Petroleum refineries
354 Miscellaneous petroleum and coal
355 Rubber
356 Plastics
361 Pottery and china
362 Glass products
369 Other non-metallic minerals
371 Iron and steel
372 Non-Ferrous metals
381 Fabricated metals
382 Machinery (not electric)
383 Electric and electronic machinery
384 Transport equipment
385 Scientific equipment
390 Other

INFORMATION MANAGEMENT IN SMES - EXTERNAL EXPORT INFORMATION AND SERVICE PROVISION TO YORKSHIRE-BASED SMALL AND MEDIUM SIZED ENTERPRISES

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School of Management - http://www.bradford.ac.uk/management/
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ABSTRACT

This research was conducted to establish the factors that lead to the successful adoption of information technology and general information management activities by small and medium enterprises (SME) and their impact on their export sales activities. The opinions of owners and managers of Yorkshire and Humberside SMEs have been used in order to reach the conclusions of this research.

External export information use has been said to be critical to both effective decision-making and superior organisational performance. In an export context, it is the acquisition of export information which has traditionally been linked to export performance, rather than the use of this information.

It is important to note that competitive advantages are increasingly found in ways that SMEs use the available information rather than in its mere possession since the same information is usually available to competitors at the same time, and possession of information does not ensure the information will be used.

Thus, while in a UK information intensive export environment, acquisition of information is critical, export information use is likely to mediate the link between information acquisition and export performance.

INTRODUCTION

International business is not limited to multinational enterprises. Many small and medium sized businesses are also involved in this arena. Traditionally, economists have thought of services and small business as part of the "non-traded" sector. But today we live in a globally integrated business system. The information technology revolution and the advances in transportation mean that knowledge, skilled people, goods, and services are extremely mobile. The world is now a global arena, where the producers of goods and services often compete both domestically and internationally. Small export firms are now finding there is a market niche for their goods and services in different parts of the world. In fact, some companies are so successful that they are now doing more business overseas than they are domestically.

This research assesses the supply, collection and management (use) of external business advice/information offered by export service providers via Internet and other information vehicles.

The chief focus of this research is on a comparison of export information suppliers that operate in different environments of regulation, contract and reputation such as chambers of commerce, commercial banks, government support agencies, law and accountancy firms among other suppliers. The efficiency of export information provision in Yorkshire and the Humber is evaluated, companies were contacted in order to obtain information regarding their views on this issue.

This research supports the suggestion that adequate supply of export information and the adequate internal management and its use by SMEs has a positive impact on the export sales performance of small and medium sized enterprises based in the Yorkshire and The Humber region. There is evidence that those companies collecting, processing and managing information tend to exhibit higher export performance as measured by the ratio of export sales to overall sales. SMEs with more formal marketing research activities, internal information management and general information infrastructure have higher ratios of export sales than those which do not manage external export information at all (Crick, Jones, and Hart 1994; Diamantopoulos and Horncastle 1997).

Internet greatly facilitates the acquisition of up-to-date export information (Hamill 1997). This tool has a positive impact on the SMEs' export performance. However, we believe SMEs are not making use of the full potential offered by Internet. It is shown that an appropriate information management infrastructure in SMEs within Yorkshire and Humberside does not necessarily translate into a higher level of annual sales turnover. Those SMEs within Yorkshire and Humberside that do not invest in information handling infrastructure have a higher annual turnover than those that do. Government support agencies need to accept that local companies although have the resources, they do not have enough preparation and guidance to handle all the external information on offer.

Export service providers need to concentrate their efforts on instructing SMEs on how to collect, process and use the available information properly, rather than providing high amounts of information that will not be properly used by their target audience. I believe that a co-ordinated introduction of management systems for information within export-related businesses in Yorkshire and the Humber would develop new opportunities of trade in foreign countries.

This research supports the idea that it is necessary to explain SME managers in Yorkshire and The Humber that an adequate internal business intelligence strategy will result in tangible competitive benefits for their organisations. This study also points out that export service providers in the region will need to change their business approaches towards SMEs if they want to deliver the information these firms need in the most efficient way.

METHODOLOGY OF THE SURVEY

This research follows the Strategic Export Model, in which I intend to analyse how external and internal factors influence the export performance of the firm. Export performance is closely related to the export obstacles perceived by the SME. Among the most frequently mentioned internal obstacles is lack of information (Kau Ah Keng and Tan Soo Jiuan, 1989).

In this case the analysis is centred on external export information (Has the adequate supply of export related information a positive impact on the export sales ratio performance of small and medium sized enterprises based in Yorkshire and The Humber?) and how the company manages that information internally (Has the adequate internal management and use of external export related information by SMEs in Yorkshire and The Humber a positive impact on their export sales ratio performance?).

Having said that, we do not intend to prove any learning and innovation adoption models. Nevertheless, a network approach on export information will be utilised (how do SMEs benefit from other business contacts in order to obtain useful export advice and information?) The resource-based approach to internationalisation is taken into account by evaluating the "information management approaches and infrastructure" of the firm. It will measure the possession of adequate information infrastructure against export sales performance.

In order to address the relationship between export marketing research activity and export performance, we piloted a research that involved 1,000 SMEs in the Yorkshire and the Humber region. This preliminary questionnaire (pilot analysis for a deeper research project) aimed to offer some light on the research questions mentioned above. All targeted firms had export potential, hotels, small shops and sole traders and other very small enterprises (VSEs) were left aside. The effective (usable responses) response rate was 6.9% (69 firms).

The use of export information collection vehicles, approaches to management of information, SME managers' perceptions, needs and expectations towards external information and export information use, and the types of export marketing research information elements, were assessed in by our questionnaire.

This resulted in three factors indicating three information dimensions important to British exporters in our sample. The three types of information elements that emerged were related to:

- Information on export markets attractiveness
- Information on product / service adaptations required for export
- Information on the background and infrastructure available in the target export markets

The managerial use of information was examined on the basis of 13 statements of use. Since information is used to support managerial decision-making (Kohli and Jaworski

1990; Day 1994; Sinkula 1994), the four statements were phrased to correspond to the use of information as reflected in different decision making styles, from intuitive to scientific (Despande and Zaltman 1982).

Finally, export activities were assessed by simply comparing the sample results of exporters and non-exporters. This provides a basis for comparing firms' export performance. In order to investigate the possible relationship between export performance and export marketing research activities, simple association analysis was performed between companies that are currently exporting and their information infrastructure and organisation. The export information collection vehicles, approaches to management of information, SMEs' perceptions, needs and expectations towards external information and export information parameters were identified from the literature review.

ACQUISITION AND USE OF EXTERNAL INFORMATION

The growing interest in the SME sector is particularly based on their assumed role as job-providers. The political will has developed in recent years to promote a more entrepreneurial Europe. It advocates establishing an environment favourable to the creation and development of innovative businesses, in particular SMES.

The results of this survey provide initial support for the contention that using export market information is related to export success (Moorman, 1995). The use of information is likely to be where new competitive advantages will lie. The growth and even survival of today's business entities will depend on their strategies for handling and processing information (Deshpande and Zaltman 1982; Turner 1991; Glazer 1991).

External export information acquisition and use is critical to both effective decision-making and superior organisational performance. It is not, as previously thought, that the acquisition of information is the one that determine the levels of export performance. It is what is done with the information that influences export performance, in other words, how it is actually put to use for decision-making purposes (O'Reilly, 1980; Moorman, 1995; McAuley, 1993; Seringhaus, 1988).

Access to information, though still considered problematic by most small exporters, is likely to be made easier with the advent of information sources such as the Internet. New skills will have to be developed for managing such information in order to use it in the most efficient, competent, resourceful and capable manner.

For experienced SME exporters, this telecommunications revolution has had the impact of neutralising, to a significant degree, some of the advantages of large competitors. It is now possible for even a small enterprise to have an effective global market presence without a physical presence.

Although the fairly well developed information-technological infrastructure improves the competitiveness of UK enterprises, particularly small enterprises can still make better use of possibilities offered by the new technology.

SME exporters are quite often unaware of the products and services available from their government support agencies, they have difficulty accessing these services and require continual training and reminders on those services. It has been argued in this research that the ability of the entrepreneur, or entrepreneurial team, to learn how to handle external information is crucial to the growth process of SMEs.

The SME manager / owner behaviour is a dynamic response to a constantly changing environment. The nature of learning may follow a trial and error and discovery activity, entrepreneurial behaviour becomes adapted in an evolutionary way to the discovery of information from trial and error. Such evolutionary theories may be able to model the nature of entrepreneurial behaviour and development.

The use of information seems to have an evident relationship with the ratios of export performance. Higher export profits are strongly related to information usage patterns, which provide initial evidence that decisions firmly based on information collected may well contribute to export performance (Baker and Abou-Zeid 1982).

Susan Hart & Nikolaos Tzokas (1999) found that export marketing information, proactively collected and seriously used to aid decision-making in the export arena, is associated with higher levels of export performance. Particularly for exporting SMEs, results tentatively indicate that the use of information relevant to the background / infrastructure of the import country could increase the firm's export profitability and the percentage of sales accounted for by its exports. Given the fact that such information often is published in easily accessible and affordable media such as government publications, trade and industry publications and export association bulletins, a decisive step towards its utilisation can easily be made.

In today's era of low-cost access to information technology products, the only obstacle to making effective use of export information may be the lack of management's belief in its usefulness, lack of the necessary education, or lack of organisational intelligence for its collection and utilisation.

The role of export information is a neglected topic in both domestic and international contexts by the majority of SME owners and managers. They do not see the direct benefits of the fact that export marketing information, if proactively collected and seriously used to aid decision-making in the export arena, is associated with higher levels of export performance (Yeoh, 2000).

The effortless storage of export information for future use is linked to lower levels of export performance, while internal management (intra-organisational use) of export information generated from a wide range of sources is beneficial to export performance (Souchon and Diamantopoulos 1997).

We can conclude that there is a clear need to show managers that market research results in tangible competitive benefits for their organisations. It is argued that this matter calls for the education of SME decision-makers on the utility of export marketing information. This is also an issue which will benefit by the development of appropriate governmental policies for SMEs, such as educational programs in information technology.

SMES IN YORKSHIRE AND THE HUMBER

The studied firms lack funds needed to continue the internationalisation process (Johanson and Vahlne, 1977; Luostarinen and Welch, 1990) by committing more resources. SMEs in Yorkshire and the Humber seem to be trapped in the first phase of the sequential model. This could be happening, probably owning to the fact that they are too small to continue the internationalisation process and / or their decision-makers lack the necessary skills to lead their organisations towards a further growth.

The knowledge of the SMEs foreign market is limited. Their current internationalisation is limited to contacts with their agents or to a few buyers abroad. This type of internationalisation must, however, be considered as dangerous as studies have shown that the agents are not always trustworthy and doing their best to promote the exporters' product.

Over 50% of the respondents export their goods or services, with the quoted percentage of exports to be on average 15% of the company turnover. It is important to note that 82% of the respondents who currently do not export would not export in the future. This is a fear much related to the "psychic distance" of new potential export destinations (Melin, 1992; Johanson & Vahlne, 1977, 1990). The non-exporter firms in our sample are very much dependent on the domestic market.

The respondent companies tend to place a high level of importance on their personal contacts when acquiring information in regards to export activities. The close proximity of SMEs to their customers is a distinguishing feature of the sampled SMEs.

SMEs tend to place a remarkably low level of importance to the service provided by the public support agencies. The reasons for this may include a low level of quality and awareness of these services. Respondents mostly use the export advice provided by their banks, accountants and solicitors.

It appears that SME managers openly admit that they do not use the government support agencies that in theory should provide a free of charge service to all those interested parties. SME managers tend to trust private institutions much more than government institutions. Most of the interviewed SME managers mentioned that the private export service providers such as banks, solicitors and accountants target their needs more efficiently than the government institutions do. SME managers acknowledge that they have used the services of public institutions, but it seems that at the end of the exercise, they were not very satisfied by the outputs, private institutions offer more value for money for the time spent on the specific assignment.

Nearly 60% of the respondent SMEs mention that the management of their external export information is subject to a formal structure involving specific procedures. These include internal databases and files with relevant information for the company and especially nominated employees for handling external information.

Reasons given for not managing information through a formal structure involving strict procedures include the fact that some SMEs do not perceive the importance of

managing external export information for their day to day business activities. They are not willing to invest their scarce resources towards these aims.

Nearly three-quarters of the respondents (72%) store their information centrally. This figure is further substantiated by 63% of the respondent companies believing the information within their company is systematically classified. From interviews, we believe that although they make an effort to handle external information within the companies, their training and current knowledge of information management is not sufficient to handle the collected information properly. They do not translate the collected information into business decisions.

The main reasons suggested as to why some of the sampled companies did not classify their information are that they did not believe it was necessary for the competitive advantage of the company, as well as their staff manage their own information. Other reasons include that the company is too small to classify information effectively and efficiently, and limited financial and human resources to manage such information. From the sample profile we determined that the companies were not as small as to not allowing them to use some of their resources towards information management. It is more a negative attitude towards external information. As mentioned by our respondents, they do not see the benefit of spending time and other resources concerning information.

Nearly all of the information management activities are administered internally within the company, as opposed to this activity being sub-contracted to an external body. These results show some commitment from our respondents towards information management, but unfortunately, it is not a professional approach towards an efficient information usage. Although over 50% of the respondent's employ a specific individual whose part-time responsibility it is to manage the company's information, in most of the cases, it is a person in a secretarial position without sufficient and adequate training on information management.

The companies who do not manage information at all tend to delegate the information management responsibilities to each functional department in the organisation, centralising the information on specific individuals. These individuals work on a non-share information approach that is very negative to the overall success of the enterprise.

As a whole, 60% of the respondents believe they do not experience problems in obtaining information. Over 50% of the respondents suggest that one of the main information problems encountered is that there is too much information to sort through and that information is "too expensive". Their comments also suggest that the information currently available is out-of-date and does not meet their needs and strategic direction of their company. We believe that these respondents do not make any effort to collect information and that they are victims of well entrenched negative attitudes towards business intelligence and old beliefs about poor export service provision in the region. Nowadays all export service providers in the UK offer information free of charge via this channel of communication.

The most encountered problem by SMEs when handling information is the cost of it. SMEs mention that the acquisition of information is too expensive for them. This

information should be provided by government support agencies free of charge. Nowadays, this information is also offered via Internet. Since 90% of the respondents have access to Internet, we can conclude that the respondents are not making the most of this information facilitator tool. The Internet as a vehicle and as a tool for the management of information within the respondent companies is supported by an extensive and abundant resource of IT hardware and software. The average number of personal computers in the respondent companies is 19. The ratio for personal computers to employees is approximately 1 to 3.

The following uses of information ranked the highest in our survey: resolving technical problems, improve competitive position of the the company, identify new markets, and check customer's credit. SMEs focus on information that represents immediate sales leads for their businesses: currency movements, specific business opportunities and customers' preferences. On the other hand, information that they consider is not directly related to sales such as: economic data, distribution and information on the political situation of a country; attracts the least amount of interest by SMEs and rank the lowest in the survey analysis. It seems that SMEs in the region do not have a marketing approach but a production and sales approach: their aim is to sell what they produce, not much time is spent analysing what the customers' needs are. The main reason could be the difficulties they experience with their day to day business cash flow.

It is necessary to measure the gap between the information offer and demand. This is reflected when SMEs mention that the information on offer is out of date and that they have too much information to sort through and difficulties using the data received. This reveals that the information on offer is not well targeted, or that the companies do not have enough preparation and guidance to handle all the external information on offer. It seems that export service providers should concentrate on instructing SMEs on how to collect, process and use the available information properly.

INFORMATION INFRASTRUCTURE IN THE REGION

A number of association analyses have been performed on the data obtained in this survey, basically on the information infrastructure available within SMEs in Yorkshire and their sales outputs. This association analysis offers some unexpected results. It seems that an appropriate information management infrastructure in SMEs within Yorkshire and Humberside does not necessarily translate into a higher level of annual sales turnover. Those SMEs that do not invest in information handling infrastructure have a higher annual turnover than those who do.

SMEs in Yorkshire and The Humber are well placed for handling external information. They do have the necessary human and economic resources for this aim, unfortunately, SMEs in the region lack the managerial skills and experience to use their information infrastructure and the information provided in the region.

Those SMEs, with an appropriate information infrastructure, are under the same competitive conditions to those who do not manage external information at all. It is important to highlight that the storage of information within SMEs does not translate into an improved export performance. It is not only necessary to offer business

intelligence / information management training to SMEs, but to show them how to use the information gathered to the benefit of their own businesses and competitiveness. This assumption is supported by the following questionnaire results:

- There is no relationship between the sales turnover and the fact of a company having a formal structure and procedures for managing information. Companies whose management of information is subject to a formal structure have an average turnover of £14.2m against £15.0m of those who do not.
- There is no relationship between the sales turnover and the fact of a company having a specific person responsible for managing information. Companies, which have a specific person for managing external information, have an average turnover of £13.2m against £17.8m of those who do not.
- Companies who do not systematically classify their information have an average turnover of £22.8m against £11.1m of those who do classify their information systematically.
- Companies who do store their information centrally have an average turnover of £12.7m against £19.2m of those who do not store their information centrally.
- Companies whose staff is trained in handling and managing information have an average turnover of £10.0m against £23.0m of those who do not.
- Companies whose staff knows what information enters the company have an average turnover of £9.8m against £28.8m of those who do not.
- The correlation between turnover and number of hours spent in managing external information is very low (0.348).
- There is no correlation between information annual budget and sales turnover, it is almost non-existent (-0.009).
- Companies who consider they are experiencing problems in obtaining relevant information have an average turnover of £21.6m against £10.0m of those who do not.
- Companies who do have IT tools implemented specifically to search, classify and process information have an average turnover of £17.0m against £13.2m of those who do not.
- The larger the firms turnover, the more probabilities that the firm will have access to Internet. Firms, which are not connected to Internet, tend to be in the lower range of general turnover. Firms connected to Internet have an average turnover of £15.6m against £5.5m of those who are not connected.
- There is no relationship between exporting and being connected to Internet. Exporters and non-exporters have almost the same level of access to Internet. It is important to highlight that 92% of exporters have access to Internet.
- There is no relationship between the number of computers and the level of turnover. The correlation between these two variables is very low (0.292).

All the above points support the idea that SMEs in Yorkshire and the Humber that are well placed to handle external business information do not do so, and are under the same competitive conditions as those companies that do not demonstrate any type of commitment towards information management. It is not only crucial to offer business intelligence / information management training to SMEs, but also to show SME managers and owners how to use the information gathered to the benefit of their own businesses and competitiveness.

THE EXPORT SERVICE PROVIDERS IN THE REGION

All the different barriers and obstacles to exporting have been thoroughly investigated by international business researchers. Katsikeas and Morgan (1994) suggest that these can be classified under four key areas: external, internal, informational and operational problems. Export assistance must seek to address each of these areas.

Additional research contend that as firms progress through various stages of the internationalisation process (Welch and Luostarinen, 1988), different types of export assistance will be required to address the changing nature of export needs. This research suggests that conventional business support agencies' support measures are inadequate and unsuitable for the needs of smaller firms in each of the various internationalisation stages.

Export seminars and other forms of coaching or training in the region do not seem to be producing the expected results. The formulae currently offered are rejected by many small business managers, who do not see them as a real answer to their problems. The services offered by support programs do not adequately meet the needs of small exporting firms. SME owner-managers in Yorkshire and The Humber generally perceive these programs very negatively. Considerations such as this led us to wonder about the relevance of this type of intervention, which often seems to have been developed by specialists working for different agencies without input from the firms themselves with respect to either the content or the teaching approach used.

Given that owner-managers are the key elements in the decision to export, as stated earlier, it is vital that awareness and training interventions should concentrate on their perceptions, weaknesses, and development needs. It is also important to know which intervention methods the owner-managers prefer, and the information and teaching formulae most likely to encourage them to take up exporting. The low attendance rate at export workshops, seminars, and clinics provides evidence of the current failure to meet the expectations of owner-managers (Carrier, 1999).

For the more experienced exporters among SMEs, the traditional promotional methods of organising marketing missions and participating in trade fairs, particularly specialised ones, continue to be effective not only for market entry but also for market diversification. Participation in such fairs has become essential to stay in tune with the latest market trends, buyer preferences and technologies. These specialised activities should be encouraged by business support agencies.

For less experienced SMEs, more important is the proper matching of a quality product or service to assessed market demand. SMEs therefore need assistance in evaluating the market trends and preferences for their specific goods, developing and upgrading their products, contacting potentially interested buyers or agents through up-to-date databases and arranging effective presentations of the product itself.

The revolution in telecommunications has opened up new international business possibilities for many SMEs compared with the situation a decade or so ago. Previously, gaining entry into distant markets was out of the question for a majority of SMEs. Even assuming that they could organise the finance and production aspects of their operations effectively, foreign marketing raised almost insurmountable

obstacles. The process of market selection, buyer identification, visits abroad with quantities of samples, preparation of business offers and counter proposals, discussion of specifications and so on required large investments of time, energy and resources. Today much of this can be done immediately without leaving the office, thanks to the electronic mail, Internet information and other telecommunication facilities. Export service providers need to foment and train local SMEs in the utilisation of these new communication technologies.

Selection of markets and customers electronically is common practice these days. Electronic contact with customs is also coming into the picture as an alternative to personal contact, particularly for small businesses. Basic research on markets can be carried out by using suitable databases. Commercial contacts can be established through business directories that are also accessible electronically. The need for repeated personal visits is eliminated. The cost of going global has therefore been brought within the reach of many SMEs for the first time. If small firms are enabled to acquire or use such facilities, through assistance from support agencies, they can greatly improve their chances of reaching new markets.

Ian Sayers (2000) focus on the importance of Internet and its impact on the way business is handled nowadays. Business-to-business (B2B) marketplaces is a real revolution in nearly every market in which SMEs export and it will change the way in which export service providers operate. Such marketplaces exist in nearly all industry sectors. This innovation leads to a dramatic reduction in costs, order cycle times and working capital requirements and a big increase in efficiency and effectiveness.

Given the considerable impact of the owner-manager's personal attitude on the firm's decision to export (Miesenbock, 1988; Imai and Baba, 1989; Christensen and Lindmark, 1993), it is relevant to consider the various paths available to help owner-managers overcome barriers to exporting and to encourage more internationally-oriented business behaviour. In this respect, training and development on export information management may offer a potentially interesting solution. A common feature of many of these programmes is the use of consultants to develop export management competencies and improve export decision making among groups of small firms. The preference for group activities not only reflects a more efficient way for public business support agencies (or designated providers) to deliver support, but also creates conditions conducive to peer group learning and shared experiences among participating firms (McNaughton and Bell, 1999).

The development of practical information management skills is regarded as central to supporting small firms' international marketing activities. To develop these skills in SME managers, it is necessary to develop programmes that concentrate efforts upon learning experiences rather than formal training content, building on on-the-job learning opportunities. Informal on-the-job training is the basis of training activities. This can be achieved through the involvement of experienced mentors working with groups of small firms on the hands-on application of relevant concepts.

It is suggested that regional export service providers concentrate their efforts towards the generation of regional networks. These have a major role to play in the development of skills, given that personal contact networks are a useful tool for entrepreneurs who wish to enlarge their spans of information sources (Demick and

O'Reilly, 2000). There is a need for these personal contact networks to be formalised. As such, business support agencies can play a valuable role not only in fostering the formation and expansion of such networks, but also in helping to formalise them; for example export clubs or industrial associations or clubs in the region.

The close proximity of SMEs to their customers, as manifested by the use of the above informal networks and marketing research vehicles, is a feature of SMEs (Johanson and Mattsson, 1990; Christensen and Lindmark, 1993; Sharma and Keller, 1993; Blankenburg, 1995; Ghauri and Holstius, 1996). The close personal contacts among SME managers and their customers are an inherent characteristic of how SMEs collect external information. Informal contacts are the prime source of information for SMEs. They place a particularly low level of importance to the service provided by the public and private business support agencies. The reasons for this may include a low level of awareness of these services.

Export service providers should measure the quality of the information they currently offer. This measure should be specific to different acquisition modes, or even different information sources. Such a measurement would prove invaluable in explaining why certain information is accepted and used by SMEs, and the relationship between information use and export performance.

Export service providers should concentrate on strategic information regarding economic background, transport infrastructure, growth trends, and government aid. This type of information may be more important to improve export sales and profit ratios for SMEs than more specific information, which might be used to assess individual market potential or the need to adapt products to local conditions.

Information about market attractiveness and required product adaptations, although critical for the initial decision to export, does not provide any differentiating competitive advantage later on. It appears that after the initial exporting activities, information regarding background and infrastructure (for example, transport and government aid information) assumes greater competitive potential since it can reduce exporting costs or make use of export / import financial aids and incentives.

It is not only the specific type of information collected that may improve export performance, but also the extent of proactive collection of export information that shows greater association with export performance. It might be reasonably argued that investigation of the seriousness with which a company approaches the collection of marketing information is a promising indicator of superior SME export performance.

The respondents essentially suggest that any form of action to improve the company's management of information, including, a better prioritisation of information needs, central management of information, and more financial resources, staff and time will be beneficial for them. On the other hand, they believe that sub-contracting the information management activity and accessing more services provided by business support services are the least useful alternatives to improve their information management. The survey reveals that the image of the government agencies dealing with business support is very much damaged and that it will take a great deal of work and time to amend and improve this situation, recovering the trust of SMEs with regard to this institutions.

Approximately 70% of the respondent companies requested that the two most expected roles of business support agencies should be to introduce clearly defined and identified sources of information, with each source having minimum overlap, and to carry out information searches with the necessary guarantee and confidence.

We also consider that the provision of information management training is key to the improvement of the utilisation of government information services. Most of the interviewed companies simply do not know what to do with the acquired information, most of the times, the information is simply stored in the company and no action is taken upon it. It is necessary to provide training on how to produce business plans and strategies out of the information available. Once companies know about the benefits of external information in relation to the development of an international business strategy, the utilisation of information will be valued and much appreciated. It is not simply a matter of offering the right information, but also to show SMEs how to benefit of it by using it properly.

The need for better communication between business support providers and small businesses is an important topic. It has emerged that most small business owners are unaware of the existence of information services. Many exporters are missing out on potentially useful services because of their low levels of awareness of some providers and products. When exporters know about a support provider, they may not be aware of the full range of services or products on offer.

Most business owner/managers are used to receiving information that are of little or of no relevance to their business, and as a result, they regard government support agency mail-shots and glossy brochures as an expensive way of misusing time and resources. Small businesses do not want more information about what the support agencies are capable of. However, what they do need is short and simple focused information which concentrates on their current business needs. The main reason for these comments is concerned with the duplication of efforts among regional service providers. More than one business support agency targets the same company several times during the year, if all the other private business support organisations and European activities are added to these government initiatives, the amount of information is simply overwhelming for SMEs who struggle for time for their own business activities. The information provision needs to be regulated.

Businesses suggest that these agencies should adopt a ‘less is more’ approach, keeping the amount of paper that it sends out to a minimum, and ensuring that it is closely targeted so that it is of specific relevance to its recipients.

Information and advice on grants on the availability of grants was singled out as priority area for government attention. Grants were the area on which small businesses would like the government to provide more information. This finding was consistent for all business sectors and size bands. Small firms experience difficulties in finding out what grants are available and whether they are eligible and many owner/managers were confused about which agency they should approach to get the relevant information.

Bank managers and accountants are often well placed to help owner/managers to get the right information because they have regular contact with them and tend to be aware of any problems that they are experiencing. They are also interested in ensuring that their customers get the information that they need to ensure business success. However, banks have been regularly criticised for being inconsistent in their decision-making and ineffective in the transfer of information to clients, maybe because they are more interested in the large companies (profitable customers) rather than the small and unprofitable ones. In order to cover this gap, government support agencies need to develop partnerships with the local private export service providers such as accountants, banks and solicitors.

Nearly 50% of the respondents felt that currency fluctuations and slow payments were acting as major barriers to exporting, with over 50% disagreeing with the issue of lack of competitive products acting as a barrier. Most SMEs consider that the characteristics of their products are competitive abroad, but that the currency fluctuations and the strong sterling pound make the British products unaffordable abroad. Due to the small size of SMEs in Yorkshire and the Humber and their limited resources, the negative cash flow due to slow payment, together with the currency fluctuations, represent one of the most important barriers to their export activities.

Informal meetings with SME managers expose their point of view that SMEs have more serious problems to worry about rather than using their time managing external information that will not solve this immediate problems. This means that information for SMEs should focus on currency fluctuations, external funds and grants available for exporters and information on how to avoid non-necessary export formalities for specific products, general export bureaucracy and paperwork. Government support agencies should concentrate their efforts in simplifying official procedures for export matters. This is the main reason why "lack of government support" ranks so high in this research.

The effective access to focused advice and information is the most important enduring issue facing smaller exporters of today in the region, especially those new to exporting. Access to finance does not appear to be a major difficulty for firms with some experience of exporting, though they may not be fully aware of all the alternative sources of finance.

It is fundamental to understand how collection of marketing information can be focused more sharply to aid decision-makers. All support interventions should be made on a mentoring basis to improve the ability of an individual entrepreneur to learn from the information process.

It is suggested that a large part of entrepreneurial learning is experiential, if this is the case, then pre-start courses in information training may have little effect. Yet preparation for such experience can still be very valuable. As we have argued, entrepreneurs need to know how to take advantage of their experience. Pre-start or incubator experience can be a valuable precursor for information. The implication is that there is a role for mentoring support for new and early stage entrepreneurs, mentors who can show entrepreneurs how to reflect from experience and to absorb the knowledge from learning events.

CONCLUSIONS AND RECOMMENDATIONS

Responses show that external export information within SMEs in Yorkshire and The Humber is not properly managed and therefore has no great impact on the company's export performance. We believe that companies with good infrastructure to manage external export information in Yorkshire and the Humber are simply storing this information without giving it the use that it deserves. National business support agencies need to direct their support efforts towards the small business sector through export programmes that involve external information management training and network development that are designed to promote the proper utilisation and supply of existing export information.

Also, our survey results demonstrate that export information supply in the region is not adequate and therefore has no positive impact on the respondents' export performance. Information, which is of value to SMEs, has to be focused and precise, concentrated on what they need to know. Many SME owner-managers, especially at the micro level, are not accustomed to learning from written materials. Information has to be accessible. This means that the form of presentation needs to take into account the learning style of potential users.

Effective delivery of information services for SMEs has to be based on a sound knowledge of their own mode of learning. SMEs learn incrementally, from experience, through trial and error. They also learn from their environment, particularly from their competitors, suppliers and customers. SME owner-managers are more likely to value and use information which comes from someone close to them who can stamp information with practical credibility.

Internet is rated as one of the preferred sources of information for SMEs. It is remarkable how positively SMEs have adopted this new technology. One of the main reasons for this is its utility and the low cost for delivering the desired information. We advise export service providers to use this communication channel to promote their services and deliver information to SMEs in the region.

The main challenges to business support agencies, seeking to develop new export promotion measures, are the need to improve infrastructure, access to finance, and marketing. Many small enterprises are unable to market their goods effectively in overseas markets. Small firms continue to lack knowledge of marketing channels and fail to establish marketing networks, or have not entered into strong market relationships with existing overseas customers. Export service providers need to offer up-to-date information on these aspects. There is a clear need to show managers that market research results in tangible competitive benefits for their business activities. This issue calls for the education of SME decision-makers on:

- The utility of export marketing information
- The sources which can deliver this information at the lowest cost, and
- The necessary organisational and other capital adjustments they should implement in their firms to allow the flow and utilisation of export marketing information.

This is also an issue that will benefit by the development of appropriate governmental policies for SMEs, such as educational programs in information technology. This might determine whether SMEs will succeed in using export marketing information, since in terms of expenses, as the cost of information technology keeps decreasing and instant worldwide communication becomes increasingly available, even small enterprises can have information and communication resources to participate in world markets.

ISSUES FOR FURTHER RESEARCH

The results of this study should be used as a basis for subsequent, more extensive research with a much broader sample of SMEs who are considering exporting. For such a research project, a more positivist stance would be required; using a questionnaire comprising mostly closed questions for which subjects would be asked to choose from a set of responses determined in advance by the researcher.

Two factors emerged as being appropriate for further analysis: a comparison describing informal marketing research information vehicles on the one hand, and formal marketing research information vehicles on the other, its reliability, its effectiveness on decision-making and their impact on export performance.

Additional issues for further research in the Yorkshire and the Humber region should include:

- The circumstances in which well-developed information-technological infrastructure improves the competitiveness of Yorkshire and The Humber based SMEs.
- The reasons why Yorkshire & The Humber SME exporters are quite often unaware of the products and services available from their government support agencies.
- The reasons why Yorkshire & the Humber SMEs have difficulty accessing these services and require continual training and reminders on those services.

More research is needed which can progress based on the insights gained from this study. In particular, future research should strive to examine the details of export information utilisation, management and infrastructure, rather than continue the trend of merely observing the incidence of its collection and provision. The motivation for collection and use of information has been studied extensively, little attention has traditionally been paid to the forces by which the information management process is maintained. Further research should focus on techniques and approaches used by SMEs to implement and maintain a formal business intelligence culture within this type of organisations.

In this process, potentially important effects of intervening variables, such as export experience, which our literature review suggests is important to information collection and export performance, need to be carefully addressed.

Arguably, behavioural and organisational factors moderate the use and utility of marketing information. Apparently, it is not only the specific type of information

collected that may enhance export performance, but also the extent of proactive collection of export information that shows greater association with export performance. It might be reasonably argued that investigation of the seriousness with which a company approaches the collection of marketing information is a promising indicator of superior SME export performance (Hart & Tzokas, 1999). Yet, one must be reminded that information can change behaviour and lead to organisational restructuring a fact that is indicative of a complex relationship and one which cannot be addressed adequately in the space of this research, but would be an interesting lead for future research.

BIBLIOGRAPHY

Baker MJ., And E.D. Abou-Zeid (1982)
Successful Exporting
Helensburgh, Scotland: Westburn Publishers, Ltd.

Blankenburg, D. (1995)
A Network Approach To Foreign Market Entry
In Moller, K., And Wilson, D. (Eds.), Business Marketing: An Interaction And Network Perspective, Boston: Kluwer Academic Publishers, Pp. 375-405.

Carrier, Camille (1999)
The training and development needs of owner-managers of small businesses with export potential
Journal of Small Business Management (Oct), Vol.: 37, Issue: 4, Pp. 30-41

Cavusgil, S Tamer (1984)
Organizational Characteristics Associated With Export Activity
Journal Of Management Studies Vol: 21 Issue: 1 Pp: 3 - 22

Cavusgil, S Tamer And Godiwalla, Yezdi M. (1982)
Decision-Making For International Marketing: A Comparative Review
Management Decision Vol: 20 Issue: 4 Pp: 47 - 54

Cavusgil, S Tamer And Kirplalani V.H. (1993)
Introducing Products Into Export Markets: Success Factors
Journal Of Business Research Vol: 27 Pp: 1 - 15

Cavusgil, S. T. (1984)
Difference Among Exporting Firms Based On Their Degree Of Internationalisation
Journal Of Business Research, 8(2), Pp. 195-208

Cavusgil, S. Tamer (1980)
On The Internationalization Process Of Firms
European Research (November) Vol: 8 Issue: 6 Pp: 273 - 281

Cavusgil, S. Tamer / Nevin, John R. (1981)
Internal Determinants Of Export Marketing Behaviour: An Empirical Investigation
Journal Of Marketing Research 18 (February), Pp 114 - 119

Cavusgil, S. Tamer / Warren Bilkley / G. Tesar (1979)
A Note On The Export Behaviour Of Firms
Journal Of International Business Studies Spring Summer Pp 91-97

Cavusgil, S. Tamer And Zou, Shaoming (1994)
Marketing Strategy-Performance Relationship: An Investigation Of The Empirical Link In Export Market Ventures
Journal Of Marketing Vol: 58 Issue: 1 Pp: 1 - 21

Cavusgil, S.T. (1980)
Export Development Efforts In The United States: Experiences And Lessons Learned In S.T. Cavusgil And M.R. Czinkota, Editors, International Perspectives On Trade Promotion And Assistance, Quorum Books, Westport, CT, 173-83

Cavusgil, S.T. (1985).
Guidelines For Export Market Research
Business Horizons (Nov/Dec), Pp 27-29

Cavusgil, S.T., And V. Naor (1987)
Firm Management Characteristics As Discriminators Of Export Marketing Activity
Journal Of Business Research 15(3), 221-235

Christensen, P. R., And Lindmark, L. (1993),
Location And Internationalisation Of Small Firms
In Lundqvist, L., And Persson, L.O. (Eds.),
Visions And Strategies In European Integration, Berlin: Springer-Verlag, Pp 131-151

Christensen, P. R., And Lindmark, L. (1993),
Location And Internationalisation Of Small Firms
In Lundqvist, L., And Persson, L.O. (Eds.),
Visions And Strategies In European Integration, Berlin: Springer-Verlag, Pp 131-151

Crick. D., M. Jones, and S.J. Hart (1994)
International Marketing Research Activities of UK Exporters: An Exploratory Study
Journal of Euromarketing 3(2). 17-26

Day, G.S. (1994).
The Capabilities Of Market Driven Organizations
Journal Of Marketing 58, 37- 52

Demick, David H. and O'Reilly, Aidan J. (2000)
Supporting SME internationalisation: A collaborative project for accelerated export development
Irish Marketing Review; Dublin, Volume: 13, Issue: 1, Pp. 34-45

Deshpande, R., And G. Zaltman (1982).
Factors Affecting The Use Of Market Research Information: A Path Analysis
Journal Of Marketing Research 19 (February), 14-31

Diamantopoulos, Adamantios And Horncastle, Stephen (1997)
Use Of Export Marketing Research By Industrial Firms: An Application And Extension Of Deshpande And Zaltman's Model
International Business Review Vol: 6 Issue: 3 Pp: 245 - 270

Ghauri, P. N., And Holstius, K (1996)
The Role Of Matching In The Foreign Market Entry Process In The Baltic States
European Journal Of Marketing, 30(2), Pp75-88

Glazer, R. (1991)
Marketing In An Information Intensive Environment: Strategic Implications Of Knowledge As An Asset
Journal Of Marketing 55 (October), 1-19

Hamill, James H. (1997)
The Internet And International Marketing
International Marketing Review, 14 (5), 300-23

Hart, Susan; Tzokas, Nikolaos (1999)
The Impact Of Marketing Research Activity On Sme Export Performance: Evidence From The Uk
Journal Of Small Business Management (April) Vol. 37, Issue: 2, Pp. 63-75

Hart, Susan; Tzokas, Nikolaos (1999)
The Impact Of Marketing Research Activity On Sme Export Performance: Evidence From The Uk
Journal Of Small Business Management (April) Vol. 37, Issue: 2, Pp. 63-75

Imai, K, And Baba, Y (1989)
Systematic Innovation And Cross Border Networks
Research Note, OECD, Paris

Johanson, J., And Vahlne, J.E. (1990)
The Mechanism Of Internationalisation
International Marketing Review, 7(4), Pp 11-24

Johanson, Jan And Vahlne, Jan-Erik (1977)
The Internationalisation Process Of The Firm - A Model Of Knowledge Development And Increasing Foreign Market Commitments
Journal Of International Business Studies (Spring/Summer) Vol: 8 Issue: 1 Pp: 23 - 32

Johanson,J., And Mattsson, L.G. (1990)
Internationalisation In Industrial Systems - A Network Approach
In Ford, D. (Ed.), Understanding Business Markets: Interaction, Relationships And

Networks, London: Academic Press, Pp 468-486

Katsikeas, C.S. And RE. Morgan (1994)
Differences In Perceptions Of Exporting Problems Based On Firm Size And Export Market Experience
European Journal Of Marketing, Vol. 28, No.5, Pp.17-33

Kau, Ah-Keng And Tan, Soo Jiuan (1989)
Differences Between Small And Medium Sized Exporting And Non-Exporting Firms: Nature Or Nurture
International Marketing Review Vol: 6 Issue: 4 Pp: 27 - 40

Kohli, A.K., And B. Jaworski (1990).
Market Orientation: The Construct, Research Propositions And Managerial Implications
Journal Of Marketing, 54 (April), 1-18

Luostarinen, R., And Welch, L. (1990)
International Business Operations
Helsinki, Kyrri Oy.

McAuley, A. (1993).
The Perceived Usefulness Of Export Information Sources
European Journal Of Marketing 27(10), 52-64

McNaughton, R. And J. Bell (1999)
Brokering Networks Of Small Firms To Generate Social Capital For Growth And Internationalization
In Wright, R.W. (Ed.), International Entrepreneurship: Globalization And Emerging Businesses, Research In Global Strategic Management, Vol. 7, JAI Press, Greenwich, CT., 63-84.

Melin, L. (1992)
Internationalisation As A Strategy Process
Strategic Management Journal, 13, Pp 99-118.

Miesenbock, K. (1988)
Small Business And Exporting- A Literature Review
International Small Business Journal, Vol. 6, No. 2, Pp. 42-61

Moorman, Christine (1995)
Organizational Market Information Processes: Cultural Antecedents And New Product Outcomes
Journal Of Marketing Research Vol: 0 Issue: 0 Pp: 318 - 335

O'Reilly, Charles A. (1980)
Individuals And Information Overload In Organisations: Is More Necessarily Better?
Academy Of Management Journal, Briarcliff Manor; Dec 1980; Vol. 23, Iss. 4; Pp. 684

Sayers, Ian (2000)
E-Business Marketplaces: A Revolution In International Trade
International Trade Forum, Geneva; Iss. 4; Pg. 12-15

Seringhaus, F.H. Rolf (1986)
The Role Of Information Assistance In Small Firms' Export Involvement
International Small Business Journal, 5 (2), 26-36

Seringhaus, F.H. Rolf And Mayer, Charles S. (1988)
Different Approaches To Foreign Market Entry Between Users And Non-Users Of Trade Missions
European Journal Of Marketing Vol: 22 Issue: 10 Pp: 7 - 18

Seringhaus, Rolf (1987)
The Role Of Information Assistance In Small Firms' Export Involvement
International Small Business Journal 1986/87 (Winter) Vol: 5 Issue: 2 Pp: 26 - 36
Sharma, D. D., And Keller, R. (1993)
Exporting In A Network: Relationship Between Technical Consultancy And The Sources Of Procurement
In Sharma, D. D. (Ed.), Industrial Networks, Advances In International Marketing, Vol. 5, Connecticut: JAI Press Inc., Pp. 235-245.

Sinkula, J.M. (1994)
Market Information Processing And Organisational Learning
Journal Of Marketing 58, Pp. 35-45

Souchon, Anne L. And A. Diamantopoulos (1997)
Use And Non Use Of Export Information: Some Preliminary Insights Into The Antecedents And Impact On Export Performance
Journal Of Marketing Management, 13 (5), 135-51

Turner, P. (1991)
Using Information To Enhance Competitive Advantage - The Marketing Options
European Journal Of Marketing 25 (6), 55-64.

Welch, Lawrence S. & Luostarinen, R. (1988)
Internationalisation: Evolution Of A Concept
Journal Of General Management, Henley-On-Thames; Winter; Vol. 14, Iss. 2; Pp. 34-56

Yeoh, Poh-Lin (2000)
Information acquisition activities: A study of global start-up exporting companies
Journal of International Marketing; Chicago; Volume: 8, Issue: 3, Pp.: 36-60

LESSONS FOR LATECOMERS: EXPLORING ENTRY STRATEGIES INTO CHINA FOR AUSTRALIAN SMEs

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INTRODUCTION

Australian SMEs often dream of exporting their services and know-how to countries like China to expand their market. However, success for these firms in China has not come easily for many reasons. This paper explores the ideas, knowledge, experience and options for Australian SMEs contemplating a move into China. It suggests an alternative mode of entry for small firms that may ensure their longevity, an important element for business in China.

In order to appreciate the issues fully about China, Australian businesses need to understand, the major historical, geographical and economic features of this large country and its people. This is a necessary prerequisite to appreciating the alternative suggestion put forward in this paper.

The dynamic growth of the Chinese economy since 1949 must rank as one of the most remarkable developments of the last century. The ability to feed, clothe and develop a huge geographically and culturally diverse population of 1. 3 billion is an awesome task for any Government. China managed to develop and prosper with the usual difficulties faced by many advanced industrialised economies. Derberger (1999) stated that the evolution of the Chinese economy was dependent on 5-year Plans as well as taking advantage of dynamic changes within the Chinese economy and internationally. However, China's economic growth was often marked by frequent policy changes, sometimes in opposite directions, associated with changes in leadership such as Mao Zedong, Deng Xiaoping, Jiang Zemin and Zhu Rongji (Derberger: 1999).

Western economists noted that over the period between 1978-1996, China achieved an annual average GDP growth rate of approximately 10%; it had the seventh largest GDP in the world in 1995 and a purchasing power second only to the US (Harvie:

2000). In addition to its impressive economic growth, China is the world's largest producer of coal (1.3 billion tons) and grains (465 million tons), second to Japan in steel production (94 million tons) and produces 20 million colour TV sets, 9.3 million refrigerators, 1.5 million automobiles and a 1.3 billion population. (Wong: 1999) These outputs are expected to increase with China's entry to the WTO, predicated on a normal increase in the standard of living of the population.

China's economic performance has impressed not only economists but also international business corporations and national governments; many consequential difficulties usually occur when any country is moving rapidly to industrialise and China is no exception. Environmental problems confront China's rapid urbanisation, with the need for clean water, waste disposal, renewable energy, air pollution control, not to mention the social dislocations of country-city migration and the necessity to provide adequate housing in the urban areas, unemployment, (particularly in rural areas) education, and training to meet the country's industrial requirements. It is important to acknowledge these issues as part of China development (Iredale: 2000).

Notwithstanding these issues, Australia, like many other small economies and nations should be attracted to the potentially enormous markets in China. Bilateral trade between Australia and China has grown steadily in the last decade, but export growth slowed temporarily caused largely by the Asian financial crisis of 1997-1998. In 2000 and 2001, Australian exports to China have increased but this growth was uneven across sectors and different commodities. In 2001, Australian manufactured exports rose by 29% but STMs (simply transformed manufacture) rose by 44% and ETMs (elaborate transformed manufactures) rose by only 21%. In 2001, Australia's top 3 exports to China were, iron ore (A$ 1369 million), wool (A$ 1278 million) and copper ores (A$ 307 million) (dfat.gov.au/geo/china/proc_bilat_fs). Other statistics on Australia's exports to China by sector for 2000-2001 by industry sectors show that primary industries and mining accounted for A$61.5 billion. The only other significant sectors were tourism A$15.4 billion, processed industrial supplies A$11.3 billion, and machinery and industrial equipment A$8.9 billion.

The economic indicators for China encourage relatively small economies such as Australia to develop dynamic industries and become less dependent on exporting primary products. While the economic motivation exists to increase exports the volume of trade and investment between Australian and China is still modest by global standards.

The strategic questions for Australian SMEs as relative latecomers, are:

* How best to enter China's large markets and
* How to remain viable in the short and long term while dealing with its complexity, diversity and heterogeneity. It is both a strategic business issue and a practical one for each firm contemplating entering the China market.

This paper considers an alternative strategy for firms to enter the China market. It suggests that the traditional approach of initially setting up an enterprise in one of the major coastal cities such as Shanghai, Zhejiang, Hubei or Beijing may require rethinking. The Central, Western and Northeastern provinces may present more opportunities, notwithstanding the usual difficulties of lack of infrastructure and

facilities not usually encountered in the major cities. While Australian businesses are small by international standards, they continue to be attracted to finding niche markets. It is important that small countries should examine all possible options to achieve clear economic goals.

In terms of Porter's (1990) analysis of the economic and competitive advantages for countries such as Australia, this paper considers:

- the Australian perspective and industry drivers to internationalise,
- the traditional modes of entry by Australian firms into China
- the consequences of entry into the wrong market.
- arguments for a regional strategy

Finally, we will argue that entry though the regional provinces in China for Australian firms may be the best strategic option.

Regional China

Regional China, in this paper refers to provinces of Central, Western and the North - Eastern regions of the country. While these regions such as Heilong Jiang, one the northeastern provinces of China, are smaller in terms of population demographics, they possess natural resources as well as extensive areas of forests and provide a better potential for growth. Heilong Jiang was an industrial stronghold but with harsh climatic extremes. It is rich in natural energy resources such as coal and natural gas. Cities such as Harbin have an infrastructure originally associated with the Trans-Siberian railway and after 1949 with heavy engineering workshops. After the 1980's rationalisation of China's economy, many of the factories were not financially viable. Now, many commentators describe the Northeastern Provinces as the "rust buckets" of China.

In 1990, the 12 Coastal provinces of China (Liaoning, Beijing, Tianjin, Hebei, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, Guangxi and Hainan) accounted for approximately 50% of the urban population, 54% of the Non-State owned enterprises and 49% of the state owned enterprises. In Central China, the Central Provinces (Jilin, Mongolia, Shanxi, Henan, Anhui, Hubei,Jiangxi and Hunan) contributes 35% of the population, 31% of the Non -State owned enterprises and 36% of the state owned enterprises. In Western China, the 9 Provinces (Xinjiang, Cansu, Ningxia, Sichuan, Guizhou, Yunan and Tibei) contributes 16% of the urban population and 15% of the Non -State owned enterprises and 19% of the state owned enterprises operate there in 1990. (Johnston: 1999 See Table 1, Appendix 2). These statistics show, even a decade ago, that there is considerable potential for economic growth in the Central and North Western China, particularly in the Non -State owned enterprises, meaning the private sector. The Central Government acknowledged the need to encourage more economic growth in the non-coastal regions of China and this was reflected in the 7th Five Year Plan.

In an attempt to distribute the benefits of industrialisation to the provinces and to encourage specialisation in industrial, technological and primary sector development in China, the Government's 6th Five Year Plan (1981-1985) recognised these economic, demographic and investment disparities. It encouraged a "three economic

regions" strategy which it introduced in 1985. The coastal regions were expected to develop technological industries and actively participate in the international economy. The Central and Western regions were encouraged to specialise in energy, agriculture and mineral development. The Government intended to use the rapid economic growth of the Coastal regions to encourage parallel development in the Central and Western regions, and in the whole of China. The 7th Five Year Plan, (1986-1990) favoured the Coastal or Eastern regions. The Coastal Development Strategy (CDS) was announced as a decree in 1988 when reform policies in investment, finance and trade were established to facilitate China's "open door" attitude to attract global business. Since 1992 China has experienced the problems associated with rapid economic growth such as inflation, management control, local autonomy, disparity between the rich and poor and regional inequality. The rapid growth of the coastal regions generated tensions in the Central and Western China to the extent that in the 9th Five year Plan (1995-2000) the Central Government acknowledged the uneven growth between different regions. It encouraged the Yangtze River Valley development to engage in interregional cooperation as a policy with resources committed to a more evenly spread economic growth. Wei (1998) noted that economic growth had been unevenly distributed along the coastal region of China; it noted that disparity of development existed even within some coastal cities Wei (1998) analysed national income per capita (NIPC) for 1972 –1992 (see Table 2 Appendix 2) and concluded that growth rates of NIPC in Shanghai, Tianjian, Beijing and Liaoning, the leading four cities were among the lowest NIPC rates in the nation; their relative positions in the national economy had also declined (Wei: 1998).

In summary, the Central Government recognised the need to direct international business investment to assist the regional development of China. It follows that the Government's policy to reduce social and economic inequality in China in the 21st century. This policy should provide foreign investors with opportunities to change their entry strategies away from the four most prosperous cities to other provinces in the coastal, central and western regions. This is the situation that Australian SMEs and some larger firms are facing in developing strategies to successfully compete in China's very competitive markets.

AUSTRALIAN INDUSTRY DRIVERS TO INTERNATIONALISE

China is a very important market for Australian exports. Now that China is a member of the World Trade Organisation, there is the expectation that the trade in both goods and services will grow significantly.

The provision of services is becoming an integral part of the economic development of many industrial nations and provides significant scope for increasing employment. When Australia's export of services (5%) to China is compared with those from Singapore (69%), there is considerable scope for improvement.

One of the drivers favouring Australian exports is the $US-$A exchange rate. Although the current US$-A$ exchange rate has increased to US$0.57 from US$0.52, it has been relatively low for many years. It would be surprising if the $US-$A exchange rate reaches US$0.60 in the short term. The exchange rate represents the economic judgment by the world on the relative risks and benefits for investing in that particular country. The exchange rate is affected by the country's rate of inflation,

productivity and the current account deficit. The Reserve Bank of Australia believes that the long-term decline in the Australian current account deficit has ended and the narrowing of this deficit should improve the exchange rate. However, the "correct" rate of foreign exchange is a matter of judgment. The impact of the exchange rate on trade is beyond doubt. It affects the purchasing power for imports, which means that the long-term standard of living for Australia has been significantly reduced and can only be justified by the prospect of a substantial increase in the economic activity of the export sector.

Other drivers for Australian companies to internationalise include:

(1) Innovative companies being awarded United Nations or similar sponsored contracts and realising that it is possible to compete in world markets.

(2) The economies of scale to justify research and development (for example, the making of successful TV and films for global audience.)

(3) Government changes of laws applicable to exporting goods and services. In the Australian case the GST (goods and services tax) was removed from goods and services exported from Australia.

(4) As large corporate clients become international, the services required by these clients increasingly require service providers to follow and ultimately expand to provide services to clients in the foreign country.

An example of an innovative Australian company is AWS Clinical Waste. This firm specialises in design, manufacture and installation of waste treatment systems. The company employs 8 people and produces revenue of AUD$4 million per year. The company won a contract from the World Bank for the supply of three "stand alone" systems for the treatment of medical waste in Bangladesh where there was a serious hazard caused by re-cycling of medical waste from landfills. The company now manufactures and exports fully automated and computer controlled waste treatment systems to other countries including the United States and Europe.

The Company successfully climbed "the Value Curve"- a term used by Bartlett and Ghoshal (2000) to describe the increase in the gross margin of profit when technological and marketing competency is applied to a product. AWS Clinical Waste advised other prospective exporters that factors to account for their continued success included:

- Quality of the work must be world best standard
- Act quickly on export opportunities
- Company executives should constantly visit overseas countries
- Company should sub-contract some aspects of its fabrication in the countries where the units will be installed
- Maintain a home base for research and development (R+D) and maintain control of the intellectual property.
- Maintain constant technical research into the treatment of chemical waste
- Research into allied areas- for example, the conversion of biological waste into power sources for remote areas.

- Export markets cannot be regarded as dumping ground for surplus products- you should focus on the future and accept that the market will be long term.

Profile of Australian Exporters

In addition to the drivers to internationalise, there is considerable room for improvement for exporters in Australia. By international standards, the number and volume of Australian exports to countries such as China are small but they remain significant in terms of future growth for small nations.

In a recently published survey of Australian businesses engaged in exporting, the Australian Bureau of Statistics (2000) noted that over a 4- year period from 1994/1995 to 1997/1998. Australia had 21,800 export businesses, representing 4% of total businesses. Of this total,

- small businesses (employing less than 20 persons) of which they were16, 600 (77%) were and they account for only 13% of total export revenue.
- large businesses, (of which they were 700) earned 49% of total export revenue,
- medium businesses employing 4,500 people (21% of total) and accounted for 38% of the total export revenue.

The same survey found that of the 21,800 exporting businesses,

- the vast majority, 17,800 (82%) exported goods compared to 4,000 (18%) who exported services. Not all firms were engaged in regular exporting.
- Only 7% of all businesses exported continuously over the four years of the survey.
- Exporters in large businesses were more likely to be regular exporters`, (54%) and only one-third of SMEs exported each year. (ACIB: 1999)

We may conclude that Australian SMEs do not earn as much export income as the relatively few large business. Possible explanations must consider the years, 1994-1998 as spanning the Asian currency crisis, the relatively high foreign exchange rate for the Australian dollar and the recession in Japan. It should be noted that genuine "breakthrough" products are usually created in small factories rather in established enterprises. While some small factories may abandon the opportunity to meet larger volumes of exports goods with the excuse that the demand could contract, most factories would fund ways to augment their production to meet the type of problem.

MODES OF ENTRY FOR DEVELOPING COUNTRIES

Bartlett and Ghoshal (2000) raise two fundamental questions to be answered by any company contemplating the export of goods or services.

- Why do companies from peripheral countries find it so difficult to compete against established multinational companies in Europe, Japan, and the United States

- It is still possible for small companies to develop from "bit" players to "stars" in international business

The authors explored these questions by examining some multinational companies that had successfully built lasting and profitable business from countries far from the heart of the global economy. (Australia is described as a relatively prosperous yet still peripheral nation). They showed that the companies who aspired to become multinationals in peripheral nations all start at the bottom of the "Value Curve" but most of the companies remain at this level. The authors stated that in general, the cause of failure was due to a "paralysis of will" where the managers either lack confidence in their organisation's ability to climb the "value curve" or lacked the courage to commit resources to an export environment accepting the challenge and ultimately succeeding. Even if the companies produced a world class product, the management was either unaware of the company's global potential or was too debilitated by self-doubts to capitalise on these products. Bartlett and Ghoshal (2000) show that "late entrants" can still succeed by bench marking the "first movers" and to manoeuvre around them to exploit niches overlooked by larger companies. Through cross-pollination of ideas, the small companies can compete successfully with established multinational companies.

While Bartlett and Ghosal (2000) considered small companies moving to become international companies, Yan (1998) considered reasons why some large companies which were established multinationals that had succeeded in other markets failed in the China market by making incorrect strategic decisions leading ultimately to total withdrawal.

Yan (1998) shows that many multinationals, when considering the China market, do not expect to make money in the short term but believe that it is critical to stay in the market in order to reap the early-mover advantage. He shows that short-term results are the better indicators of a successful strategy and concludes that if no positive short-term results are achieved, the critical mass required to make a business grow is not achieved and the overhead costs of the venture cannot be spread over a reasonable volume of the product, leading to ultimate failure.

Yan (1998) describes the decisions made by two successful multinational car-makers, Peugeot and Volkswagen, and their appreciation of the China market for the vehicles produced in factories in China. Volkswagen realised that while many people in China could not afford to buy a car, they could afford to use taxicabs. This insight pointed Volkswagen in the direction of better "back up" service and less price sensitivity on the purchase price. Peugeot followed a different strategy and ultimately withdrew from the market. It entered the China market at approximately the same time as Volkswagen by setting up a joint venture near Hong Kong. The market was, and still is, mainly for commercial vehicles such as taxis; Peugeot did not accept this market condition and tried to compete on areas other than extensive service. Peugeot never managed to develop an effective approach for commercial buyers and consequently it never generated the prices and profits needed to motivate distributors. "Without this high channel profit, Peugeot was unable to attract capable and aggressive distributors and could not develop a reasonable service network" (Yan: 1998:74). After 12 years in China, Peugeot withdrew entirely. Yan (1998) admits that Volkswagen built sustainable advantage in the market by attracting better management talent; he further

concluded that relationship building between all parts of the industry was of fundamental importance, as was the establishment of connections (guanxi) with political leaders.

CONSEQUENCES OF ENTRY INTO THE WRONG MARKET

Beer consumption in China in the year 2000 was estimated at 16 litres per person which is low by comparison with Britain (100 litres per person) and Germany (140 litres per person). The size of the beer market attracted the major multinationals which established "state of the art " breweries in China but with disappointing results. The multinationals (which included Fosters Breweries, the largest brewers in Australia) launched their global brands in the four major cities Beijing, Shanghai, Shengshen and Guangzhou. This market represented 5% by volume of the total beer sales in China in 2000. Yan (1998) described the way in which Anheuser- Busch achieved success in this small and very competitive markets by comprehensive research into the drinking habits of the potential customers both in their home environment and when they celebrate. The Chinese habits of drinking Premium beers differed significantly from the European or American ways. Before entering the China beer market, Anheuser-Busch had researched the drinking habits of the Chinese and had learnt that 70% of premium beer is consumed in restaurants and bars. Beer consumers in China choose to drink cheaper priced beer with their families but when drinking with friends in public places, they prefer premium - priced beers and like to share large bottles with their friends. Anheuser-Busch acted on this finding and sold its premium beer in 22-ounce glass bottles to satisfy this demand.

In 1998, Fosters, which had operated three under-utilised breweries in China, decided to cut its losses by selling two of its breweries, and operating only in Shanghai. The Shanghai brewery continued to suffer from under- utilisation of approximately 40%. Ultimately, Fosters withdrew completely from the China market.

South African Breweries (SAB) was one of the biggest brewing groups in the world and was attracted to the China market. Being a late entrant, SAB decided not to compete with the multinationals already established in the major cities and ultimately decided on a joint venture strategy with a Chinese partner but with SAB management control. A suitable joint venture brewery was located in Liaoning Province in the north-eastern region of China where there had been heavy engineering industries which had closed down after Central Government's subsidies were finished.

In Liaoning Province, the Government industries had been rationalised with the production of beer being assigned to the Shenyang Light Industry Bureau, a state - owned enterprise. SAB formed a joint venture partnership with Shenyang Light Industry Bureau to develop the existing brewery. The competitive advantage that SAB brought to the joint venture was the ability to keep production and quality high while maintaining its reputation for low operating costs. The other joint venture partner brought labour and some access to the Provincial Government who wished to retain as many jobs as possible in the province. There was some upgrading and expansion in the technology to assist the strategy of securing the dominant position for beer in the northeastern provinces before expanding into any other areas of China. The venture was expected to become at least self-supporting as soon as possible because the breweries in the northeastern provinces were now competing for funds from its parent

company against other parts of the SAB company wanting to explore other beer markets in Eastern Europe.

AN ENTRY STRATEGY FOR SMALL AUSTRALIAN COMPANIES

The traditional entry strategy for Australian businesses, and possibly for many others, has instinctively meant establishing offices in the provinces in coastal China. such as Shanghai or in Beijing.

Michael Porter (1990), a leading authority on international business strategy was recently interviewed in Sydney and discussed ways in which Australia could exploit its competitive advantages. Porter suggested that Australia already had groups of companies within the one industry that were forming clusters which ultimately create a critical mass that can set a global standard. The groupings vary from fragmented to highly concentrated but all have the common elements that there are high quality business relationships with a high level of trust and collective skills formation. Examples of these clusters are horse breeding, wine production, biotechnology and defence technology.

Further, recent research by Porter and Stern (2001) identified three elements in a nation's capacity to innovate. (1) An innovation infrastructure that sets the basic conditions for innovation; this would include people with appropriate educational levels and technical skills, adequate financial resources to support the applied research and development, and a public policy sympathetic to relatively long term research, tax incentives and the protection of intellectual property. (2) Geographical concentrations of interconnected companies that work in a general sense on the same research and development field. The authors show that innovation takes place disproportionately when companies work in clusters because of the quality of specialised inputs from researchers working on different aspects of the same general problem. (3) Linkages between the companies in the cluster; generally the linkages are the universities and local technical colleges that provide the bridging but can include the government research institutes such as the various division of Australian Commonwealth, Science and Industry Research Organisation (CSIRO)

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In Sydney during the past 20years, a loose grouping of companies has formed a cluster to solve and exploit the use of Australian hardwood timber. Entities involved in this grouping have included the faculties of engineering and architecture at the University of Sydney, the New South Wales State Government, (CSIRO) and the Commonwealth Building Research Station. It would seem that a successful entry strategy to China for an industry grouping based on housing and timber engineering could be achieved by following the example and to establish a cluster around building and timber engineering in the northwestern provinces of China.

A housing and timber engineering group would have expertise in the properties and technology of bricks, concrete, timber and steel as well as a comprehensive knowledge of heat transmission, building technology and the technology of paint. While it is not expected that all the above expertise would come as a "package deal" to a province, expertise in paint can be of immediate use to existing buildings and therefore this technology should start the process of creating the viable cluster. The city of Harbin has a University of Architecture and Engineering; it would seem that

this University should be involved in the Cluster because of its knowledge and experience of local conditions

The Northeastern region of China has timber resources that could complement the technological experience of timber engineering in Australia to build an industry for China based on timber such as timber trusses for domestic and light industrial roofing.

The improvement of living conditions in China is usually amongst the top preferences after a person has obtained stable employment. It would be expected that the improvements would start with refurbishment of the fabric of the existing dwelling and the most obvious and cheapest improvements would be to paint the dwelling. The technology of paint has been researched for many years in Australia. Paint to be applied to all surfaces and for all temperature conditions could be manufactured in Australia and exported to Heilong Jiang for sale in the cities. Not every paint is suitable for every application; it would therefore require suitable research at a University level in Heilong Jiang to initially determine appropriate types of paint suitable for extreme climates. It would also require training programs for the staff recruited in the province to advise on commercial applications of the paint. The technology for low cost housing would also be an appropriate research field for universities in both Heilong Jaing and Australia. It would be possible to second Australian researchers to work in the Universities in China by Government – to-Government initiatives concerning the establishment of cooperative research projects may provide better long term prospects for commercialising the outcomes.

Now that China has joined the World Trade Organisation, it would be possible to maintain outlets for the wholesale and retail paints as wholly owned subsidiaries of the Australian company. Bartlett and Ghoshal (2000) explain how long term ventures can fall apart due to an "asymmetry of interests or a shift in the power balance". The authors describe an example of a local agent switching alliances because of no direct investment in its own local sales and marketing capabilities; the overseas joint venture partner was powerless to respond. Whether justified or not, there is local resentment if the profits of an enterprise are repatriated to the home country of the multinational without any profits remaining in the provinces.

The successful multinationals emphasise the values of a long-term relationship and the building of trust between the parties; it would seem that a joint venture arrangement would be the preferred way to progress any business in China.

If the direct import of the paint from Australia was financially profitable, a factory should then be built so that some paints can be produced at the factories in China with other high quality paints being manufactured in Australia, thereby expanding employment in both countries. It is highly likely that there would be environmental conditions in the extreme cold that affect the paints. There should be research facilities within the schools of architecture and engineering at Universities in Heilong Jiang province to work on these problems either by sponsoring an academic from an Australian University for a short term appointment or Australian overseas aid assisting in the establishment of such a research faculty.

Australia has another competitive advantage: an excellent public University system in which many overseas students presently study for postgraduate degrees. Some of the

students choose to remain in Australia while others prefer to return to their home countries. Recruiting students who have finished their studies and intend to return to their home country would overcome the language barrier in the enterprise and would also engender friendly relations from the start of the enterprise.

Bartlett and Ghoshal (2000) state that companies moving from the periphery of the international world into the main stream of global competition had the following qualities in common:

- The lead was always from the top
- In each of the emerging multinationals studied, there were leaders who drove the company up the value curve.
- The leaders' commitment to global enterpreneurialism was rooted in an unshakable belief that their companies would succeed internationally- this meant that there were funds always available for the overseas section of the company.
- As the operations expanded, the companies all showed openness to new ideas that would facilitate internationalism.

If these qualities were accepted, more members of the clusters could move to Northeast China to increase the inter- relationships of cluster members in China and Australia.

CONCLUSION

Australia has a temporary competitive advantage because the Australian dollar has fallen to a very low value; we do not believe this low value is justified in which case the foreign exchange rate will rise as it is now occurring. It gives Australia a once-off opportunity to establish some niche markets in large markets such as China. The Central Government of China in addition, encourages foreign investment and development in the Regional Provinces where economic growth is much needed to sustain the urbanisation and industrialisation. We have argued that small economies such as Australian firms should consider the advantages of working collectively; industrial clusters need to look seriously to the future and invest with long terms strategies to grow their markets with high quality products and services in China. In addition to industrial development, we have also argued that university research academics, vocational training teachers from technical institutions professional engineers and architects need to work collaboratively to creatively invest in regional Chinese provinces. A change in mind-set may be necessary for Australian firms. In China, culture of collaboration, cooperation and investment are usually in the long term, 10 years or more. Short-term expectations of progress in China, its people and institutions are doomed to failure. It is "unchinese" to think in short terms.

If Australian firms fail to appreciate the complexities and commitment of time and financial resources, technology, educational and training resources required to develop long lasting and profitable entrepreneurial relationships with China and its people, an outstanding opportunity again would have been missed. It would be disappointing for Australia to pass by this opportunity to get in on 'the ground floor' with an integrated cluster involving building products, paint manufacturing and the home and industrial construction industry in China.

REFERENCES

Australian Centre for International Business (ACIB) (1999) *Australian Firms in China: Strategies for Success,* Business Report, Universities of Melbourne and New South Wales, Australia

Australian Bureau of Statistics and Australian Trade Commission (2000) *A Portrait of Australian Exporters: A Report based on the Business Longtitudinal Survey*, Canberra, and Australia.

Austrade (1994) *Intelligent Exports and the Silent Revolution in Services*, Sydney Australian Publishing Service.

Austrade (2001) *Export Statistics 2000-2001*, Canberra, Australian Publishing Service.

Brown, R (2002) *Clusters: Even the Stars Do It*, Australian Institute of Management, Sydney Australia.

Business Review Weekly (BRW) (2002) *"The Export Quest"*, 24-30 January, Fairfax, Sydney, Australia.

Business Review Weekly (2002) *How to Kick Global Goal*s, 28 March-3 April., Fairfax, Sydney, Australia.

Bartlett CA and Ghoshal S (2000) *Going Global: Lessons for the Late Movers"* Harvard Business Review, March-April 2000

Dernberger, R F (1999) *The People's Republic of China at 50: The Economy*. The China Quarterly, 1999, p 606-615

Department of Foreign Affairs: www.dfta.gov.au/geo/china/proc-bilat_fs.html

Department of Foreign Affairs (1997) *China's Transition Economy-Between Plan and Market*, Briefing Papers No 5, East Asia Analytical Unity, Canberra, Australia.

Harvie, C (Ed) (2000) Contemporary *Developments and Issues in China's Economic Transition*, Macmillan Press, and UK

Iredale Robyn (1999) *China's Labour Migration Since 1978*, in Harvie, C (ed) 1999, Contemporary Developments and Issues in China's Economic Transition, MacMillan Press, UK Chapter 9

Johnson, M F (1999) *Beyond Regional Analysis: Manufacturing Zones, Urban Employment and Spatial Inequality in China*, The China Quarterly, p 1-22

Porter, M E (1990) *The Competitive Advantage of Nations*, New York, Free Press.

Porter, M (2002) *Getting Clustered*, Interview with David James, Australian Institute of Management, Management Today, June, Sydney.

Porter, M and Stern, S (2001) *Innovation: Local Matters*, Sloan Management Review, Vol 42, Issue 4, Summer 2001

Wei Yehua (1998) *Economic Reforms and Regional Development in Coastal China*, Journal of Contemporary Asia, Vol 28, No 4, 1 p498-517

Wong, J (1998) *China's Post-Deng Xiaoping Economy: Problems and Prospects*, Institute of East Asian Political Economy, IUJ Research Institute Working Paper No 1, Singapore

Yan R (1998) *Short-Term Results: The Litmus Test for Success in China*, Harvard Business Review, September- October 1998.

TRAINING OF MANAGERS FOR ASSIGNMENT ABROAD

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ABSTRACT

The paper presents various approaches to studying cultures of different countries. The starting point is the Hofstede's dimensions of cultural values as well as Hall's approach to high- and low- context cultures. After that the interaction between culture and organizational behavior is discussed. A special attention to the impact of culture on motivation of employees, communication, conflict resolution and organizational changes is given.. The paper concludes with the presentation of some methods that can be applied with training of managers on various cultures.

1. INTRODUCTION

Companies of all sizes, large, medium and small, with facilities in foreign countries face the problem of training expatriate managers besides the problems of their selection, compensation as well as reintegration. Since such managers can contribute a lot to the achievement of the companie's goals, their significance should not be neglected.

Once a manager that will conduct the business of the company abroad has been selected, it is necessary to prepare him for the coming assignment. As the manager already has job-related skills, such preparation is ussually focused on cross-cultural training. The future expatriate manager has to be acquainted with the culture of the host country before his departure in order to behave appropriately. Hence, he has to get to know different types of behaviors and interpersonal styles considered acceptable, both in business meetings and social gatherings in the new work environment. Besides, the expatriate manager must learn to communicate accurately in the new culture.

In the paper the author will first present various approaches to studying cultures of different countries. She will start with the Hofstede's dimensions of cultural values as well as Hall's approach to high- and low- context cultures. Then she will turn her attention to the interaction between culture and organizational behavior. She will present the impact of culture on motivation of employees, communication, conflict resolution and organizational changes. She will conclude the paper with the presentation of some methods that can be applied with training of managers on various cultures.

2. APPROACHES TO THE STUDY OF CULTURE

Researchers have developed various frameworks to classify the cultures of the world (cf. Darlington, 1996 for a review). Their models suggest what the approximate values of people in a particular culture will be. But they cannot predict what any one individual's constillation of values will be—not everyone in a particular culture believes or behaves in the same way. Sometimes, there is greater variation within single cultures than across cultures.

2.1. Hofstede's definition of culture

Hofstede specifically focused his attention on work related values in his study of culture. He collected data from IBM employees from 40 countries. In analyzing the data from more than 116,000 employees, Hofstede extracted four dimensions of values to explain the differences among cultures and then later added a fifth. Although his data was collected in the 1970s, several recent studies and data from outside Europe, have generally confirmed Hofstede's findings, with minor additions or differences (Chinese Culture Connection, 1987; Darlington, 1996; Hoppe, 1990; Smith, 1996; Trompenaars, 1993). Some substantial differences have also been cited when alternate methods are used or some non-European cultures are surveyed (e.g., Pearce and Osmond, 1999).

According to Hofstede (1980, 1991) cultures can be compared and classified on the basis of five different dimensions that affect behavior, organization practices, and social practices such as marriages, funerals, and religious ceremonies:

- Individualism – collectivism
- Power distance
- Uncertainty avoidance
- Masculinity – femininity
- Short term – long term orientation

The first dimension refers to whether individual or collective action is the preferred way to deal with issues. In cultures oriented toward individualism – such as the USA, the UK, and Slovenia – people tend to emphasize their individual needs and concerns and interests over those of their group or organization. The oposite is true in countries which score high on collectivism, such as, Asian countries such as Japan and Taiwan. In a collectivistic society, one is expected to interact with members of one's group. It is almost impossible to perceive a person as an individual rather than one whose identity comes from groups with which that individual is associated (Brislin 1993).

The second dimension—power distance—is connected with the differences in power and status that are accepted in a culture (Zenko, 1999). Some nations accept high differences in power and authority between members of different social classes or occupational levels while other nations do not. For example, the French are relatively high in power distance; Israel and Sweden score very low. In Israel and Sweden, worker groups demand and have a great deal of power over work assignments and conditions of work (Adler, 1991). French managers tend not to interact socially with subordinates and do not expect to negotiate work assignments with them.

The third dimension, uncertainty avoidance refers to a relationship of a particular culture to the uncertainty characteristic of the future. Societies high in uncertainty avoidance tend to prefer rules and operate in seemingly predictable situations as opposed to situatiuons where the appropriate behaviors are not specified in advance. Those with high uncertainty avoidance prefer stable jobs, a secure life, avoidance of conflict, and have lower tolerance for deviant persons and ideas. Japan scores higher than the USA on uncertainty avoidance while both score higher than Sweden. This means that, for instance, in Japan there is far less tolerance for deviations from accepted behavioral practices than in the USA, while Sweden is generally considered to be a very tolerant society (Tosi, Mero, Rizzo, 2000).

The masculinity-femininity dimension of a culture refers to the degree to which values associated with stereotypes of masculinity (such as aggressiveness and dominance) and femininity (such as compassion, emphaty, and emotional openess) are emphasized. High masculinity cultures such as Japan, Germany, and the USA tend to have more sex-differentiated occupational structures with certain jobs almost entirely assigned to women and others to men. There is also a stronger emphasis on achievement, growth, and challenge in jobs (Hofstede, 1991). In these cultures, people are also more assertive and show less concern for individual needs and feelings, a higher concern for job perfomance and a lower concern for the quality of the working environment. In countries high on the feminine dimension such as Sweden and Norway, working conditions, job satisfaction, and employee participation are emphasized.

The very last among mentioned dimensions stem from the philosophy of the Far East and was added by Hofstede following the findings of the Chinese Culture Connection (1987). This dimension reflects a culture's view about the future. The short-term orientation, a western cultural characteristic, reflects values toward the present, perhaps even the past, and a concern for fulfilling social obligations. Long-term thought patterns, characteristic of Asian countries, reflect an orientation toward the future, belief in thrift and savings, and persistance. In countries with a long-term orientation, planning has a longer time horizon. Companies are willing to make substantial investments in employee training and development, there will be longer-term job security and promotions will come slowly.

2.2 Hall's cultural model

An American anthropologist Edward T. Hall used the concept of context to explain differences in communication styles among cultures. According to Hall, the context is »the information that surrounds an event; it is inextricably bound up with the meaning of that event« (Hall and Hall, 1995). He categorized cultures on a scale from high- to low-context. In Table 1 examples of countries with a high- and low-context communication style are presented.

Table 1: High- and Low-Context Countries (Hall, Hall, 1995)

High-Context	Low-Context
China	Australia
Egypt	Canada
India	Denmark
France	England
Italy	Finland
Japan	Germany
Lebanon	Norway
Saudi Arabia	Switzerland
Spain	United States
Syria	Sweden

In a high-context culture it is characteristic that most of the information is either in the physical context or internalized in the person, while very little is in the coded, explicit, transmitted part of the message. In Saudi Arabia, for example, family, friends, coworkers, and clients have close personal relationships and large information networks. Because of this, people in high-context cultures know a lot about others within their networks. They do not require extensive background information. In these cultures, people do not rely on language alone for communication. Tone of voice, timing, facial expression, and behaving in ways considered acceptable in the society are oft used tools for communicating messages.

In low-context cultures the mass of the information is vested in the explicit code. People in Switzerland, for example, separate their lives into different aspects such as work and personal lives. Therefore, when interacting with others, they need to receive more detailed information.These cultures depend on the use of words to convey meaning. Expressing complete, accurate meaning through appropriate word choice is important.

3. THE CONNECTION BETWEEN CULTURE AND ORGANIZATIONAL BEHAVIOR

As communication technologies advance and countries become more closely linked through trade, more information about other cultures becomes available. Products are sold worldwide and in some cases marketed in the same way everywhere.

In Slovenia, as well as in other countries in the world, we can find someone eating a McDonald's hamburger while dressed in Levis jeans, sitting in a Honda filled with Shell gasoline. Because of this, some might say that cultures are becoming more alike and that the study of culture is therefore irrelevant. However, a closer look at what seem to be cultural universals reveal many differences. Having a McDonald's hamburger in Moscow or Beijing is somewhat trendy and the cost is well above average. In Washington, DC, eating at McDonald's is a mere convenience as well as one of the cheapest meals available.

On another level, the effect of cultural differences can be clearly seen. Ethnic conflicts continue to flare around the world. These conflicts often result from attempts to maintain distinct cultural identities. Culture, although not the only variable of

importance, contributes significantly to explaining key differences in societal behavior. With an appreciation of the role of culture in organizations comes a better understanding of management and organizational behavior around the world.

3.1. Differences in cultures and motivation

The culture of a country or region in which the organizations function influences the way of motivating employees a great deal. In collective countries, such as Japan, giving an individual reward to an employee could embarrass the recipient and thus be demotivating. In high-context collective cultures there are often expected norms of behavior for particular situations. Offering rewards for individual behavior that runs counter to group norms is unlikely to have a positive influence on motivation.

Hofstede's masculinity versus femininity dimension also suggests what could be rewarding for different societies. If a culture is masculine, people prefer to receive money, titles, or other materialistic or status-oriented rewards. In a feminine society, meaningful rewards are time off, improved benefits, or symbolic rewards.

In some countries, the perception of material items is as gifts rather than as rewards for performance. In China for example, organizations often distribute food to all employees as holiday gifts. People in higher positions get more or better quality items, but employees make no connection between their performance and the gifts.

Factors that motivate employees in organizations do not diverge only as regards cultures, but differ quite often within the particular culture. Which rewards are cherished by employees in Slovenia or Croatia does not only reflect the culture of Slovenes or Croats but also depends on other factors, such as age, gender, education, organizational level and tenure of the employees.

3.2. The effect of the culture on communication process

People in different cultures communicate among themselves differently. The major differences in how people from different cultures communicate with each other are language usage, verbal style, and nonverbal communication.

Two people may speak the same language but speak it quite differently. For example, people from the United States and England both speak English, but the meaning of certain words is quite different, sometimes even opposite, in the two countries.

Verbal communication styles are another way for cultures to vary in their communication patterns. In cultures employing a direct style the speaker tries to convey his true feelings through the choice of words. In the indirect style, the speaker selects words to hide his real feelings. For example, North Americans using the direct style say, »No« or »I can't do that« if they are unable to make a particular deal. In contrast, a Korean speaker might say, »It might be possible«, or »It's interesting in principle«, rather say »no« directly. The direct style is common in individualistic, low-context cultures, and the indirect style in collective, high-context cultures. The direct style allows the individualist to express his own ideas clearly. The collectivistic orientation is to maintain group harmony and concern for the feelings of others.

Culture also has quite a strong impact on nonverbal communication which may be expressed through facial expression, gestures, eye contact and posture. For example, the smile usually indicates happiness or pleasure, but for Asians, it can also be a sign of embarrassment or discomfort (Samovar, Porter, 1991). The level of gesturing in Italy, Greece, and certain Latin American countries is so high that people appear to be speaking with their hands. For Chinese and Japanese speakers, using gestures is less common. Greeting gestures also differ. In a business situation, North Americans shake hands, Japanese bow, and Middle Easterners of the same sex kiss on the cheek (Abbasi and Holman, 1993).

3.3. The impact of culture on conflict resolution

The way people sense conflicts varies widely with culture. Intercultural communications expert Stella Ting-Toomey has developed a theory of culture and conflict that explains cultural differences using Hall's low-and high-context framework (Gundykunst and Ting-Toomey, 1988; Hall, 1976).

According to this theory people in low-context cultures see conflict as instrumentally oriented. These cultures view the world in analytic, linear logic terms, and separate issues from people. Public disagreements are acceptable, people can have a conflict and still maintain a friendly relationship afterwards. In a high-context culture, conflict is expressive oriented. People in these cultures do not separate person from issue. Open disagreement and public confrontation are highly insulting and cause both parties involved to »lose face«.

In either type of culture, conflicts develop for different reasons. In low-context cultures there is less specification of appropriate ways to behave. Conflict often arises because one party violates the other's expectations. In the high-context culture, which has more specific rules of behavior, conflict usually occurs when a person violates cultural expectations.

The third aspect of the conflict situation refers to the behavior of people involved in the conflict. In the low-context culture, people are oriented toward action. This results in a direct, confrontational response to conflict, with all parties wanting a quick resolution. In the high-context setting, the attitude toward conflict is evasive and nonconfrontational, leading to an indirect, inactive approach. This often results in avoiding or ignoring the conflict.

3.4. National culture and organizational change

Cultures vary in their receptivity to change. Some cultures change slowly and actively resist change – even to the point of attempting to prevent outside influences – because they value traditional behavior. Other cultures embrace change but, on occasion, significant segments of their population attempt to reestablish traditional values and behavior and view progress as a threat. Yet other cultures are ambivalent toward change and simultaneously embrace, resist, and fear it (Treven, 2001).

One way to understand a culture's relationship to change is its orientation toward time (Trompenaars, 1993). Some cultures are past oriented, view tradition and history as important, and interpret the present through the lens of ancient principles, customs,

and texts. Other cultures are present oriented and focus on the moment. For these societies, history is relatively unimportant and the future is not of great concern. Finally, some cultures are future oriented and emphasize planning and future achievements. In these societies, progress is a central theme, the fate of future generations is a concern, and there is belief that rational thought can guide human action. Traditional cultures with a past orientation resist change, whereas cultures with a present-orientation display either ambivalence or reluctant acceptance of the new. Cultures with a future orientation tend to view change as desirable and, to some extent, inevitable.

Even present, and future-oriented societies experience resistance to change. To some extent, for all cultures, resistance to change is attributable to the uncertainty associated with change, including the awareness that change is not always improvement and can produce unintended consequences or reverse results with negative outcomes. It is important for managers to understand sources of resistance to change so they can anticipate and reduce them. Tradition, habit, resource limitations, threats to power and influence, and fear of the unknown, are forms of resistance to change found in all societies.

4. TRAINING OF EXPATRIATE MANAGERS

In the previous chapters we have already mentioned that expatriate managers are more successful if their organizations provide appropriate training for their work and life abroad. Lack of training or its absence may result in a failure of their assignment in a foreign country.

The most important aspect of expatriate training is cross-cultural training. It prepares expatriate managers to live and work in a different culture. For the expatriates coping with a new environment is a much greater issue than dealing with a new job. A variety of training methods can be applied with cross-cultural training. In Table 2 some of the popular ones are presented together with a brief description of each.

Table 2: Cross-cultural training methods

Cultural Briefings	Explain the major aspects of the host country culture, including customs, norms, values, traditions.
Area Briefings	Explain the geography, history, economy, law, politics and other general information about the host country.
Role Playing	Allows the trainee to act out a situation that he or she might face in living and working in the host country.
Cases	Portray a real-life situation in business or personal life to illustrate some aspect of living or working in the host culture.
Culture Assimilator	Provides a written set of situations that the trainee might encounter in living or working in the host country.
Field Experiences	Provide an opportunity for the trainee to go to the host country or another unfamiliar culture to experience living and working for a short time.

An organization can choose the most appropriate method for training, applying three situational factors of the expatriate's assignment (Black, Mendenhall, 1989):

- culture novelty,
- degree of interaction with host country nationals,
- job novelty.

Culture novelty refers to the difference between the new culture and the expatriate's home culture. The degree of difference can be measured by comparing the cultures by means of models, such as Hofstede's or Hall's, that were discussed in chapter 2 of our paper.

The degree of interaction with host country nationals refers to how often and at what level the expatriate manager communicates with locals. Last but not least job novelty involves the new job demands, including expectations, job constrains and the degree of autonomy.

5. CONCLUSION

In a modern, increasingly interdependent world, studying culture is essential for managers. They have to think globally, notwithstanding the country they live in. No matter what their company produces or to what market it sells the products it will encounter global competition everywhere. Even in the small nation of Slovenia, which has a lot of companies that successfully meet the needs of people for various products and services, we can observe an ever increasing occurance of foreign competition on the domestic market. As recently as 1999, for example, companies from abroad, such as OBI, Baumax and Intespar, built three modern shopping centers in Maribor, the second biggest town in Slovenia.

It is important for managers to study other cultures also because their competitors, suppliers, shareholders, or employees may come from other cultures. In developed countries – of which Slovenia would be one -- there are also an increasing number of immigrants and guest workers bringing their own cultures into their new homes. Managers have to be able to integrate them into the new work environment. Hence, it is necessary for managers to know their culture as well as to understand their way of life. It is cross-cultural training that gives them such knowledge.

REFERENCES:

Abbasi S.M., Hollman K.W.: Business Success in the Middle East, Management Decision, 31(1), 1993, 55-59.

Adler N.J.: International Dimensions of Organizational Behavior, PWS-KENT, Boston, 1991.

Black J.S., Mendenhall M.: »A Practical but Theory-Based Framework for Selecting Cross-Cultural Training Methods«, Human Resource Management, 28, 511-39, 1989.

Brislin R.: Understanding Culture's Influence on Behavior, Harcourt Brace Jovanovich, Fort Worth, 1993.

Chinese Culture Connection, »Chinese Values and the Search for Culture-Free Dimensions of Culture,« Journal of Cross-Cultural Psychology, 18, 143-164.

Darlington G. Culture: A Theoretical Review, In Joynt P. and Warner M. (eds.), Managing Across Cultures, International Thomson Business Press, London, 33-55, 1996.

Gunykunst W.B., Ting-Toomey S.: Culture and Interpersonal Communication, Sage, Newbury Park, California, 1988.

Hall E.T.: Beyond Culture, Anchor Press, Garden City, New York, 1976.

Hall E.T., Hall M.R.: Key Concepts: Underlying Structures of Culture. In Lane H.W., Di Stefano J.J., Maznevski M.L.: International Management Behavior, Blackwell Publishers, Cambridge, Massachusetts, 1995.

Hofstede G: Culture's Consequence, Sage, Newbury Park, California, 1980.

Hofstede G.: Cultures and Organizations, McGraw-Hill, London, 1991.

Hoppe M.H. A Comparative Study of Country Elites: International Differences in Work-Related Values and Learning and their Implications for Management Training and Develoment, unpublished PhD thesis, University of North Carolina at Chapel Hill, 1990.

Pearce C.L and Osmond C.P. »From Workplace Attitudes and Values to a Global Pattern of Nations: An Application of Latent Class Modeling,« Jorunal of Management, 25, 759-778, 1999.

Samovar L.A., Porter R.E.: Communication Between Cultures, Wadsworth, Belmont, California, 1991.

Smith P.B. »National Cultures and the Values of Organizational Employees: Time for Another Look,« in Joynt P. and Warner M (eds.), Managing Across Cultures, International Thomson Business Press, London, 92-102, 1996.

Tosi H.L., Mero N.P., Rizzo J.R.: Managing Organizational Behavior, Blackwell, Cambridge, Massachusetts, 2000.

Treven S.: Organizacijsko vedenje – mednarodni pristop, Gospodarski vestnik, Ljubljana, 2001.

Trompenaars F.: Riding the Waves of Culture: Understanding Diversity in Global Business, Irwin, New York, 1993.

Zenko Z.: Comparative analysis of management models in Japan, United States of America, and Western Europe : doctoral dissertation, Ekonomsko-poslovna fakulteta, Maribor, Slovenia, 1999.

ELECTRONIC COMMERCE AND MARKET FOCUS: SOME FINDINGS FROM A STUDY OF SWEDISH SMALL TO MEDIUM ENTERPRISES

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ABSTRACT

In the past, organisations relied on traditional quantitative metrics, such as return on investment (ROI) to make decisions when investing in technology. With the advent of electronic commerce (EC), these decisions are becoming less reliant on ROI measures. Instead different driving forces are taking precedence in the decision making process. This paper presents the findings of a study of 118 Swedish small to medium enterprises (SMEs) that have adopted EC. The results of the study suggest that improvements to customer service, internal efficiency and organisational competitiveness have become equally important when making EC investment decisions. The study also examined whether major market focus (local, regional, national or international) had an influence on the organisation's decision to adopt EC. Findings indicate no associations between the market focus and the driving forces, however the existence of a fully developed plan for EC adoption and the size of the business were found to be highly associated with the development of new markets as an EC adoption criteria.

INTRODUCTION

The advent of electronic commerce (EC) has led to changes in the day-to-day procedures of organisations (Kuljis et al, 1998). Technology is no longer viewed as a set of stand alone systems, but has become fully integrated with the overall organisational strategy (Turban et al, 2000; Raisch, 2001; Porter, 2001; Rajkumar, 2001). Organisations that have adopted EC or are in the process of considering this type of information technology (IT) investment, have found that traditional return on investment (ROI) calculation methods are not sufficient for the purpose of accurately measuring IT payback (Moozakis & Lewis, 2000; Lewis, 2000a; Violino, 2000b). This has led organisations to use alternative evaluation methods and different sets of organisational criteria against which to measure investments in IT. This is particularly relevant to the small to medium enterprise (SME) sector where changes brought about by the advent of EC are having a significant impact.

This paper begins by briefly examining some of the changes brought about by the advent of EC, in particular changes to the metrics used by organisations when considering investment in EC technology. This is followed by a discussion of the nature and internationalisation of SMEs, in particular their approach to the acquisition, investment and use of EC technology. The paper then presents a study of 118 Swedish SMEs which investigated the major reasons behind their adoption of EC. The study also examined whether the respondent SMEs' major market focus (local, regional, national or international) influenced their decision making in the EC adoption process. Finally, the study endeavoured to ascertain whether factors such as the size of the business or the existence of a fully developed plan for the acquisition of EC were associated with the importance of reaching new markets as a criterion for EC adoption.

EC TECHNOLOGY DECISION MAKING PROCESSES

Organisations have encountered different problems in attempting to formally measure the adoption and profitability of IT investments in EC. A number of authors (Kollman, 1998; Dugan, 1999; Hlava, 1999; Wilder, 1999; Violino, 2000a; Cameron, 2000) have argued that with the advent of EC, traditional measurements have become obsolete or invalid. Some of the problems associated with traditional metrics include the inability of accounting for hidden costs and intangible strategic benefits of EC and the necessity of constantly revising evaluation methods in line with the fast pace of IT developments. Conventional ROI calculations fail to alleviate these problems. Moozakis and Lewis (2000) argue that this is due to the lack of product tangibility and an increase in virtual organisational structures, developments that are in direct contrast to the formal, material nature of ROI measurements.

There have been diverse attempts to apply different forms of evaluation methods and calculations in order to gauge the payback of IT investments. Indeed, Wilder (1999:48) reports that many organisations are "tossing out conventional thinking about the need for a return on investment and focusing on how the initiatives advance their overall business strategy whether it's to improve customer satisfaction, increase brand awareness, or open new sales channels". Organisations have begun to rely on in-house, as well as off-the-shelf products for this purpose (Moozakis & Lewis, 2000). Some of the evaluation criteria used by organisations include improvement in lead time (Riemenschneider & Mykytyn, 2000), development of new markets (Wilder, 1999), improved relationships with business partners (Korchak & Rodman, 2001) and improved marketing (Cameron, 2000), while the methods employed range from identifying sources of sales revenue generated through and attributable to EC and customer satisfaction surveys (Violino, 2000a; 2000b) to measuring the IT performance of an EC website as a whole, operational cost savings, observing customers' surfing and online purchasing habits to expand marketing strategies, determining the revenues generated during off-business hours, counting online transactions and the number of online visitors (Lewis, 2000), as

well as benchmarking against competitors. Where these methods fail, they are replaced by the instincts and experience of managers and decision makers (Violino, 2000a). Not surprisingly, some organisations have begun viewing EC outlays as absolutely necessary, regardless of cost, in order to remain competitive (Quinn, 2000). Cameron (2000) further confirms the abandonment of formal ROI calculations by stating that IT projects and investments can be justified for any number of reasons, without ever measuring any form of ROI, highlighting the importance placed on EC in the modern organisation. However, Evans (2001) argues that before EC can achieve any impact it must first be fully aligned and integrated with the overall strategy of the business. Indeed, Brynjolfsson and Hitt (1998) assert that EC cannot exist without investment in organisational change. The study presented in this paper has focused on SMEs, therefore it is now appropriate to examine the nature and internationalisation of SMEs, in particular their acquisition and use of IT and EC technology.

THE NATURE OF SMALL BUSINESS

The special circumstances of small business have been the topic of many government committee findings as well as research initiatives. Barnett and Mackness (1983) suggest that small businesses should not be thought of as miniature versions of large businesses, but quite unique in their own right. Small business tends to be more risky than its larger counterpart (Brigham & Smith 1967; Walker 1975), it is subject to higher failure rates (Klatt 1973; Cochran 1981) and tends to keep less adequate records (Markland 1974; Rotch 1987).

Reynolds et al (1994) provide the following summary of features of small business generally not shared by larger organisations: a small management team; strong owner influence; multi-functional management; a close and loyal work team; centralised power and control; lack of specialist staff; informal and inadequate planning and control systems; lack of promotable staff; lack of control over the business environment; limited ability to obtain finance; labour intensive work; limited process and product technology; narrow product/service range, limited market share and heavy reliance on few customers; intuitive rather than rational decisions; reactive rather than innovative responses to change; personal rather than tasks oriented leadership; practical but narrow education, experience and skills; low employee turnover; product dedication rather than customer orientation; reluctance to take risks; management heavily swayed by the owner's personal idiosyncrasies; strong desire for independence; and intrusion of family interests.

In line with general views concerning small business, the acquisition and subsequent use of computer technology in the small business environment cannot simply be considered a miniaturised version of the larger organisation. Clearly, many of the features gleaned from studies of larger businesses can be applied to small business. However, the nature of small business operations presents a variety of factors which must be considered when computer technology is acquired in the small business environment. Increasingly, the acquisition of EC technology in particular has also meant increased global exposure for SMEs. This trend will be briefly discussed in the next section.

INTERNATIONALISATION OF SMEs

It is now widely acknowledged that the Internet has changed the way SMEs do business by revolutionising the dynamics of international commerce and enabling cross-border information flows and transactions (Quelch & Klein, 1996). One of the main uses of the Internet has been for globalisation, allowing SMEs to achieve rapid growth and internationalisation (Ellsworth and Ellsworth, 1997). The creation of global markets and the advent of EC have brought about a new set of opportunities and challenges to SMEs (Raymond, 2000; Nielson & Morris, 2001; Quelch & Klein, 1996). Quelch and Klein (1996) argue that the Internet will cause a reduction in global advertising costs and increase advertising efficiency, erode the competitive advantages of scale economies,

decrease information dissemination and communication costs by abolishing geographical and temporal barriers allowing SMEs to reach critical masses of customers. In order to achieve this low cost access to global markets and customers, SMEs have had to invest in and acquire EC. It is now appropriate to examine EC acquisition by SMEs, in particular the criteria used by SMEs for EC adoption, as well as the effect, if any, of potential globalisation.

ACQUISITION OF IT AND EC BY SMEs

There have been many studies, over the years, investigating the acquisition and use of both IT and EC by SMEs. These studies have often been directed towards trying to determine the IT success in SMEs. In the past, many of the studies tended to be directed towards specific sectors of the SME: users, vendors, management (see Schultz et al, 1984; McDoniel et al, 1993). User-oriented issues included perceptions and expectations of IT, user involvement, acceptance and training. Investigators have studied the impact of users' beliefs and attitudes on their usage behaviour (Robey, 1987; Ginzberg, 1982; Ives et al, 1983), and how these internal beliefs and attitudes are, in turn, influenced by various external factors including the system's technical design characteristics (Gould et al, 1983 and Dickson, Desanctis & McBride, 1986 cited in Ditsa, 1994); user involvement in system development (Baroudi et al 1986; Tait & Vessey, 1988; Amoako-Gyampah & White, 1993; Burton et al, 1993); the type of system development methodology used (Alavi, 1984); the nature of the implementation process (Ginzberg, 1978); and cognitive style (Szajna & Scamell, 1993). On the other hand, 'vendor' studies have concluded that ongoing success with IT was positively associated with vendor support, vendor after sales service, vendor training and vendor expertise (see Yap et al, 1992; MacGregor & Cocks, 1995; MacGregor et al, 1995). Finally, management involvement in the acquisition of IT by SMEs has been reported by Bergeron et al (1990), Jarvenpaa and Ives (1991), and Fink and Tjarka (1994). More recently, however, studies surrounding the adoption of both IT and EC (see MacGregor & Bunker, 1996a; ibid 1996b; Thong, 1999, Bunker & MacGregor, 2000; Mirchandani & Motwani, 2001) have suggested the need to look at the driving forces or criteria behind EC adoption in relation to the overall strategy of the SME rather than simply relating the driving forces to specific sectors.

In a study of 308 CEO's, Riemenshcneider and Mykytyn (2000) nominated a variety of reasons, which they termed 'Most Important Things' that prompted SMEs into the adoption of EC. These included reduction of costs, increased productivity, faster feedback of information and access to customers. A similar study of the Asia Pacific region by PriceWaterhouseCoopers (1999), as well as studies by Fuller (2000) and Kendall (2000) suggested factors such as improved customer service, customer information exchange, improved competitiveness, increased revenue, attracting new investment and access to international markets as reasons put forward by SMEs for their adoption of EC. Access to new markets and global customers has, in fact, been singled out by various authors as one of the most important driving forces behind EC adoption and use by SMEs.

A National Small Business United and Arthur Andersen survey of SMEs in 1997 indicated that 86.7% of the respondents that had a website used it to reach new customers, while 30.4% had a website to support global expansion. In 1996, the same survey reported that only 8% of the respondents had home pages on the Web and more than 77% did not use the Internet to conduct business. Clearly, claims that EC is changing the way SMEs view globalisation and competition (Poon 2000) are legitimate. In fact, the same survey in 1998 reported that SMEs viewed the Internet as their most favoured growth strategy in the next 12 months.

Adopting EC and developing an online strategy has enabled SMEs to expand their customer base globally (Tetteh & Burn, 2001; Maloff, 1995) and reach markets and customers that were once unreachable (Shewmake & Sapp, 2000; Bennett, 1997) allowing SMEs to compete locally, nationally and internationally. Quelch and Kelin (1996) argue that EC will lead to rapid intemationalisation of

SMEs. It has also been argued that the Internet might decrease export barriers faced by SMEs (Bennett, 1997; Hamill, 1997). Bennett (1997:327) argues that "… the use of the Internet for global marketing enables firms to leapfrog the conventional stages of internationalisation, as it removes all geographical constraints, permits the instant establishment of virtual branches throughout the world, and allows direct and immediate foreign market entry to the smallest of businesses". Finally, a study by Poon and Swatman (1997) suggests that SMEs believe it is cheaper to compete globally through the Internet. The implications of this are significant.

A research study of Swedish SMEs which aimed to investigate the relationship between organisational factors and driving forces or criteria for EC adoption by SMEs will now be described. The study also examined whether the major market focus of SMEs (local, regional, national or international) was associated with any of these driving forces.

SURVEY INSTRUMENT

A questionnaire was developed for SME managers. A series of factors termed 'driving forces for the adoption of EC' were developed. The inclusion and exclusion of factors was based on previous studies, in particular those carried out by PriceWaterhouseCoopers (1999) and Riemenschneider and Mykytyn (2000). Only those factors which were reported as having a greater than 50% response as important were included in the survey instrument. The factors included in the questionnaire were: customer demand, pressure by competition, pressure by suppliers, reduced cost, improvements to customer services, improvements to lead time, increased sales, improvements to internal efficiency, improved relationships with business partners, development of new markets, improved organisational competitiveness, improved marketing, improved internal control of the business

Respondents were asked to rate each of these factors as pertaining to their adoption of EC across a 5 point Lickert scale where 1 indicates that the factor was unimportant to the decision to adopt EC, 2 indicates little importance to the decision to adopt EC, 3 indicates some importance to the decision to adopt EC, 4 indicates the factor was quite important to the decision to adopt EC and 5 indicates it was of greatest importance to the decision to adopt EC. Respondents were also asked about their market focus (local, regional, national or international), whether a full enterprise wide plan had been developed and documented for the use of EC within the organisation and the size of the business (sole entrepreneur, 1-9, 10-19, 20-49, >50). Questionnaires were distributed to SMEs around the four regional areas of Sweden: Karlstad, Filipstad, Saffle and Arvika.

ANALYSIS OF RESPONSES

A total of 1170 questionnaires were distributed. Responses were obtained from 260 SME organisations giving a response rate of 22.2%. Of the 260 responses, 118 indicated that they were using EC in their day-to-day business activities. The respondent group covered retail, industrial, service and financial sectors. 96% of the respondents had been in business for more than 2 years. 92% of respondents indicated that they had been using some form of IT for at least the last 2 years. Table 1 provides the overall responses for the major driving forces behind the adoption of EC. Some respondents did not complete the questionnaire fully. This was taken into account in the statistical analysis.

Table 1
Factors which were the major driving forces behind the adoption of EC

	No importance	Little importance	Some importance	Very important	Greatest importance
Customer demand	48	25	20	19	6
Pressure by competition	36	20	32	19	9
Pressure by suppliers	57	23	19	13	3
Reduced cost	13	12	28	37	27
Improved customer services	6	1	16	43	52
Improvement to lead time	29	14	23	30	19
Increased sales	17	13	35	25	26
Improved internal efficiency	6	2	20	54	39
Development of new markets	18	15	21	33	30
Improved competitiveness	13	5	18	41	39
Improved marketing	24	8	21	30	33
Greater control of business	25	16	28	29	19
Improved relationships with business partners	16	11	32	39	19

A series of chi-square tests were carried out to determine whether the major market focus was significantly associated with the rating of any of the driving forces or criteria behind EC adoption. The results indicate that the major market focus was not associated with any of the driving forces. However, the existence or non existence of a fully developed plan for EC and the size of the business were associated with the development of new markets as a driving force behind EC adoption. This is indicated in Table 2 and Table 3 respectively.

Table 2
Rating of the importance of developing new markets as a criteria for the adoption of EC

	No importance	Little importance	Some importance	Very important	Greatest importance
Fully developed plan	7	13	15	24	22
No plan	10	0	6	6	5
(p < .005)					

Table 3
Rating of the importance of developing new markets as a criteria for the adoption of EC

No of employees	No importance	Little importance	Some importance	Very important	Greatest importance
0	4	1	0	3	1
1 – 9	8	3	9	8	21
10 – 19	1	1	6	8	5
20 – 49	1	4	5	8	1
> 50	4	6	1	6	2
(p < .001)					

DISCUSSION

Before examining the data in detail, it is interesting to note that of the 260 respondents, only 118 (45.4%) indicated that they are using EC in their day-to-day business activities. This will be the subject of a study to be produced by the authors.

A number of authors and studies (Wilder, 1999; PriceWaterhouseCoopers, 1999; Violino, 2000b; Riemenschneider & Mykytyn, 2000) have suggested that factors other than strict ROI are being used by SMEs as criteria to be considered for the adoption of EC. A closer examination of Table 1 would tend to support this, at least amongst the respondent group. While reduction of cost was seen as important as a criterion for the adoption of EC, by far the strongest reasons appear to be improvements to customer services, improvements to internal efficiency and improvements to organisational competitiveness. While these figures do not actually reject ROI, they suggest that for SMEs, ROI is only one of several factors that need to be taken into consideration when adopting EC.

The InformationWeek Research Global IT Strategies 2001 study found that organisations which are classified as export leaders are more likely to invest in leading edge IT (cited in Thyfault, 2001). According to this study, most export leaders invest in e-business which results in higher percentages of their revenue coming from global sales. However, the results of the survey presented in this paper indicate that major business market was not significantly associated with any of the driving forces behind EC adoption. Export SMEs in Sweden were no more likely to adopt EC than SMEs operating locally and nationally. Several reasons have been put forward by different authors for SMEs' lack of interest in exporting and international markets. Nielson and Morris (2001) suggest that, despite the opportunities afforded by EC, SMEs still face traditional problems including poor transport and distribution networks, inefficient customs procedures and barriers to market access in key export markets, such as high tariffs or restrictive trade practices. Shewmake and Sapp (2000) also list obstacles that SMEs may encounter, including language barriers, tariffs, diverse currencies and customs regulations. They state that "as a result of these problems, many companies have yet to move their e-business beyond their native shores" (ibid, 2000:30). Bennett's study (1997) shows that one of the reasons some organisations have not set up a Web site is because they do not perceive the Internet as making exporting any easier. Hamill and Gregory (1997) identified four different categories of export barriers including psychological, operational, organisational and product/market. It appears that these barriers remain obstacles to the internationalisation of SMEs despite the advent of EC.

Despite these results, an examination of Table 2 indicates that 57% of those who had developed a plan for EC adoption saw the development of new markets as being of extreme importance (categorised by respondents as being very important or of greatest importance) as a criterion for EC adoption, and only 8% saw no importance in the criterion. By comparison, of those respondents who had not developed a plan, 41% saw the driving force development of new markets as being of extreme importance (categorised by respondents as being very important or of greatest importance) as a criterion for EC adoption, while 37% saw no importance. Tetteh and Burn (2001) support the view that SMEs need to adopt a strategic outlook in their planning and management in order to adopt an e-business infrastructure, while Hamill (1997) highlights the need for export planning and adopting a strategic approach to new markets.

Finally, Table 3 indicates that medium sized SMEs (1 to 20 employees) placed a higher level of importance on the use of EC to develop new markets than those organisations which consisted of the sole entrepreneur and those whose staffing level was greater than 20. In fact, 60% of the medium sized SMEs indicated they saw the development of new markets as being of extreme importance (categorised by respondents as being very important or of greatest importance) as a criterion for EC adoption.

CONCLUSION

This research has sought to identify factors that influence the adoption of EC by SMEs. Improvement in customer services, improvement to internal efficiency and improvement to organisational competitiveness were rated as the most important criteria for the adoption of EC in the organisation. Clearly, while ROI remains an important consideration, the 'all pervasiveness' of EC within the organisation has meant that ROI is only one of many factors needing to be considered.

The globalisation and internationalisation of markets presents a new challenge to SMEs (Raymond, 2001). Meeting this challenge has been made easier by the advent of EC which has opened up new opportunities and new markets for, not only large, but also small and medium organisations, including those from developing countries (Nielson & Morris, 2001). The research presented here has indicated that the adoption of EC by SMEs was not associated with their major market focus. It appears that export SMEs still face similar challenges to those that existed before the advent of EC. Raymond (2001) and Quelch and Klein (1996) argue that SMEs need support from government organisations in developing marketing strategies that are appropriate in a global business environment. Nielson and Morris (2001) also suggest that in order to increase cross-border trade, much has to be done by way of international regulatory cooperation, while Hamill (1997) states that internet training should be a top government priority. Perhaps then more SMEs will turn to new markets and exports.

Recent studies have shown that for the adoption of EC to be successful, there is a need to fully plan its acquisition and use. This study supports this notion by showing that the existence of an organisational wide plan is associated directly with the importance rating of developing new markets as a criterion for EC adoption. Furthermore, the research indicates that organisational factors, such as the size of business, appear to have some bearing on the importance placed on the development of new markets when decisions are being made.

Clearly, additional research is required to refine and understand the issues identified in this and other studies, however, it would appear that EC adoption is just as prevalent among local and national SMEs, as it is among SMEs that export.

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REFERENCES

Alavi, M. (1984) An Assessment of the Prototyping Approach to Information Systems Development, *Communications of the ACM*, 27(6), 556 – 563.

Amoako-Gyampah, K. & K.B. White (1993) User Involvement and Satisfaction: An exploratory contingency model, *Information & Management*, 25(1), 1 – 10.

Barnett, R.R. and J.R. Mackness (1983) An Action Research Study of Small Firm Management, *Journal of Applied Systems*, 10, 63 – 83.

Baroudi, J.J., M.H. Olson and B. Ives (1986) An empirical study of the impact of user involvement on system usage and information satisfaction, *Communications of the ACM*, 29(3), 232 – 238.

Bennett, R. (1997) Export marketing and the Internet: Experiences of Web site use and perceptions of export barriers among UK businesses, *International Marketing Review*, 14(5), 324 – 344.

Bergeron, F., S. Rivard and L. De Serre (1990) Investigating the Support Role of the Information Centre, *MIS Quarterly*, 14(3), 247 – 260.

Brigham, E.F. and K.V. Smith (1967) The Cost of Capital to the Small Firm, *The Engineering Economist*, 13(1), 1 – 26.

Brynjolfsson, E. and L.M. Hitt (1998) Beyond the Productivity Paradox, *Communications of the ACM*, 41(8), 49 – 55.

Bunker, D.J. & R.C. MacGregor (2000) Successful Generation of Information Technology (IT) Requirements for Small/Medium Enterprises (SME's) – Cases from Regional Australia. In *Proceedings of SMEs in a Global Economy*, 72 – 84, Wollongong, Australia.

Burton, F., Y. Chen and V. Grover (1993) An Application of Expectancy Theory for Assessing User Motivation to Utilise an Expert System, *Journal of Management Information Systems*, 9(3), 183 – 198.

Cameron, P. (2000) Measuring Up, *CMA Management*, 74(2), 26 – 28.

Cochran, A.B. (1981) Small Business Mortality Rates: A Review of the Literature, *Journal of Small Business Management*, 19(4), 50 – 59.

Ditsa, G.E.M. (1994) Measures of User Acceptance of Information Systems, Master of Commerce Dissertation, Department of Information Systems, University of Wollongong.

Dugan, S. (1999) The Revenue Factors: Strategies for Maximizing E-Commerce Success, *Infoworld*, 21(40), 70 – 72.

Ellsworth, J.H. and M.V. Ellsworth (1997) *Marketing on the Internet*, John Wiley & Sons, New York.

Evans, C. (2001) An e-strategy for online e-business, *Information Systems Management*, 18, 8 – 21.

Fink, D. and F. Tjarka (1994) Information Systems Contribution to Business Performance: A Study of Information Systems Executives' Attitudes, *Australian Journal of Information Systems*, 2(1), 29 – 38.

Fuller, T. (2000) The Small Business Guide to the Internet: A Practical Approach to Going Online, *International Small Business Journal*, 19(1), 105 – 107.

Ginzberg, M.J. (1978) Steps towards more effective implementation of MS and MIS, *Interfaces*, 8(3), 57 – 63.

Ginzberg, M.J. (1982) Key Recurrent Issues in MIS Implementation Program, *MIS Quarterly*, 5(2), 47 – 59.

Hamill, J. (1997) The Internet and international marketing, *International Marketing Review*, 14(5), 300 – 323.

Hamill, J. and K. Gregory (1997) Internet marketing in the internationalisation of UK SMEs, *Journal of Marketing Management*, 13(1-3), 9 – 28.

Hlava, M.M.K. (1999) Expanding partnerships for Small-and Medium-Sized Enterprises (SMEs) Needed: The Right Kind of Support, *Bulletin of the American Society of Information Science*, 25(5), 7 – 9.

Ives, B., M.H. Olsen and J.J. Baroudi (1983) The Measurement of User Information Satisfaction, *Communications of the ACM*, 26(10), 785 – 793.

Jarvenpaa, S. & B. Ives (1991) Executive Involvement and Participation in the Management of Information Technology, *MIS Quarterly*, 15(2), 205 – 225.

Kendall, K.E. (2000) E-Commerce Aesthetics: E-Commerce for E-Commerce' Sake, *Information Resources Management Journal*, 13(3), 3 – 4.

Klatt, L.A. (1973) *Small Business Management: Essentials of Entrepreneurship*, Wadsworth, CA.

Kollman, T. (1998) Marketing for Electronic Market Places – The Relevance of Two 'Critical Points of Success, *Electronic Markets*, 8(3), 36 – 39.

Korchak, R. and R. Rodman (2001) eBusiness Adoption Among US Small Manufacturers and the Role of Manufacturing Extension, *Economic Development Review*, 17(3), 20 – 25.

Kuljis, J., R. Macredie and R.J. Paul (1998) Information Gathering Problems in Multinational Banking, *Journal of Strategic Information Systems*, 7(3), 233 – 245.

Lewis, D. (2000) Some Retailers De-Emphasize Web Payback, *InternetWeek*, 834, 94.

McDoniel, P.L., J. Palko and T.P. Cronan (1993) Information Systems Development: Issues Affecting Success, *Journal of Computer Information Systems*, 34(1), 50 – 62.

MacGregor, R.C. & R.S. Cocks (1995) Computer Usage and Satisfaction in the Australian Veterinary Industry, *Australian Veterinary Practitioner*, 25(1), 32 – 39.

MacGregor, R.C., D.J. Bunker, J.K. Pierson and K.A. Forcht (1995) Levels of Satisfaction with Pre and Post Installation Vendor Contact: Their Effect on Small Business and College/University Technology Course Requirements, *Education Foundation of the Data Processing Management Association*, 78 – 84.

MacGregor, R.C. & D. J. Bunker (1996a) The Effect of Priorities Introduced During Computer Acquisition on Continuing Success with IT in Small Business Environments. In *Proceedings of the Information Resource Management Association International Conference*, 271 – 277, Washington D.C.

MacGregor, R.C. & D.J. Bunker (1996b) The Effect of Setting Performance Criteria When Acquiring Computer Technology on the Perceptions of Ongoing Success with Information Technology in the Small Business Environment. In *Proceedings of the 25th Annual Meeting of the Western Decision Sciences Institute*, 277 – 279.

Maloff, J. (1995) *The Virtual Corporation,* Internet World, 5, 46 – 50.

Markland, R.E. (1974) The Role of the Computer in Small Business Management, *Journal of Small Business Management*, 12(1), 21 – 26.

Mirchandani, D.A and J. Motwani (2001) Understanding Small Business Electronic Commerce Adoption: An Empirical Analysis, *Journal of Computer Information Systems*, 41(3), 70 – 73.

Moozakis, C. and D. Lewis (2000) Enterprises Tailor ROI To E-Business, *InternetWeek*, 842, 90.

National Small Business United and Arthur Andersen (1998) *Annual Survey of Small and Mid-Sized Business*, NSBU.

National Small Business United and Arthur Andersen (1997) *Annual Survey of Small and Mid-Sized Business*, NSBU.

National Small Business United and Arthur Andersen (1996) *Annual Survey of Small and Mid-Sized Business*, NSBU.

Nielson, J. & R. Morris (2001) E-commerce and trade: Resolving dilemmas, *Organisation for Economic Cooperation and Development. The OECD Observer*, No 224, 37 – 39.

Poon, S. (2000) Business environment and internet commerce benefit – a small business perspective, *European Journal of Information Systems*, 9, 72 – 81.

Poon, S. and P.M.C. Swatman (1997) Small business use of the Internet: Findings from Australian case studies, *International Marketing Review*, 14(5), 385 – 402.

Porter, M. (2001) Strategy and the Internet, *Harvard Business Review*, March, 63 – 78.

PriceWaterhouseCoopers (1999) *SME Electronic Commerce Study Final Report*, 37pp.

Quelch, J.A. and L.R. Klein (1996) The Internet and international marketing, *Sloan Management Review*, 37(3), 60 – 75.

Quinn, J. (2000) Untenable ROI spreads e-panic, *Computing Canada*, 26(6), 15.

Raisch, W.D. (2001) *The eMarketplace: Strategies for Success in B2B*, McGraw Hill, New York.

Rajkumar, T.M. (2001) E-Procurement: Business and Technical Issues, *Information Systems Management*, 18, 52 – 60.

Raymond, L. (2001) Determinants of Web site implementation in small business, *Internet Research: Electronic Networking Applications and Policy*, 11(5), 411 – 422.

Riemenschneider, C.K. and P.P.jr Mykytyn (2000) What Small Business Executives have Learned About Managing Information Technology, *Information & Management*, 37, 257 – 267.

Reynolds, W., W. Savage and A. Williams (1994) *Your own business: A practical guide to success*, ITP.

Robey, D. (1987) Implementation and the Organisational Impact of Information Systems, *Interface*, 17(3), 72 – 84.

Rotch, W. (1987) *Management of small enterprises: cases and readings*, University of Virginia Press.

Schultz, R.L., M. J. Ginzberg and H.C.jr Lucas (1984) A Structural Model of Implementation. In Schultz, R.L. and M.J. Ginzberg (eds) *Application of Management Science*, JAI Press, Greenwich, 55 – 87.

Shewmake, B. and G. Sapp (2000) Bringing down the international barriers, *InfoWorld*, 22(18), 30.

Szajna, B. and R. Scamell (1993) The Effects of Information Systems User Expectations on their Performance and Perceptions, *MIS Quarterly*, 17(4), 493 – 614.

Tetteh, E. and J. Burn (2001) Global strategies for SMe-business: applying the SMALL framework, *Logistics Information Management*, 14(1/2), 171 – 180.

Tait, P. and I. Vessey (1988) The Effect of User Involvement on System Success: A Contingency Approach, *MIS Quarterly*, 12(1), 91 – 108.

Thong, J.Y.L (1999) An Integrated Model of Information Systems Adoption in Small Businesses, *Journal of Management Information Systems*, 15(4), 187 – 214.

Thyfault, M.E. (2001) Heavy exporters spend big on leading-edge IT, *Informationweek*, 834, 54.

Turban, E., J. Lee, D. King and H. Chung (2000) *Electronic Commerce: A Managerial Perspective*, Prentice Hall, New York.

Violino, B. (2000a) IT Excellence 500, *Internetweek*, 754, 48 – 62.

Violino, B. (2000b) Payback Time For E-Business, *Internetweek*, Special Issue 811, 1.

Walker, E.W. (1975) Investment and Capital Structure Decision Making in Small Business. In Walker, E.W. (ed) *The Dynamic Small Firm: Selected Readings*, Austin Press, Texas.

Wilder, C. (1999) ROI: E-business Strategic Investment, *Informationweek*, 735, 48 – 56.

Yap, C.S., C.P.P. Soh and K.S. Raman (1992) Information System Success Factors in Small Business, *OMEGA International Journal of Management Science*, 20(5-6), 597 – 609.

ORGANISATIONAL SOCIAL CAPITAL: AN ALTERNATIVE APPROACH TO AID THE DEVELOPMENT AND SUSTAINABILITY OF SME EXPORT CLUSTERS IN AUSTRALIA

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ABSTRACT

The purpose of this article is to put forward the proposition that a firm's organisational social capital is an important factor when developing export clusters.

The main argument in this article is that high levels of social capital within firms overcome inherent Australian cultural traits of individualism to stimulate more sustainable export cluster development. The article suggests that firms high in social capital take a more long-term perspective when developing relationships with other firms, that over time leads to trust and the building of common objectives. This, it seems, works as a catalyst for cooperation and working together for mutual benefit.

Keywords: Export Clusters / SME / Organisational Social Capital / Relationships / Collaboration/ Cooperation / Trust

INTRODUCTION

Governments of most western economies would acknowledge the important economic and social role played by the small business sector (Birley and Westhead, 1990). In most developed countries small and medium enterprises (SMEs) constitute the bulk of the industrial base and contribute significantly to their exports as well as to their GDP or GNP (Kharbanda, 1999). For instance, in 1999 alone, Australia's total exports of goods and services totaled in excess of $114 billion, or nearly 20% of GDP (AUSTRADE, 2000). However, many SMEs are reluctant to or, cannot export due to limited resources, a lack of knowledge regarding foreign markets, and the perceived risk and uncertainty of the internationalisation process (Peng and Ilinitch, 1994). The last decade has seen the emergence of clustering as an important tool for SMEs to overcome the disadvantages of their small scale.

The premise is that clustering among smaller firms provides them with the potential to achieve collectively more than they could individually, in accessing and competing in world markets (Porter, 1990). However, in culturally individualistic societies such as Australia this concept may not always be embraced (Harris and Dibben, 1999). Whilst most firms may be happy to form long and lasting relationships with suppliers, the concept of working and sharing information with competitors is another story. The issue therefore, is how potential exporting firms can overcome inherent cultural traits of distrust among competitors to achieve these objectives.

In recent years social capital has been put forth as a possible remedy to overcome distrust and aid cooperation in attaining shared goals for mutual outcome in groups (Coleman, 1988). The purpose of this paper therefore, is to generate more knowledge and understanding of the phenomena of social capital and how social capital may contribute to resource poor potential exporting SMEs to overcome inherent cultural traits when forming export clusters.

THE LITERATURE – INDUSTRY CLUSTERS

Interest in industry clusters and their role in economic development has grown substantially over the last several years among academics, economic development professionals, and firm managers (Enright, 1999). Many terms have been used to describe geographic agglomerations of firms in an industry or related industries. Terms such as *industrial cluster* (Porter, 1990), *regional cluster* (Enright, 1992, 1993), and *Industrial districts* (such as the Italian industrial districts described in Brusco, 1992; Piore and Sabel, 1984; Becattini, 1987, 1989; Goodman and Bamford, 1990; and Pyke, 2000). This paper focuses more on export clusters that is, small exporting or potential exporting firms operating in the same industry segment.

EXPORT CLUSTERS

The reason why these SMEs need to organise themselves into export clusters is that they often lack critical mass and cannot leverage finance and marketing expertise to compete in the new global economy (CREDC, 2000). Porter (2000) suggests that most cluster participants are not direct competitors but rather serve different segments of industries. Whilst these *vertically formed* clusters (alliances between parties at different levels e.g. producers and processors/manufacturers) undeniably increase a region's economic performance (e.g. Cairns, Bundaberg, Gold Coast and Boonah) the fundamental and underlying problem most SMEs face in the internationalisation process is the lack of resources (i.e. financial, production and personnel) to consistently supply export orders.

Horizontal led export cluster formation on the other hand, can overcome these problems while at the same time foster vertical cluster integration e.g. processors and other suppliers. Porter argues the reverse pointing out that "companies are often reluctant about participating for fear of aiding direct competitors" (2000, p. 4). However, Porter does concede that firms included in the cluster may still be both

competitive and cooperative. Horizontal export clusters members may compete directly with some members of the cluster, purchase inputs from other vertical cluster members, and rely on the services of other cluster firms in the operation of their business (Economic Development Strategy Report Minnesota, 1999).

Inherent in horizontal like-industry clusters however is the distrust between members (Pyke, 2000; Lyon and Atherton, 2000). Most modern commentators argue that trust is an element of cluster formation and critical to cluster success, (Porter, 1990; 2000; Enright, 1992, 1993; Ffowcs-Williams 2000; Brusco 1992; Piore and Sabel 1984; Becattini 1987, 1989; Goodman and Bamford 1990; Pyke 1992; Sforzi 1992, Staber, 1996; Pyke, 2000; DPI, 2000). Trust leads to cooperation (Fukuyama, 1995; Gambetta, 1988; Putnam, 1993, 1995; Ring and Van de Ven, 1994 and Porter, 2000), and the development of collective strategies (Kramer, Brewer and Hanna. 1996). A relatively new concept in business circles called Organisational Social Capital may be the *panacea* that may enable the development of sustainable export strategies for SMEs through export clusters.

SOCIAL CAPITAL

The term social capital came to prominence in the late eighties led by Coleman (1988), followed by Putnam (1993). They defined social capital as "those features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions", or, as "features of social life-networks, norms and trust that enable participants to act together more effectively to pursue shared objectives" (Putnam, 1995 p.p 664-683). There is increasing evidence to show that social cohesion is critical for societies to prosper economically and for development to be sustainable (World Bank, 1999).

Social capital is the ability of people to work together for common purposes in groups, organisations, and communities and is a harmonious comming ling of trust, viable channels of communications, and norms and sanctions (Neace, 1999). In addition to knowledge and skills (human capital), sufficient levels of social capital are essential for a firm's social and economic development (Neace, 1999; Paxton, 1999).

At an organisational level, social capital is described by Leana and Van Buren (1999, p.538) as a resource reflecting "the character of social relations within the firm". Organisational social capital benefits both the organisation (by creating wealth for the shareholders) and its members (by enhancing employee skills). Organisational social capital is realised through members' levels of collective goal orientation and shared trust, which creates value by facilitating successful collective action.

Building these collaborative relationships requires resources, skills, energy, motivation, and most critically, trust (Putnam 1995). The fundamental proposition of social capital theory is that network ties provide access to resources. One of the central themes is that social capital constitutes a valuable source of information benefits (i.e., "who you know" affects "what you know") (Nahapiet and Ghoshal,

1998). The willingness however of people to share what they know may be in part, be due to inherent cultural values. Culture underpins the likely strength of social capital in society therefore it will be beneficial to reflect on the values and norms that are inherent in Australian culture.

Individuals with different national backgrounds hold different but stable beliefs and underpinning values, different assumptions regarding the environment and different expectations about relationships among people (Hofstede, 1980, 1991). Contrary values about what is and is not of worth in life can be expected to influence the motivations for the development of trusting relationships. Different expectations about relationships among people may influence both with whom business relationships will be sought, and the processes which will and which will not lead to the formation of trust and cooperation (Harris and Dibben, 1999). In every culture there is an implicit dimension, a set of beliefs which are subconscious because the members of that culture take these so much for granted that they fall below the threshold of awareness (Costa and Bamossy, 1995). These subconscious beliefs are known as norms. Examples might include norms and values related to honesty, civic mindedness, cooperation, group identity, and the like.

Norms are the social rules and guidelines that prescribe appropriate behaviour in particular situations (Hill, 2000). A norm exists when the socially defined right to control an action is held not by the actor but by others (Coleman, 1990). Thus, norms represent a degree of consensus in the social system. The importance of social norms of openness and teamwork as key features in firms is highlighted by a significant emphasis on cooperation rather than competition, on open disclosure rather than a disclosure of information that leads to a building of loyalty to the firm (Starbuck, 1992). Table 1 illustrates a study by Harris and Dibben on Hofstede and Trompenaars works that reflect Australian business norms.

Table 1 Australian Business Values.(H – Hofstede. T – Trompenaars)

Australian Values Concept	Implications for Business Relationships.
Power Distance Low (H)	Close relationships will be equally possible with individuals no matter their relative social positions. This is particularly important in an inter-organisational setting although more likely to occur with people of equal rank e.g. CEO to CEO.
Universalism (T)	Focus is ***more on the rules than on relationships.*** This implies that general 'rules' will be applied in the formation of new, and the management of existing business relationships.
Low Uncertainty Avoidance (H)	Company activities are less formal; managers tend to take more risks. The intrinsic novelty of new business relationships will be an attraction to their formation.
Specific (T)	Relationships are specifically determined by their purpose rather than broadly based and not context linked (Diffuse).
Individualism (H & T)	More frequent use of 'I' and 'me'. ***Relationships not seen as important as individual achievement, which is highly regarded***.
Masculine (H)	Although Australia is positioned about half way on Masculinity-Femininity continuum there are still a number of key elements that can be identified as typically Australian. These include material success, male assertiveness, and the notion that failing is a disaster and conflicts are resolved by fighting them out.
Attitude to time (T)	Time is ***measured in money*** and therefore should not be wasted. ***Short-term financial outcomes are sought*** from business relationships.

Source*: Adapted from Harris and Dibben (1999 pp. 470-471).*

Harris and Dibben's work illustrate that Australian culture in general, focuses more on the individual and individual achievements rather than that of the group or society as a whole. This ethos is in line with Hofstede's (1984) theory on individualism. Hofstede argued that individuals have a high need for achievement and tend to believe that personal interests are more important that group interests. Conversely, collectivists value reciprocation of favours, a sense of belonging, or as person that "includes the person himself plus his intimate societal and cultural environment

which makes his existence meaningful" (Hofstede, 1984 p.150). Social capital too, is underpinned by a collectivist type model where working with others is the norm. Relationships are nurtured and built upon with a view of long-term mutual gain, rather than short-term profit maximisation. Members acting together in association with common values and norms are able to build networks among themselves and with others, further increasing the strength of their social capital. Networking leads to the formation of coalitions, increased status, and increased power to influence decisions and policies (Gittell, Bustamante and Steffy, 2000).

The literature has thus far, identified that social capital in an organisational setting relies strongly on high levels of trust underpinned by cooperative norms and a disposition to participate in collective behaviour. Without all of these elements, high levels of social capital may not exist. Working together for example relies on some degree of cooperation between stakeholders. It also requires a 'we can do' attitude rather than the 'I can'. Underpinning these elements is the trust between the stakeholders. By cooperating and putting their trust with other stakeholders for mutual gain rather than individual gain, the individual trusts that rewards gained by group cooperation will be passed back to the individual. The next section illustrates how social capital aids the formation of trusting and sustainable clusters.

The Link Between Export Clusters and Social Capital

Perhaps one of the most famous clusters in the world is Silicon Valley. Described by Cohen and Fields as "an economic space built on social capital" (1999, p. 109). In Silicon Valley, *collaborative partnerships* were formed to pursue specific objectives of innovation and competitiveness rather than, the dense networks of civil engagement as postulated by Putnam, (1993). The authors argue that Silicon Valley's social capital is built on focused, productive interactions among social institutions, instruments, and entities including universities, governments, businesses and people (human capital).

Other well known clusters include Hollywood (movies), Seattle (Boeing and Microsoft, Paris and Milan (fashion) and Hong Kong, New York and London (Finance) (OECD, 2000). These clusters are region focused clusters and predominately vertically formed. Many small firms undeniably contribute to exportable products of the much larger firms within these clusters. Social capital is thus easier to build because there is not direct competitor collaboration but rather, partnerships between suppliers and buyers within the clusters. Common threads within these clusters include trust, cooperation and working for mutual benefit. In Australia there are many thousands of SMEs who believe they have something to export but unfortunately don't have the capacity to do so. According to a Yellow Pages Australia study, 24% of all small business proprietors indicated that they intended to use exporting as a growth strategy. However, just 11% were found to be exporting at the time of the research (Yellow Pages Australia, 1995,pp.1-2). With Australia's share of world trade at less than two percent (ACCI, 1999) it would seem that historical exporting strategies are not producing the desired results.

Clearly, a new way of exporting should be investigated to further increase this share of the international trade environment.

The question is therefore, if social capital aids cluster formations and sustainability in vertical clusters, how can this social capital be utilized to form like industry clusters? To answer the question this study examined the internal dimensions of firms to firstly, identify the existence of social capital within the firm and secondly, to establish if social capital within firms could be externalised to form sustainable export clusters. The next section describes the method used in the study.

METHODOLOGY

Realism was the preferred paradigm for the research as the identified research area is deficient in theory and lacking in well-established constructs and principles (Perry 1998). It seems that little or no theory building has been carried out to determine whether social capital within the firm can be externalised to export clusters. This requires an understanding of the firm's organisational behavioral constructs particularly in the areas of trust, cooperation and working together for mutual gain. Realism seeks to understand the common reality of the phenomena in which many people operate independently. Constructivists and critical theorists consider there are many realities, while realists believe that there is a 'real' world to discover even if it is only imperfectly and probabilistically apprehensible (Guba and Lincoln, 1994; Merriam, 1988, Perry, 1998). Realism does not suffer from the limitations of relativism (Hunt, 1990) that constructivism and critical theory do, for realism is often characterised by some researcher *objectivity* (Perry, 1998). The research used the rigorously analytical method of case study inquiry (Yin, 1994; Perry and Coote, 1994; Perry, 1998).

Case study research methods are particularly well-suited to this research since the object of this discipline is the study of social capital in organisations, and "interest has shifted to organisational rather than technical issues" (Bonoma, 1985; Gilmour and Carson, 1996). The quintessential characteristic of case studies is that they strive towards a holistic understanding of cultural systems of action (Feagin, Orum and Sjoberg, 1990 in Tellis, 1997). Cultural systems of action refer to sets of interrelated activities engaged in by the actor in a social situation (Stake, 1995).

Opinion varies regarding the number of cases that should be considered. Some recommend that such decisions should be left to the researcher (Romano, 1989), while others recommend that cases should be added until theoretical saturation is reached (Eisenhardt, 1989). Others recommend sampling selection to the "point of redundancy" (Lincoln and Guba, 1986 p.204). This however, ignores the real constraints of time and money considerations (Perry and Coote, 1994). In the case of this research nine case studies were used to allow cross-case analysis to be used for richer theory building (Perry and Coote 1994).

Each case subject was initially contacted by letter, which included issues of confidentiality in order to encourage participation in the research and to protect case identities. A follow-up telephone call was then made to determine a date and time for each interview, as well as to determine the appropriate informant.

It was considered important that the instrument was designed so respondents would not feel intimidated in any way in the interview. This was achieved by carefully designing an introduction to the questions to ensure that informants were aware of the purpose of the interview and were comfortable with its agenda. Social capital is a relatively new concept and not one that has been connected to export clusters before so this explanation became an important feature of the interview process and technique.

Questions included both open and closed questions. The open-ended questions enabled in-depth data collection, and included probe questions. They allowed the interviewer to ask broad questions, and then further probing to allow for in-depth discussion and ultimately rich and detailed data collection. Closed questions obtained information about factors identified prior to entering the site enabling data to be obtained about the organisation such as the number of employees and the years of operations. These techniques helped to ensure that replication was obtained throughout all interviews, improving both internal and external validity of the study.

The time each interview took was between one and one and one half-hours. Throughout each interview, extensive hand written notes were taken and checked soon after the interview was completed. In addition, each interview was audio taped and later transcribed. The notes and transcriptions from the tapes were then crosschecked for accuracy

RESULTS AND DISCUSSION

The cases studied in this research provided a wealth of insights into how social capital within firms may be externalised to aid the formation of export ready clusters.

A study of the literature identified many studies that have collected empirical data about social capital including: Coleman, (1988); Putnam, (1993, 1995); Grief, (1993); Neace, (1998); Nahapiet and Ghoshal, (1998). Erbin, Franzkowiak and Wenzel, (1999); World Bank, (1999); Paxton, (1999); Leana and Van Buren, (1999); Cohen and Fields, (1999) and Cox, (2000). All agree that the elements of social capital, associability, trust and cooperative norms cannot exist in isolation if there is to be high levels of social capital. Associability, trust and cooperative norms rely on and, are dependent on each other. Associability, for example, relies on some degree of cooperation between stakeholders. It also requires a 'we can do' attitude rather than 'I can'. Underpinning these elements is the trust between the stakeholders. By cooperating and putting their trust in other stakeholders for mutual gain rather than simply individual gain, the individual trusts that rewards gained by group cooperation will be passed back to the individual.

Similarly, most modern commentators argue that trust is an element of cluster formation and critical to cluster success, (see Porter, 1990; 2000; Enright, 1992, 1993; Ffowcs-Williams 2000; Brusco 1992; Piore and Sabel 1984; Becattini 1987, 1989; Goodman and Bamford 1990; Pyke 1992; Sforzi 1992, Staber, 1996; Pyke, 2000; DPI, 2000). The literature identified that trust leads to cooperation (see Fukuyama, 1995; Gambetta, 1988; Putnam, 1993, 1995; Ring and Van de Ven, 1994 and Porter, 2000), and the development of collective strategies (see Kramer, Brewer and Hanna. 1996). Social capital therefore, is the "glue" that binds all these elements together. However, the literature does not communicate how this may evolve. This research fills that gap and contributes to the body of knowledge in this area.

Important to this research is that seemingly high levels of social capital within firms may be externalised to aid export cluster formation. Equally important, low levels of social capital may hinder the formation of export clusters. It would seem that those managers and owners of firms with high levels of social capital take a more long-term perspective when developing relationships with other firms, that over time leads to trust and the building of common objectives. This, it seems, works as a catalyst for cooperation and working together for mutual benefit. High levels of social capital help to overcome many of the issues such as distrust, opportunism, and the sharing of core competencies, that impede like industry export cluster formation, and help to facilitate more joint export and marketing ventures between firms. Typically respondents whose firms were low in social capital highlights were unwilling to sharing core competencies or develop joint marketing activities. One respondent claimed, *"There is not much there for us (in clusters) because we are finding that many of our interests are consistent"* further underlining the unwillingness of some firms to share information.

The research found that potential cluster members with firms high in social capital take the time to get to know and develop relationships with other clusters members as a pre-cursor to cluster membership. One respondent commented, *"relationships are the eyes and ears to the world."* Another commented, *"a cluster is a relationship and we socialise a lot."* Personal relationships are important to them because they build trust and ultimately lead to common objectives. Common objectives lead to cooperation and associability among members that given time may lead to mutual benefits to all parties.

On the other hand, potential cluster members with firms low in social capital are more likely to be opportunistic, non-cooperative and distrusting of other potential members, which ultimately will lead to a general level of non-performance in the cluster. For example a respondent from a firm low in social capital commented, *"we don't give information away, we suck information from the cluster."* The research also indicated that a combination of potential cluster members with both high and low social capital may lead to frustration from high social capital members and a general level of cluster under-performance.

TIME AND CLUSTER FORMATION

Time is the underlying element that produces social capital. As with other forms of capital, social capital represents a form of amassed history, that is, it reflects investments of social relations and social organisation over time (Bourdieu, 1983; Granovetter, 1992). Time is important as all forms of social capital rely on stability and continuity of the social structure (Nahapiet and Ghoshal, 1998). It takes time to build trust, therefore relationship stability and durability are key network features associated with high levels of trust and norms of cooperation (Granovetter, 1985; Putnam, 1993; Ring and Van de Ven, 1992). Australians however, normally perceive time as a commodity to be spent, or wasted and generally short-term financial outcomes are sought from business relationships (Harris and Dibben 1999). Five of the nine firms interviewed mentioned that time investment in cluster formation was a negative issue. Generally these firms indicated little in the way of social capital.

The issue of time is important therefore when building export (horizontal) clusters. Porter's work generally concentrates on complementary industry cluster formation (vertical or supply chain) where trust may not be as important as in the formation of like industry clusters and therefore requires little investment in time. When firms commit to sharing core competencies of their firms, time *is* important. This study found that trusting and cooperative relationships are at the very heart of successful cluster formation, and, they do take time to develop.

From the study it would seem then that the ingredients for a successful export cluster include small firms with the ability to develop long-term trusting relationships, with common export goals, who have open communication channels, a real commitment to information sharing, and will work together for mutual benefit. These concepts are important not only for the firms involved, but for all Australians as a whole.

Exporting is crucial to Australia's economic health. Increased exports means business growth, and business growth means more jobs. The division between domestic and international markets is becoming increasingly blurred as most SMEs are already competing internationally with foreign owned companies in their domestic market. It is therefore critical for SMEs and governments alike not to ignore international realities if they intend to maintain market share and keep pace with international competitors.

Developing such sustainable export clusters will require a dynamic interaction of business, government agencies, social capital, and cluster practitioners. Arguably, state and federal governments have for decades directed taxpayer money into the wrong area of the internationalisation process. A cursory examination of any of the State or Federal trade divisions will uncover the amount of effort and money going into export initiatives for SMEs. Many of these initiatives are regurgitated from previous programs, many of which have been developed with a short-term political gain in mind. If SMEs are to overcome a lack of resources they need to get the inside right before looking to get the outside right. That is, invest in and develop,

organisational social capital within firms first. When firms are high in social capital we can then be reasonably assured that potential cluster members will have the qualities necessary to work with, and cooperate with other members, without an environment of opportunism. This is likely to lead to more sustainable and profitable export clusters. Trust is necessary for people to work together on common projects, even if only to the extent that all parties believe they will be compensated in full, and on time. But trust is also a by-product of successful collective action. Moreover, collaborative SMEs that successfully complete a project are likely to exhibit higher trust, which makes further and more complex collaborative efforts possible. Social capital and trust among export cluster members is therefore a vital underpinning resource necessary for creating export clusters.

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Any study has limitations that may be addressed in further research. This study is limited in that the methodology used in this research was case study methodology therefore impacting on generalisability. The case study approach looks for analytical rather than statistical generalisations and so is not suited to theory testing.

To overcome problems of generalisability, a methodology such as a survey or experiment may be required. Future research could study the usefulness of social capital within firms when internationalising and, whether social capital is a determinant in developing successful long-term industry clusters, whether exporting or not, by adopting a quantitative method such as using a mail survey to small business owners.

The study was restricted to only one industry sector (food and beverage), thus limiting the external validity of this research. Further research for comparison across a number of industry sectors could provide valuable insights and enhance external validity.

The research was confined to a single geographic location, (the Southeast region of Queensland) which again impacts on the external validity of this research. Further research could involve a broader geographic coverage encompassing SMEs from all Australian states or comparisons made between SMEs in other states or regions within these states. However, given that social capital is a relatively new concept particularly in the internationalisation process and social capital, as with the formation of industry clusters, takes time to evolve, it may be that some longitudinal studies of the phenomena should be carried out.

Finally, by extending the research to larger firms as well as SMEs, a comparison of social capital issues may provide a more generalisable model of export cluster formation.

Fourthly, in this study, data triangulation of information obtained from multiple sources, including a review of relevant literature, government sources and informants from small to medium sized firms, addressed the internal and external validity issues of qualitative analysis. However, increasing the number of firms involved in this study may uncover if there are other factors that influence a firm's social capital.

REFERENCE LIST AND BIBLIOGRAPHY

AUSTRADE, 2000. Submission to the Productivity Commission inquiry into Cost recovery by Commonwealth regulatory, administrative and information agencies November 2000)

Australian Chamber of Commerce and Industry. 1999. *Economy Continues to Improve.* http://www.acci.asn.au/

Becattini, G., (ed.), 1987. *Mercato e forze Locali: il Distretto Industriale*. Bologna: il Mulino.

Becattini, G., (ed), 1989. *Modelli locali di Sviluppo*. Bologna: il Mulino.

Birley, S. & Westhead P., (1990) "Growth and Performances Contrasts Between Types of Small Firms." *Strategic Management Journal.* Vol. 11.

Bonoma, T. 1985; *'Case research in marketing: opportunities, problems, and a process'.* Journal of Marketing Research. Vol. 22.

Brusco, S. 1992. *The idea of the Industrial District: Its genesis.* In Pyke, F., G. Becattini, and W. Sengenberger, editors, 1992. *Industrial Districts and Inter-firm Co-operation in Italy.* Geneva: International Institute for Labour Studies.

Cairns Regional Economic Development Corporation. 2000. *Collaboramics.* http://www.credc.com.au

Cohen, S. and Fields, G. 1999. *Social capital and capital gains in Silicon Valley.* California Management Review. Berkley Winter 1999.

Coleman, J. 1988. *Social capital in the creation of human capital.* American Journal of Sociology 94 (Supplement): S95-S120.

Coleman, J. 1990. *Foundations of Social Theory*. Harvard University Press. Cambridge Mass.

Costa, J. and Bamossy, G. 1995. *Marketing in a multi cultural world: Ethnicity, nationalism, and cultural identity*. Sage Publications. USA

Department of Primary Industries. 2000. *Supermarket to Asia.* (http://www.supermarkettoasia.com.au/Magazine/march99/page53.htm)

Enright, M. J. (1992) *"Why Local Clusters are the Way to Win the Game,"* World Link, 5, July/August.

Enright, M. J. (1993) "*The Geographic Scope of Competitive Advantage*," in Dirven E., Groenewegen, J. andvan Hoof, S. (ed), *Stuck in the Region?: Changing Scales of Regional Identity.* Utrecht: Netherlands Geographical Studies 155

Enright, M. 1999). The Globalization of Competition and the Localizatyion of Competitive Advantage: Policies Toward Regional Clustering, in The Globalization of Multinational Enterprise Activity and Economic Development, Hood, Neil and Young Eds., Macmillan London.

Eisenhardt, K. 1989. *Building theories from case study research.* Academy of Management Review. Vol 16 no.3

Feagin, J.Orum, A. & Sjoberg, G. (eds.). 1991. *A case for case study.* Chapel Hill, NC: University of North Carolina Press.

Ffowcs-Williams, I. 2000. *Policy for Inter-firm Networking and Clustering: A Practitioners Perspective.* OECD Bologna Conference for Ministers responsible for SMEs and Industry members on "Enhancing the Competitiveness of SMEs in the Global economy: Strategies and Policies.

Fukuyama, F. 1995. *Trust. The social virtues and the creation of prosperity.* Hamish Hamilton. London.

Gambetta, D. (Ed.). 1988. *Trust: Making and breaking cooperative relations*. Oxford, England.

Gilmore, A and Carson, D. 1996. *Integrative qualitative researching a services context.* Marketing Intelligence and Planning. Vol. 14 no. 6

Gittell, M., Bustamante, I., and Steffy, T. 2000. *Social capital and social change; Women's community activism.* Urban Affairs Review. Thousand Oaks.

Goodman, E. and Bamford, J. (ed), (1990) *Small Firms and Industrial Districts in Italy.* Routledge London.

Guba, E.G. and Lincoln, Y.S. 1994, *Competing paradigms in qualitative research*, in Denzin, N.K. and Lincoln, Y.S. 1994, *Handbook of Qualitative Research*, Sage Publications, Thousand Oaks, 105-117.

Harris, S. and Dibben, M. 1999. *Trust and Co-operation in Business Relationship Development: Exploring the Influence of National Values.* Journal of Marketing Management., Vol. 15. pp. 463-483.

Hill, C. 2000. *International Business. Competing in the Global Marketplace.* Irwin McGraw-Hill. New York.

Hofstede, G. 1980, 1984. *Culture's Consequences. International Differences in Work-Related Values.* Sage Publications California USA.

Hofstede, G. 1991. *Cultures and Organisations: Software of the mind.* McGraw Hill. Maidenhead.

Hofstede, G. 1997. A small Culture Clash Game. Synthetic national cultures as a tool in gaming. http://www.info.wau.nl/people/gertjan/TRADEMIS.html

Holden, A.1986. *Small Business can market in Europe: Results from a survey of U.S. exporters.* Journal of Small Business Management. January: 22-29.

Industry Clusters. 1999. *An Economic Development Strategy for Minnesota Preliminary Report.* USA. http://www.hhh.umm.edu/centres/slp/edweb/ic-rep.htm

Ingley, C. 1999. *The Cluster Concept: Cooperative Networks And Replicability* http://www.sbaer.uca.edu/Research/1999/ICSB/99ics027.htm

Kharbanda, 1999. *Industrial Cluster - The Hub Of Innovative Activities At enterprise Level* V.P. Senior Scientist, National Institute of Science Technology and Development Studies, Dr. K.S.Krishnan Marg, New Delhi – 110012, India.)

Kramer, R. Brewer, M. and Hanna, B. 1996. Collective trust and collective action: The decision to trust as a social decision. Sage. California.

Leana C. and Van Buren, H. 1999. *Organisational social capital and employment practices.* Academy of Management. The Academy of Management Review; Mississippi State; Vol. 24 Issue 3. pp.538-555

Lincoln, Y. and Guba, E. 1985. *Naturalistic inquiry.* Sage Publications. Newbury Park.

Lyon, F. and Atherton, A. 2000. *A business view of clustering: Lessons for cluster development policies.* Foundation for SME Development. University of Durham. UK.

Pyke, F. 2000. *Clustering and networking strategies*: *A review of practice.* A presentation to the Tavistock Institute Research and Learning Network. Tavistock Institute. London.

Nahapiet, J. and Ghoshal, S. 1998. *Social capital, intellectual capital, and the organisational advantage.* Academy of Management. The academy of Management Review. Mississippi State.

Neace, M. 1999. *Entrepreneurs in emerging economies: Creating trust, social capital, and civil society.* Annals of the American Academy of Political and Social Science. Thousand Oaks. Vol 565 pp. 148-161.

OECD 2000. Proceedings Boosting Innovation: The Cluster Approach. http://electrade.gfi.fr/cgibin/OECDBookShop.storefront/EN/product/921999041P1

OECD, 2000. *Enhancing the competitiveness of SMEs in a global economy: Strategies and policies.* (Conference for ministers responsible for SMEs and industry ministers. Bologna Italy – June 2000.

Paxton 1999. *Is social capital declining in the United States? A multiple indicator assessment.* The American Journal of Sociology. Chicago. Vol. 105 Issue 1 pp.88-127.

Peng, M. and Ilinitch,A. Export Intermediary Firms: *A Note on Export Development Research.* Journal of International Business Studies. Vol. 29 Number 3 Third quarter 1998.

Perry, C. 1998. *Processes of a Case Study Methodology for Postgraduate Research in Marketing.* The European Journal of Marketing vol.32.

Perry, C. and Coote, L. 1994. *Process of a case study research methodology: tool for management development?* Paper presented to the National Conference of the Australian-New Zealand Association of Management, Wellington.

Piore, Michael J., Sabel, Charles F., (1984), "The second industrial divide: possibilities for prosperity", New York, Basic Books.

Porter, M. 1990. *The Competitive Advantage of Nations* . The Macmillan Press Limited. London

Porter, M. 1998. *Clusters and the New Ergonomics of Competition.* Harvard Business Review. Vol.76 No. 6.

Porter, M. 2000. *Location, competition, and economic development: Local clusters in a global economy.* Economic Development Quarterly. Thousand Oaks. Vol. 14 Issue 1.

Putnam, Robert D., (1993), "Making democracy work: civic traditions in modem Italy", Princeton, New Jersey, Princeton University Press.

Putnam, R. 1995. *Bowling Alone: America's Declining Social Capital.* Journal of Democracy Vol.6 No: 1 January 1995

Putnam, R. 1996. *Who Killed Civic America?* Prospect. March, pp.66-72

Pyke, F. 2000. *Clustering and networking strategies*: *A review of practice*. A presentation to the Tavistock Institute Research and Learning Network. Tavistock Institute. London.

Ring, P. and Van de Ven A. 1994. *Developmental processes of cooperative interorganisational relationships.* Academy of Management Review, Vol. 19.

Romano, C. 1989. *Research Strategies for Small Business: A Case Study.* International Small Business Journal. Vol. 7 No 4.

Sabel, Charles F., (1993), "Studied trust: building new forms of cooperation in a volatile economy", Human Relations, 46(9), Sep.: 1133-1170.

Sforzi, F. 1992. *The quantitative importance of Marshallian industrial districts in the Italian economy,* in Pyke et al. 1992.

Sjoberg, G., Williams, N.,Vaughan, T., & Sjoberg, A. (1991). *The case study approach in social research.* In Feagin, J., Orum, A., & Sjoberg, G. (Eds.), (1991). *A case for case study* (pp. 27-79). Chapel Hill, NC: University of North Carolina Press.

Staber, Udo, (1996), "Accounting for variations in the performance of industrial districts: the case of BadenWurttemberg", International Journal of Urban & Regional Research, 20, June: 299-316.

Starbuck, W. 1992. *Learning by knowledge intensive firms.* Journal of Management Studies Vol. 29.

The World Bank Social Development Family Environmentally and Socially Sustainable Development Network. 1999. *Social Capital Initiative Working Paper No. 1. The Initiative on Defining, Monitoring and Measuring Social Capital.*

Trompenaars, F. 1997. *Riding the Waves of Culture*. Nicholas Brearley Publishing Limited. London. UK.

Yellow Pages. 1995. *Profile of businesses seeking higher growth.* Pacific Access Pty Ltd.

Yin, R. 1994. *Case study research: Design and methods*. (2nd ed.). Sage Thousand Oaks.

EFFECTIVE TECHNOLOGICAL INNOVATION: NECESSITY FOR SUSTAINABLE DEVELOPMENT OF SMALL-SCALE ENTERPRISES IN INDIA

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INTRODUCTION

Contemporary transformation of the business environment, due to liberalization, globalization and entry of multinationals has increased the competitive pressure on small-scale enterprises in India. Small scale enterprises are facing entirely new set of competitive threats: superior technology owned by foreign competitors, impacts of major shift in product and process technology, changes in preference of customer segments etc. Under the changed circumstances, ability to generate and utilize knowledge is only way to sustain in changing scenario. Technological innovation is a key to survival and growth for small-scale enterprises in India. The main hurdle in India for implementing technological innovation is the typically low investment in R&D.

In developing countries like India, small-scale industry is the potent way by which maximum employment can be generated with comparatively low investment and is also helpful in removal of regional imbalance in industrial development. The performance of Indian small-scale industries in terms of critical parameters such as number of units, production, employment generation and export is significant.

Simultaneously the sickness in the small-scale sector is the matter of great concern and debate. Since sickness in the industrial sector results in locking of resources, wastage of capital assets, loss of production and increasing unemployment. Therefore the rehabilitation of sick units as well as effective technological innovation in small-scale enterprises to prevent sickness will stimulate the economic growth in India.

SIGNIFICANCE OF SMALL SCALE INDUSTRIES

In India, the SME is generally referred as small-scale unit (including the tiny sector) defined by the criterion of scale of capital investment. This is unlike many other Countries like China, Japan, Germany, Indonesia, Iran, Turkey etc. that go by the number of employees as a criterion for identifying small and medium scale units [1]. In India, the investment limit for small-scale unit at present is Rs.10 million on Plant and Machinery. In common sense, increasing number of persons assuming the entrepreneurial career. Small enterprises serve as the seedbed of entrepreneurship due to their features as follows: -

1) This sector creates more self-employment opportunities with comparatively low capital investment.
2) The industrial unit in this sector, is generally based on the local resources / demands.

3) They can be located any where more easily; this results in horizontal growth and removal of regional imbalance.
4) This sector gives quick return and has a shorter gesture period.
5) These units help in to maintain / retain and develop traditional skills and handicrafts.
6) These units assist large and medium industries by acting as ancillaries.

The basic accent of India's policy for Small-Scale Sector has been defensive, aiming to insulate the small-scale sector from the dynamics of the competitive growth, now the changing economic and liberalized scenario this insulation has been removed. The new environment for small-scale industries consists of changes emerging from the ongoing process of economic reforms conforming to the WTO agreement and to the fast changing economic, technological and information environment. In the process [2], the liberalized policy has posed certain challenges and provided opportunities to the small-scale sector. The challenges are in the form of increased competition; reduced protection due to lowering of tariffs and market determined rates of interest. On the other hand opportunities has come in the form of access to better technology, availability of variety of raw materials and components, impetus to quality, efficiency and opportunity to restructure and diversify. In fast changing technological environment, wherein the product lifetime cycle and technology lifetime cycle is shrinking, technical entrepreneurship has assumed a central place in the enterprise development and economic growth. It can make contribution to industrial development through technical innovation i.e. product / process development and improvement in productivity, production process and systems.

The small-scale sector has emerged as the most dynamic and vibrant sector in the recent times. The small-scale industrial sector in India currently contributes about 40% of industrial production, 35% of total export and provides employment to over 18.6 million persons. [3] India started its process of integration with the global economy in JULY 1991. The government has pursued far-reaching economic and structural reforms in all sectors of economic policy. The thrust of these measures has been to make the Indian economy internationally competitive. The liberalization policy of the government has thrown open most of the industrial sector.

TABLE-1: Year-wise Growth Data of SSI Units In Terms Of Critical Economic Parameters

YEAR	NO. OF UNITS (MILLION NOS.)	PRODUCTION (BILLION RS.)	EMPLOYMENT (MILLION NOS.)	EXPORT BILLION RS.
1990-1991	1.94	1553.40	12.53	96.64
1991-1992	2.08	1786.99	12.98	138.83
1992-1993	2.24	2093.00	13.40	177.85
1993-1994	2.38	2416.48	13.93	253.07
1994-1995	2.57	2939.90	14.65	290.68
1995-1996	2.72	3562.13	15.26	364.70
1996-1997	2.85	4126.36	16.00	392.49
1997-1998	3.01	4651.71	16.72	439.46
1998-1999	3.12	5275.15	17.15	489.78
1999-2000	3.22	5784.70	17.73	N.A.

SOURCE: LAGHU-UDYOG, Volume XXV to XXVI, no 9to2, April-September-2001.

The Indian small-scale sector has been constantly out-performing large industry on crucial parameters such as growth in production, and growth in employment.

TABLE-2: Trends in Percentage Growth of SSI Sector With Respect To Large Scale Sector:

YEAR	SSI SECTOR	LARGE SCALE SECTOR
1991-1992	03.10	00.60
1992-1993	05,60	02.30
1993-1994	07.10	06.00
1994-1995	10.10	09.40
1995-1996	11.40	12.10
1996-1997	11.30	07.10
1997-1998	08.43	05.80
1998-1999	07.70	04.00
1999-2000	08.16	06.50

SOURCE: LAGHU-UDYOG, Volume XXV to XXVI, No 9 to 2, April-September 2001.

The changing economic environment has posed challenges in front of the Small Scale Industrial sector as follows:

- Increased competition (both domestic and international) in most of the spheres of manufacturing activities
  including those in rural area.
- Increased penetration of branded consumer products in rural area from large-scale units.
- Increased purchasing power among the rural populace.
- Increased awareness level of consumers due to deep penetration of media, in turn leading to
  - Quality Consciousness,
  - Preference for branded products,
  - Wider choices of brand/ products and services to satisfy similar needs.
- Limited scope for quality price trade off.
- Need for technology up gradation to meet quality needs of consumers.

To face these challenges, the entrepreneur has to adopt Innovative product/ process, productivity improvement techniques, and effective technology management for sustainability of his own unit. Here the innovative approach will be the remedy for an entrepreneur for sustainability.

SICKNESS IN SMALL-SCALE SECTOR

Inspite of this development, it is the fact that SSI Sector has not been developed to its fullest potential. The sector is set with number of problems, which have been impeded the development of this sector to its potential. The sickness in this sector is widespread growing at faster rate resulting huge loss in different shapes. It is because of the reason that, the units in this sector were operating in sheltered markets and majority of them have paid little attention to technology
up -gradation, quality improvement and cost reduction during last several decades. Due to the regime of quotas, control and licensing, this policy has given rise to setting up of industrial unit with only aim to make windfall gains, irrespective of the fact that individual is quality conscious or not. This has resulted in large number of units being sick with little scope for any improvement in future. Reserve Bank of India has defined weak unit is one which has shown accumulated losses equal to or exceeding 50% of its peak net worth for the immediately proceeding five years, and a current ratio of less than 1:1 and suffered a cash loss in the immediate proceeding year.

According to Reserve Bank of India, a unit may be regarded as viable if it would be in position, after implementing a relief package over a period not exceeding five years from the commencement of the package from the concerned agencies, as may be necessary, to continue to service its repayment obligations as agreed upon including those forming part of the package, without the help of the concessions after the aforesaid period.

Sickness in the small-scale sector is the matter of great concern and debate. Sickness in the industrial sector results in locking up of resources, wastage of capital assets, loss of production and increasing unemployment. In addition, it affects the circulation of bank credit. The magnitude and nature of sickness and its growth in the last few years as per data of Reserve Bank of India is reflected in the table below.

TABLE-3: Sickness in Small-Scale Sector

AS AT THE END OF YEAR	SICK UNIT DETAILS		POTENTIALLY VIABLE UNITS DATA	
	NO OF UNITS.	OUTSTANDING AMOUNT RS. IN CRORES.	NOS.	OUTSTANDING AMOUNT RS. IN CRORES.
1991	2,21,472	2792.00	16,140	693.12
1992	2,45,575	3100.67	19,210	728.90
1993	2,38,176	3442.97	21,649	798.79
1994	2,56,452	3680.37	16,580	685.93
1995	2,68,815	3547.16	15,539	597.93
1996	2,62,376	3721.94	16,424	635.82
1997	2,35,032	3609.20	16,220	479.31
1998	2,21,536	3856.64	18,686	455.96
1999	3,06,221	4313.48	18,692	376.96

NOTE: These units include village industries as well.
SOURCE: Annual Report of SIDO 1999-2000.

SICKNESS CAUSES

A number of causes both internal and external, often operating in combination is responsible for industrial sickness in small-scale sector. To identify the causes for sickness in unit the author among the entrepreneurs who are running the small-scale unit conducted a diagnostic survey. The units selected were small-scale units run by the entrepreneurs having technical qualification. The questionnaire was send to these entrepreneurs (100Nos.); the response received was from 54 nos. of entrepreneurs. The questionnaire comprised of the various factors responsible for affecting the performance of their individual unit. The entrepreneur was to give the weightage to these reasons as very important, important and not important based on his experience. After analyzing the response received, it has been observed that, the principle causes for sickness and venture failure are faulty planning, management deficiencies, ineffective management, non-application of cost-effective strategies, inefficient financial control, diversion of resources, inadequate attention to research and development, obsolete technology and machinery, poor industrial relations, no proper study of

techno-economic feasibility project report as well as improper market survey of the product demand and manufacturing, high operating expenses, shortage of raw material and other inputs, inadequacy of working capital, failure to generate long-term business plan etc.

The factors observed responsible for sickness of an industrial venture are mainly personality factors. If the individual entrepreneur having proper techno-commercial knowledge input, vision to study the past, analyze the present and forecast the future can stay afloat in the today's competitive world.

Unit competencies, which are represented by the substance and shadow of the entrepreneur are vital to growth of a firm and are sufficiently robust to be evident both empirically and descriptively. Technology perse is considered as important, but the ability to utilize and capitalize on the advantage of technology through invention and innovation subsequently the achieving growth through synergy is considered more important in running of unit [4].

NECESSITY OF INNOVATION

Innovation is the heart of value creation in business. New product development is the most important process and calls for the whole company's energy. Innovation is the natural state in the exciting chaotic startup period of company's history. For those that survive, it seems just as natural that the spirit of innovation dies out as the company matures [5]. In mature companies, the predictable course is for everyone to forget what made them successful in the first phase.

Innovation is a dynamic process that aims at achieving or improving competitive advantage of a firm. It involves the development, adoption or improvement of any of the following; product, services, technologies, processes, institutions, partnership ideas, system or solutions. It is recognized as being an important factor in the emergence of several newly industrialized countries notably Korea, Taiwan. [6].

The term creativity and innovation are interchangeably used in research studies, and the distinction between the two concepts may be one of emphasis than of substance. Creativity has to do with production of novel and useful ideas and innovation has to do with the adoption of useful ideas and idea implementation. Individual innovation begins with problem recognition and the generation of ideas or solutions either novel or adopted. During the next stage of process, an innovative individual seeks sponsorship for an idea and attempts to build a coalition of supporters for it. Finally during the third stage of the innovation process, the innovative individual completes the idea by producing a prototype or model of the innovation that can be diffused or mass-produced, turned to productive use or institutionalized [7].

The large-scale companies in United States want to be innovative; most are purely equipped to implement a growth strategy based on radical innovation. Robert Stringer [8] given the reason for this that most of large companies are genetically programmed to preserve the status quo. Comparatively small companies succeed in introducing radical innovation because of their genetic makeup. The leaders of small companies with a radical new technology will often bet most of their resources on commercializing the innovation. It is not difficult to understand why large companies discourage and de-motivate intrapreneurs who are the drivers of radical innovation: too many rules, too many meetings and the little willingness to 'just do it'. With this JOHN BURTON [9] states that in the

scenario, squads of trained specialists in R&D departments replace the function of individual innovation on one hand, and a bureaucracy of salaried managers replaces individual entrepreneurial leadership on the other.

The experience of developed countries has shown that the higher education institutions, besides their conventional role of development of trained manpower, can also play a more direct role for the economic growth of the nation. Those economies, which have strong entrepreneurial cultures are prospering and flourishing. The universities and technical institutions in developed countries are found more efficient in

* Innovating new technology. * Diffusing technology to business.

The industries in developed countries are competitive because of effective industry institute interaction. More over the universities and institutions along with their faculty and staff are enterprising.

The weak factors of small-scale industries in India are many. Their main problem is to accessibility to information on both markets as well as scientific and technical which is very essential for a firm to be innovative. Small Scale sector in India normally do not have a formal R&D department with highly qualified scientific and technical manpower. The lack of qualified scientific and technical manpower hinders their innovation process. External expertise is not easily accessible and financial resource constraint is also another major factor.

Where as in India, who has one of the largest stock of scientists, engineers and technicians, it has not derived full economic benefits from this skill base due to the mismatch / inadequacy of education and training and to the limited employment capacity of the Indian labor market. Industry Institute interaction in India is not strong enough and appreciable. However efforts have been started in this direction to promote Industry Institute interaction by most of the institutes like Indian Institute of Technology, Regional engineering colleges, and some universities. The Science and Technology Entrepreneurship Development Board (NSTEDB) of the Government of India is engage in evolving programs and schemes to promote spirit of entrepreneurship and innovation among science and engineering students through well structured programs. The Board has set-up a number of Science and Technology Entrepreneurship Parks (STEP), and Entrepreneurship Development Cells (EDC). It is also proposed to establish a number of Technology Business Incubators (TCB) to provide facilities for the development of growth of technology based small enterprises.

R&D CONCERNS

A wellknown hurdle in achieving technological innovations in India is the typically low investment in R&D. As per the study De [10] the Indian companies are less innovative because they invest only a fraction of their sales turnover in research (indeed in most Indian companies, the R&D departments were established not with the intent to innovate, but to save taxes). On the other hand, innovating companies have large budget for research. For instance ABB spends about 7%, Intel invests 15.4%, Motorola spends about 19%, Siemens spends about 10% and Sony's investment is 5.7% of its revenue in R&D and so on [11].

TABLE-4 The R&D expenditure contribution in terms of percentage of various sectors in India is as follows:

YEAR	CENTRAL GOVT.	STATE GOVT.	PUBLIC SECTOR	PRIVATE SECTOR
1976-1977	71.84	06.74	08.48	12.94
1980-1981	64.97	07.80	11.36	15.87
1990-1991	66.52	09.21	10.43	13.84
1991-1992	62.96	10.06	10.27	16.71
1992-1993	65.64	09.25	08.84	16.17
1993-1994	64.87	08.96	06.26	19.91
1994-1995	63.76	08.78	05.72	21.74
1995-1996	63.33	08.69	06.43	21.55

SOURCE: Science and Technology DataBook-2000.

It can be seen that the government is disassociating itself and private sector is coming forward for investing in R&D. It is also to be noted that merely large research budget doesn't guarantee innovation. As per O REILLY [12] there is no correlation between company's innovativeness and their R&D expenditure in terms of sales. The critical issue in technological innovation, thus, is not the quantum of expenditure in research, but how the research function is managed and leveraged by the company [13]. The companies, which innovate, tend to manage and deploy their R&D resources more strategically than others do.

IMPORTANT TECHNOLOGY ISSUES

In today's scenario of globalization, liberalization, the industrial sector is becoming competitive day by day. The small-scale sector in India for its sustainable development the important technology issues are as follows:

1) Management of Technology.
2) Innovation Focus.
3) Technology Strategy.
4) Infrastructure for Technology.
5) Financing Technology requirements.
6) Knowledge Management.
7) Fostering Creativity.
8) Technology Protection
9) R&D Management.
10) Technology Marketing.
11) Technology Acquisition.

Therefore, Technical education synchronized with systematically planned Enttrepreneurship Development Program can be useful to develop technical entrepreneurs. This techno-entrepreneurial education will be useful in developing the facilities of initiative and creative skills and enhance the capabilities of an engineer. Such education system can play a pivotal role in development of technical entrepreneurship for susatinable industrial development in India.

NEED FOR TECHNICAL ENTREPRENEURSHIP

Entrepreneurship is a human creative act. It involves finding personal energy by initiating and building an enterprise or an industrial venture, rather than by just watching, analyzing or describing one. It

usually requires a vision and the passion, commitment and motivation to transmit this vision to other stakeholders such as customers, suppliers, employees and financial backers. It also requires a willingness to take calculated risk both personal and financial and then doing everything possible to influence the odds. Entrepreneurship involves building a team of people with complementary skills and talents; of sensing an opportunity where others sees chaos, contradiction and confusion; and of finding, marshalling and controlling resources (often owned by others) to pursue the opportunity.

For the SSI sector in particular, the entrepreneurship is a one-man show, who is owner, manager, technician, planner everything. The success of industrial venture evolves around the capability of an entrepreneur. Therefore engineer as entrepreneur, if nurtured can be the better solution to run and manage the industrial venture in SSI sector.

In today's educational scenario where unemployment level rising and career paths becoming less well defined, JOHN.H.KELMER [14] emphasized for more practical approach to teaching which could foster a stronger business acumen in the potential entrepreneur. Engineers who learn sufficient science and engineering acquire capabilities to know why and how of various theories and can design products and services, based on their knowledge and skill competencies.
Favorable factors, contribute towards entrepreneurship among technically qualified persons are as follows;

1) Ability to analyze and diagnose the problems of production/ service of venture, and device remedial measures in the right time.
2) With acquired knowledge and experience, a technical person can work out the economics of production and service outputs and will have competitive and cost-effective strategy with an edge over others.
3) Ability to grasp the opportunities, which offer economic advantage.
4) With continuous contacts with professional bodies, can have better access to new technology and techniques that can be gainfully applied in their venture.
5) They can give fillip to ancilliarisation, thus help in building better linkage between large and medium enterprises.
6) They can forecast the changes and trends in technology and can adopt in changing environment smoothly.
7) Based on R&D, technologists can transfer technology more efficiently from laboratory to industry.
8) They can be very much helpful in self-propelled performance rather than push propelled developments.

Engineer, through entrepreneurship can bring technical revolution that can meet the challenges of emerging scenario of globalization, liberalization with key element of competition rather than protection. [15]. As per SMILOR&GILL [16] four key factors, that appear essential in the formation of new technology based industrial venture are talent, technology, capital, and know-how. Talent refers to the entrepreneurs who recognize market opportunities and organizes the unit to try to take advantage of those opportunities. Sources for talented technology entrepreneurs will be universities, technical institutions, technology oriented corporations, and public and private sector research laboratories. The amount of innovation in emerging technology industries holds tremendous potential for the start up of new technology enterprises. When that talent is linked with technology, that is, when entrepreneurs recognize and then begin to push viable ideas, the entrepreneurial process is

underway. Capital provides the financial resources through which ideas of the entrepreneur can be developed, tested and commercialized. Know-how is the ability to leverage business or scientific knowledge in linking talent, technology and capital in emerging and expanding enterprises. It is the ability to find and utilize the expertise in a variety of business and scientific disciplines to turn technological devices into marketable products. Technology Entrepreneurship requires a unique synergy among talent, technology, capital and know-how [17].

TECHNOLOGICAL INNOVATION

Technological innovation refers to a process by which an entrepreneur plans, implements, controls and evaluates technical changes to create new opportunities for enhancing the firm's competitiveness and growth. Technological innovation impacts the performance of product and process by way of reducing cost or improving quality or functionality. It may take the form of new product designs, product enhancement, design of new process, and improvement in technological delivery system etc. Technological innovation will result not only from investment in physical assets but also from intangibles such as research and development, training, organization and information systems. This reinforcement of physical investment by knowledge, resulting in technology to allow innovation, is now formally recognized in economic theory as an engine of growth. [18]

As per WASIF.M.KHAN [19] all successful innovators recognized the small market they operate in and therefore gave great importance to local design and manufacture of production equipment that overcomes the price limitations of imported equipment. Local craftsman plays a significant role in helping technical innovators to achieve their objectives. Technological complexity is a constraint, but can be managed despite practical limitations during implementation. Here the technology management plays a vital role to overcome these limitations.

There are of course innovations that spring from a flash of genius. Most of the innovations especially successful ones result from a conscious purposeful search for innovation opportunities, which are found in only a few situations. PETER.F.DRUCKER [20] has given situations where opportunity exists are as follows;

1) Within a company-
- Unexpected occurrences.
- Process needs.
- Incongruities.
- Industry and market changes.

2) Outside a company-
- Demographic changes.
- Changes in perception
- New knowledge

Every one knows, FORD EDSEL'S biggest new car failure in automobile industry. This EDSEL'S failure became foundation for much of the automobile company's later success. The unexpected failure may be an equally important innovation opportunity source, provided that the individual has the vision to find out the opportunity for innovation into the failure. Here the role of engineering education is significant to develop this vision. To develop the necessary insight among students, into the basic laws and to develop power to use them at the right situation, we are left with but one-method i.e.

simple problems solved by one principle to complex problems involving several laws. This gives the students the right insight and develops his confidence in meeting new situations with initiative and originality.

STRATEGIES FOR DEVELOPING INNOVATIVE SPIRIT

The education in general and the technical education in particular can play a pivotal role in the development of human resources. The technical education having stress on entrepreneurship development will not only be useful for employment generation but also for sustainable development of small scale industrial sector in India. The technical education curriculum should be from occupational and vocational angle to develop the: Diagnostic skill, Management skill, Computer handling skill and Awareness of National and International standards and quality control operations. These capabilities for the technical students are equally important for self-employment as well as for wage employment. As these skills are the pre-requisites for a successful entrepreneur as well as for intrapreneur. The entrepreneurial development programme in the engineering should be fully practical oriented and the syllabus can be categorized into five steps as follows: I) Pre-operational drill, 2) Operational drill, 3) Post- operational drill, 4) Functional and Structural parameters, 5) Competence building for decision making. Among these, first three will be for technical competence building and remaining will be for managerial competence building.

FINAL WORD

The question of who influences the rate of technology diffusion, and how they are able to do so, is of fundamental interest in societies where economic growth, environmental protection and social change continues to be strongly tied to technological innovation. The role of entrepreneurs in diffusing technology points to the capacity of enterprising individuals to introduce sweeping change with cumulative impact.

Today technological revolution warrants not only large financial resources, but also innovative entrepreneurship dynamic professionals and efficient management having orientation of latest generation of technology.

In the entrepreneurship development program for its success, the concentration should be more on individual entrepreneur's personality development rather than on the project. Since in the future, it is the entrepreneur who has to handle the venture, face the uncertainties and survive from it.

The follow-up in the entrepreneurship development program should not be restricted up-to training, but it should be extended till the individual starts unit and run it independently. For this the vision of the faculty of EDP should clear. If the faculty itself is acting as a professional, students are bound to have entrepreneurial qualities and vision.

The magnitude of sickness in small-scale sector is to be taken seriously and if the potentially viable units are given to the prospective entrepreneurs of EDP at first stage, as case study and then giving the unit to them for running. This will not only solve the problem of blockage of assets but also the problem of unemployment of educated youth and helpful for sustainability of SSI sector in India.

CONCLUSION

Technology is changing at a very fast rate and technical education system will have the responsibility of developing the technical manpower capable to face these challenges and develop the industrial venture for which they are working.

Technological innovations often results a gap between the technology on one hand and the market on the other. Bridging this gap needs a new way of thinking about commercialization of innovations in industrial ventures. An academic institution can play an important role in developing certain qualities in the students. If they themselves are acting as professionals, students are bound to have entrepreneurial qualities. Indian economy opening up and offering fresh avenues to the entrepreneurs, the need for revising the present management of science and technology has become inevitable, it has become necessary to inculcate entrepreneurial qualities in students.

The upcoming projects should come up with new ideas and aim of constant up-gradation in production involving latest technology and sophisticated equipments as per the global standards so as to meet the competition.

The language of technical entrepreneur is to be evolved around the five alphabets TCQMP, this TCQMP stands for: T - Time Consciousness; C - Cost Consciousness; Q - Quality Consciousness;

In today's society, it is the technology that drives the economy, since engineer creates this stuff; he is the real master of the society.

REFERENCES:

[1] NEELA MUKHARJEE, 'World Trade Organization and Small and Medium Enterprises from a Developing
Country's Perspective- A Study of Indian Small Scale Industries', Laghu-Udyog, Volume xxv to xxvi, No.9 to 2,
April-September2001, PP 36-48.

[2] VASUNDHARA RAJE, 'Taking SSI Towards New Millennium: Message of hope' Laghu-Udyog, Volume xxv
to xxvi, April-September 2000.

[3] PRASAD.C.S, 'The Third census of SSI Units', Laghu-Udyog, Vol. xxv to xxvi, April-September 2001, PP14
-20.

[4] KELMAR.JOHN.K, DIANNE.L.W.WANGHMAN, 'Determining the Relevant Factors in the Success Strategies
of Small Enterprises' Journal of Entrepreneurship, July-December 1995, pp 215-236.

[5] SHELDON.A.BUCKLER & KARAN ANNE ZIEN, 'The spirituality of innovation: Learning from stories', IEEE
Engineering Management Review, Winter1997, PP 89-102.

[6] SHRIVASTAVA.A.P, 'Technological Innovation in Developing Countries ' Colombia Journal of World

Business, Winter 1984, PP 23-29.
[7] AMULYA KHURANA & BIBHU DATTA BARAL, 'Creativity Innovation and Organizational thinking',
Abhigyan, Volume xv no1&2, 1997, PP 19-33.
[8] ROBERT STRINGER, 'How to Manage Radical Innovation', California Management Review, Volume 42 no4,
Summer2000, PP 70-88.
[9] JOHN BURTON, 'Innovation Entrepreneurship & the firm: A Post Schempetarian Approach', International
Journal of Technology Management, Volume17 nos1/2, 1999, PP16-36.
[10] DE. P.K, 'A critical assessment of the Technology Policy of India for Sustainable growth' working paper no
97/5, XLRI Jamshedpur, 1997.
[11] SHUKLA.M., 'Building Corporate Culture for Transformation', productivity 35(3), 1994, PP 418-428.
[12] U REILLY BRIAN, 'The Secret of Americas most Admired Corporations: New Ideas, New Products', Fortune,
March 3 1997.
[13] SHUKLA.M, 'Strategizing Research for Technological Research', Productivity 39/2, 1998, PP 204-210.
[14] JOHN.H.KELMER, 'Business Plans for Teaching Entrepreneurial Behaviour', Education + Training, Volume 34
no1, 1992, PP 30-32.
[15] BABURAO.G, 'Promotion of technical Entrepreneurship: Role of Humanities & Social Sciences', Journal of
Engineering Education, January 1999, Pp7-11.
[16] SMILOR & GILL, 'The New Business Incubator: Linking Talent, Technology, Capital and Know-how',
Lexington, MA: Lexington Books.
[17] RAYMOND.W.SMILOR, HENRY.R.FEESER, 'Chaos and the Entrepreneurial Process: Patterns and Policy
Implications for Technology Entrepreneurship', Journal of Business Venturing 6, PP 165-172.
[18] STONEMAN.P, ' The Economic Analysis of Technological Change' , London Oxford University Press, 1983.
[19] WASIF.M.KHAN, 'Technological Innovation in SME'S in Pakistan', Entrepreneurship & Innovation: Models
for Development: Ed. RABINDRA.N.KANUNGO, 1998, PP287-309.
[20] PETER.F.DRUCKER, 'The Discipline of Innovation', Harvard Business Review, November-December 1998,
PP 149-157.

A PROFILE OF A SUCCESSFUL EXPORT INDUSTRY FROM REGIONAL AUSTRALIA: THE WINERIES

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ABSTRACT

Australian wineries have shown a dynamism lacking in some other regional industries by successfully tapping into international markets. This paper provides a profile of the firms within the industry using a four stage model of internationalisation and is based on a sample of 292 wineries. The impact of management characteristics, and firm size are analysed. Reasons why some wineries stay in the domestic market and others expand into export markets are considered. In addition the factors believed to aid or inhibit export market expansion are also discussed. The paper concludes by highlighting the limitations of the study and suggesting directions for possible future research.

Key words: Regional Australia, Exporting, Internationalisation

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INTRODUCTION

The wineries have shown a dynamism lacking in some other regional industries by successfully tapping into international markets. Over the last decade this industry has experienced unprecedented growth in exports (around $100 million in 1989/90 to over 1 billion in 1999/00), especially to Europe and the United States. These are markets where, traditionally, Australia has run a trade deficit (ABS, 1999).

The success of the Australian wineries is even more impressive, given there is an over supply of wine in the world (Lages, 1999). Many of these firms have successfully tapped

into overseas markets, with a large proportion of newer wineries being international new ventures. They begin to export within six years of commencing operations.

This paper profiles the firms within the industry using a four stage model of internationalisation and is based on a sample of 292 wineries. The impact of management characteristics, and firm size are analysed. Reasons why some wineries stay in the domestic market and others expand into export markets are considered. In addition the factors believed to aid or inhibit export market expansion are also discussed. The paper concludes by highlighting the limitations of the study and suggesting directions for possible future research.

EXPORT BEHAVIOUR MODELS

There is an extensive body of literature pertaining to the export behaviour of firms. Currently, there is no single agreed model to explain how firms move from supplying domestic markets to overseas ones (referred to in the literature as the internationalisation process). However, there is substantial evidence for a stage model (see Leonidou and Katsikeas (1996) for a review). One of the tenets of stage models is that firms developed their exports in a cumulative manner, first expanding domestically then to psychologically close markets overseas, eventually to more complex and distant markets.

This study uses a four-stage model (see Wickramasekera, 1998, for a fuller discussion) to provide a profile of wineries at different stages in their export development. These are:

Stage 1: Awareness. During the first stage of the export adoption process the firm (adoption unit) becomes aware of exporting but management is not sufficiently interested in searching for additional information about it. These firms are still domestic market oriented.

Stage 2: Export Interest. The firms in this stage have a management team that is interested in the innovation of exporting.

Stage 3: Export Trial. Based on the available information, management draws conclusions about exporting. During this stage some firms undertake a "mental trial" (or desk evaluation) of exporting, whereas other firms will be willing to export on a limited basis. The experience gained during this stage will provide management with the information to adopt or reject the option of exporting (Schiffman and Kanuk, 1994).

Stage 4: Adoption (Established Exporters). Favourable management perceptions of export trials, or a favourable evaluation of them, will usually result in a firm deciding to proceed with exporting on a permanent basis. In this model, the post adoption evaluation, which can lead to a strengthened commitment and expansion into additional international markets, is (also) considered to be part of this stage.

STUDIES ON THE DETERMINANTS OF EXPORT BEHAVIOUR

A multitude of studies identified the importance of managerial attitudes and characteristics in developing international markets and achieving international success (Smith and Zeithaml, 1999; Calof and Viviers, 1995; Calof and Beamish, 1994; Aaby and Slater, 1998).

Top management with a "foreign market orientation" (Cavusgil and Nevin, 1981) has been considered an important factor in explaining the export behaviour of firms. Various management attributes have been identified as contributing to a foreign market orientation. Brooks and Rosson (1982) considered the type and level of education to be important. Ethnic background (Simmonds and Smith, 1968), ability to speak a foreign language (Brooks and Rosson, 1982; Swift, 1991) and the age of the manager (Bilkey, 1978) were also found to be positively correlated with exporting. However, the importance of these factors is debatable and it is more likely that this is indicative of other fundamental managerial attributes such as foreign market knowledge. Other researchers have emphasised the importance of foreign travel and overseas work experience (Ford and Leonidou, 1991), which could also be related to foreign market knowledge.

Some of the other important managerial factors identified are managerial perceptions of profit and costs (Simpson and Kujawa, 1974) and knowledge in export matters (Cavusgil and Zou, 1994). Simmonds and Smith (1968), used "international outlook" versus "national outlook" to classify managers while Roux (1979) considers this difference to be based on perceptions of risk, domestically- oriented managers being more risk averse than internationally-oriented managers.

INCENTIVES FOR EXPORT DEVELOPMENT

The extant literature from around the world has paid considerable attention to factors influencing the export behaviour of the firm. These factors have been considered to be both reactive and proactive (Albaum et al., 1985).

Researchers have generally identified that a firm possessing "firm-specific" advantages, attributes that give the firm a competitive advantage in the international market place, was likely to be more advanced in its export development than those that lacked them (Cavusgil and Naor, 1987; Axinn, 1988; Aaby and Slater, 1989). Other studies have questioned whether management initiates exports because of the confidence they have in the firm's competitive advantage. Tesar (in Bilkey, 1978) looked at management's perceptions of whether or not the firm had technological, marketing, financial or price advantages in entering export markets. However, as is the case with much of the internationalisation studies, the results tend to be contradictory in nature.

MANAGEMENT PERCEPTIONS OF FACTORS AIDING AND INHIBITING EXPORT ACTIVITY

Several studies have found that non-exporters perceive a greater number of barriers to exporting than exporters (Bilkey and Tesar, 1975). Some of the serious barriers to exporting identified in studies were insufficient export finance, foreign government restrictions, insufficient knowledge about market opportunities, inadequate product distribution abroad and a lack of foreign market connections (Bilkey, 1978). Perceived barriers tended to vary according to industry and to the stage of export development of the firm (Bilkey, 1978).

RESEARCH QUESTIONS

From the above discussion it is possible to formulate a number of research Propositions and questions. These include:

- Do management characteristics have an impact on the export behaviour of the firm?
- Do exporters target psychologically close overseas markets for their initial entry and subsequently progress to psychologically distant markets?
- What are some of the factors causing a winery to export?
- Why do some wineries stay in the domestic market?
- What factors are perceived to aid or inhibit export market expansion.

METHODOLOGY

The population for this study included all the wineries in Australia (N= 853), (ANZSIC code 2183). The survey instrument was a questionnaire, its content, design and structure based on an item analysis of theoretical and empirical research published over the previous four decades. Five- point likert-type questions were developed from the literature. The questionnaire was tested and after some modifications, was administered by post. The extensive questionnaire was designed to collect information on firm, managerial and marketing related information associated with exporting.

The questionnaires were targeted at the Marketing Manager of each winery (the key informant), either to fill out personally or to be directed to the person regarded as being responsible for the firm's decision whether or not to export. In total, 292 valid responses were received giving a response rate of over 32 percent. Based on the definitions established earlier, 71 firms were classified as being in stage 1 (awareness), 115 firms in stage 2 (interested in exports), 60 firms in stage 3 (trialing exports) and 46 firms in stage 4 (established exporters).

Mail surveys have been criticised for possible nonresponse bias. In this study methods proposed by Armstrong and Overton (1977) were used to test for sample bias. It was found that the sample is quite representative of the population based on these tests.

The results of the study are presented on the basis of frequency counts, means and One-Way Analysis of Variance (ANOVA) using SPSS software. The ANOVA procedure requires the assumptions that each of the groups is an independent random sample from a normal population and that in the population, the variances of the groups are equal. Tests were carried out to ensure that these assumptions were met, including the Levene test for homogeneity of variances (Norusis, 1993). The tests confirmed that the sample met these requirements.

In ANOVA analysis the significant *F* value is only an indication that the population means are probably not all equal. However there is no indication which pairs of groups appear to have different means. It is not possible to compare all possible pairs of means using a *t* test as the likelihood of statistical significance increases as comparisons involving the same means are made, though the population means are the same. In order to determine which means are significantly different from each other, multiple comparison procedures need to be adopted (see Winer, Brown and Michels, 1991 for a fuller discussion). For this study one of the commonly used techniques and one of the simplest, the Bonforroni test was adopted (Norusis, 1993).

Finally a number of semi-structured interviews were conducted to gain additional insights into the results obtained.

FINDINGS AND DISCUSSION

The number of employees

As indicated in Table 1 the wine industry consists of a very small number of "large" wineries, (2.1 percent), employing more than 500 employees and a large number of "small" wineries, 76.8 percent employing fewer than 10 employees, (52.5 percent employ 5 or less). These large wineries dominate the industry in terms of the value of exports.

Table 1: Number of employees

No. of Employees	% of Wineries	Cumulative %
5 or less	52.5	52.5
6 to 10	24.3	76.8
11 to 20	8.1	84.9
21 to 50	7.0	91.9
51 to 100	2.1	94.0
101 to 500	3.9	97.9
501 or above	2.1	100

However, it is also an industry where many small wineries engage in export activity. Over 73 percent of the exporting firms can be classified as small, having fewer than 20 employees (ABS, 2002 Cat. No. 8127.0). In fact, 65.7 percent of exporters have fewer than 10 employees and 40 percent fewer than 5 employees.

The findings of this study, are very similar to those of Calof (1994) and Bonaccorsi (1992) who indicated that size is not a inhibitor to export activity.

Location of Australian markets for wineries

As illustrated in Table 2, 55 percent of wineries have sales throughout Australia, 24 percent target the state where the winery is located and the adjoining states, 12 percent confine their sales to within the state where they are located while only 9 percent simply target their local region. In addition it appears that wineries that are more developed in their path to internationalisation (Adoption stage) tend to have expanded to a wider range of Australian markets than wineries less interested in exporting. The wineries in the Awareness stage tend to target the local/regional markets in which the winery is located. These results are consistent with the findings made by Wiedershiem-Paul, Olson and Welch (1978) that most firms sold interstate before beginning to export and would suggest a "stages" approach to internationalisation.

Table 2: Location of Australian markets for wineries at different stages of internationalization

	Stage of Internationalisation			
	Awareness	**Interest**	**Trial**	**Adoption**
Local region	25%	6%	3%	0%
Own state	20%	9%	15%	4%
Own & adjoining states	28%	27%	28%	2%
Australia wide	27%	58%	53%	94%

The above results are rounded to the whole %

Overseas markets

Respondents to the survey engaged in exporting were asked to indicate the number of overseas markets they serviced, the first overseas market entered and their most recent overseas market.

The number of markets serviced ranged from 1 to 48, the average being 7. As has been well documented elsewhere (Dwyer, 1992), the first market that most Australian wineries entered was the United Kingdom. In this survey almost 57 percent took this approach. The most recently entered overseas market is almost equally split between the United States and Thailand, with 16.3 percent of the firms indicating these countries as their most recent markets. Most of the countries listed as the first markets were in Europe, North America and New Zealand. For Australia and especially for the wine industry, these areas could be considered to be *"psychologically"* close rather than geographically close, as is the case for Asian countries.

Among the most recently entered markets, there were more Asian countries listed (China, Singapore and Malaysia), though other European countries such as Germany and Sweden were prominent as well. These results indicate that Australian wineries tend to target

"psychologically" close markets initially, and as they develop their international experience, they tend to target markets that are more "psychologically" distant. These results are consistent with international studies (Johanson and Vahlne, 1977).

Reasons for exporting

The results of the interviews were very diverse. According to one winery manager, their winery was "caught in the Australian market, needed to expand" and his brother (a wine judge) had contacts and networks which enabled them to find overseas agents to market their products.

For another winery, the trigger for the decision to export was a business plan formulated in 1960. They choose the market considered easiest to tap into, the UK. In order to gain entry to that market, the respondent worked with another winery and sought the assistance from their agent to export. In addition, the ability to network with other wineries was cited as being crucial to export success.

An interview was conducted with the export manager of one of the largest wineries in Australia and one of the largest exporters. They commenced their exports in the 1930s due to an unsolicited order, initially exporting surpluses.

During the interview, the manager stressed that the domestic market is still profitable and exports are considered a last resort for growth for the company. He cited the high fixed costs such as cost of travel and share of profit as inhibiting factors. In addition, the need to gain an advantage by using the business partners' resources (such as market knowledge, distribution networks and knowledge of local laws and customs) was stressed in tapping into new international markets. In certain countries where "gifts" need to be given to obtain permits, the company refrained from operating.

In contrast to the above winery, the next winery interviewed can be considered a "micro–firm" being a two person operation. The winery is located in a premium wine growing area in south Australia. The respondents cited their search for greater profits and larger markets to allow growth coupled with approaches by overseas buyers) who were willing to make payment up front for their products) as reasons for initiating exports. They also attributed their success to the region in which they were located.

In summary, it is clear that a number of reasons why some of the wineries were tapping into international markets emerged. One of the important factors appears to be the unsolicited orders that they receive, a finding consistent with many international studies that also identified the importance of this change agent (Bilkey 1978, Albaum et al., 1989). Another important factor is the ability of the firms to tap into networks, both formal and informal (in terms of "personal relationship with customers, distributors and consumers"). This finding is consistent with research by Bjorkman and Kock (1997) and Coviello and Munro (1997). Other factors emerging are a desire for greater profits (Louter, Ouwerkerk and Bakkar, 1991) and, the limited size of the domestic market (Kaynak and Kothari, 1997). In addition, some of the smaller wineries were able to

export profitably by tapping into "niche markets" where a premium price could be obtained.

Reasons for staying in the domestic market

The final winery to be interviewed was a domestic market-oriented operation. The wine maker had thirty years of industry experience but did not consider exporting to be worth while. According to the respondent, he was not satisfied that smaller exporters were actually making money from their international sales and considered it was more of an image-related factor due to media hype. He had received unsolicited export orders, however did not follow them up because it was felt the winery did not have the critical mass to sustain exports. In addition, the wines produced received a premium price from the domestic market, mainly from cellar door sales, because the customers perceived it cheaper to buy directly from the winery. Comments by other respondents have expressed similar views regarding exporting. These include:
"I believe for the small boutique winery we should concentrate on niche markets where price is not so important"

"My conversations with other winemakers … are all pessimistic about the return from exporting. Some I have spoken to have looked into it thoroughly".

Factors perceived to enhance or inhibit export market expansion

Researchers such as Calof and Beamish (1995) identified the profound impact that management perceptions have on the firm's decision to internationalise. The respondents to this study were requested to indicate the importance of thirteen "firm-specific" factors that enhanced their firm's product competitiveness in the market place. (See Table 3 for a summary of the results.) "The perceived high quality of the wines" and "the uniqueness of our wines" were deemed to be the most important factors enhancing market competitiveness by more than 80 percent of the respondents. Other significant factors were "quality packaging", "control costs by controlling the entire process", "the product's price", "well established cellar door sales" and "innovative production skills". More than 50 percent of the respondents indicated these as being important in enhancing competitiveness. There were no significant differences between the stages for the factors "perceived high quality of wines", "the uniqueness of our wines" and "product's price". However, the fact that wineries in all stages considered these factors contributed to the firm's competitiveness in the marketplace (defined as having a mean value greater than 3.0) is likely to reflect the highly competitive nature of the wine industry.

An, important factor in differentiating between the stages seems to be a "well established network of distributors". Firms in the Awareness stage clearly indicate that they do not have a good network of distributors but as the wineries develop, their network of distributors becomes better established. This was particularly indicated by the firms in the Adoption stage. This result, along with the findings from the interviews clearly indicate the significance of networks in achieving export market success (Benito and Welch,1994).

Table 3: Firm- Specific Factors Enhancing Competitiveness

	Mean –response				
Firm- specific factors enhancing competitiveness	Aware	Interest	Trial	Adoption	P <
The perceived high quality of wines.	4.4	4.5	4.6	4.6	NS
The uniqueness of our wines.	4.3	4.1	4.4	4.0	NS
Quality packaging.	3.5	3.9[1]	4.0[1]	4.2[1]	.0001
Control costs by controlling the entire process	3.6	3.6	4.1[2]	4.0	.0165
The product's price.	3.6	3.5	3.8	3.8	NS
Well established cellar door sales.	3.9	3.4	3.7	3.1[1]	.0089
Innovative production skills.	3.5	3.5	3.8	4.0	NS
Well established network of distributors.	2.4	3.3[1]	3.6[1]	4.1[1,2&3]	.0000

Means > than 3 indicates greater importance
1 = Significantly different from Awareness stage at the 95% confidence level, **2** = Significantly different from Interest stage, **3** = Significantly different from Trial stage

Factors inhibiting export activity

In response to questions on possible inhibiting factors to exporting, the majority of firms identified "the limited quantities of stocks for market expansion" as the major barrier. Other potential barriers where more than 50 percent of the firms "agreed" or "strongly agreed" included "lack of financial resources", "possible risks involved in selling abroad", "exchange rate variability", "low prices required to gain sales in major markets" and "compliance with export regulations".

The majority of firms in all the stages indicated "limited quantities of stocks for market expansion" as the main inhibiting factor, finding consistent with the results of the earlier Australian wine industry study by Dwyer (1992).

Though all firms indicated "limited quantities of stocks for market expansion" as the main inhibiting factor, firms in the Awareness stage found it more so than firms in other stages. "Lack of financial resources" was a major constraint for firms in the Awareness to Trial stages, showing a significant difference with the Adoption stage firms. Similar trends were exhibited for "risks involved in selling abroad", "legal and regulatory barriers in export markets", "difficulty in collecting payment from foreign markets", "problems in selecting a reliable foreign distributor" and "management's lack of knowledge and experience in export matters". Firms in the Trial stage see these factors as a greater problem than do firms in the Interest stage, possibly reacting to the discovery that once they start exporting they experience greater difficulties than anticipated (Cavusgil, 1982). However, once they become established in their export endeavours, these factors are no longer seen as a problem (mean value < 3.0). Similar trends are exhibited for "inadequate/incorrect market information" and "unfamiliar foreign business practices". These findings are again consistent with Cavusgil (1982).

All firms agree that there is limited government support to encourage exporting. However during the interviews, several respondents stressed the preference for a “hands off” approach by the government.

Wine in Australia are taxed at one of the highest rates in the world (see Anderson, 2000), including wines used for tasting appear to be a financial burden for the domestic market oriented small winemakers. Given this scenario wine makers were far more interested in a review of the taxation regime than government handouts. Comments included:
"Rapacious, three government taxes", "There is more and more red tape involved in exporting and additional costs for tasting for small wineries".

Managerial characteristics

In the literature cited previously, the characteristics of the firm's main decision maker has been related to the internationalisation behaviour of the firm. In this study, information was collected on the gender, country of birth (Australian born versus overseas), the completion of tertiary education, overseas work experience, received training in export matters, previously worked for a company that exported and fluency in a foreign language. (See Table for a summary of the results.)

Table 4: Managerial characteristics

	Percentage of Managers			
	AWARE	INTEREST	TRIAL	ADOPTION
Gender (% of males)	87%	92%	90%	87%
Country of birth (% born in Australia)	87%	83%	85%	82%
Completed tertiary education	76%	85%	76%	82%
Worked overseas	39%	51%	52%	64%
Received training in export matters	13%	38%	48%	55%
Previously worked for a company that exported	29%	50%	42%	34%
Fluency in foreign language(s)	12%	25%	16%	27%

The above results are rounded to a whole %

Generally, it was found that Australian wineries had highly educated managers. An average of 81% had received a tertiary education. Those firms that had an international market orientation (in the Interest, Trial or Adoption stages) had management that were much more skilled in export matters, had experience working overseas or had previously worked for a company that exported. However, managers that had received "training in export matters" was the most significant factor in differentiating between the Awareness stage and the other stages of internationalisation.

This is an important finding. It indicates that export promotion agencies can aid in developing commitment to exporting by providing appropriate training and information on export matters. The other management attributes could be an indirect indication of market knowledge.

CONCLUSION

The expansion of the wine industry has been built around a quality product, capitalising on the comparative advantage that Australia offers. The main limiting factor to the export expansion of the wineries appears to be the “limited quantities of stock”. However, the industry must be extremely careful to ensure that standards do not drop in its haste to increase production. Measures such as stringent chemical testing must be maintained, possibly with the Australian Wine and Brandy Corporation conducting random tests to ensure quality. Any drop in quality or breaches of food standards could have a serious impact on the entire Australian wine industry. In light of this vulnerability, wineries should try to differentiate their wines in the market place and promote their own brands.

The high tax regime in Australia is hurting some of the domestic market oriented, smaller wineries relying on cellar door sales or offering samples to buyers. Some tax deduction on samples used may assist these smaller wineries to expand. However, it is also possible that high taxes are forcing some wineries to export rather than concentrate on the domestic market. In future research this issue will need to be looked at in detail.

The results of this study indicate that management perceptions are important in determining whether a firm will decide to adopt and develop exports. However, the wine industry seems to have the right mix of attitudes. In general, wineries in the Awareness stage have made a conscious decision to remain domestic-market oriented. Wineries in the Interest stage are generally more enthusiastic than firms in the Trial stage. The difference in attitude could result from those firms in the Interest stage not being fully aware of barriers to exporting, whereas those in the Trial stage have experience of such problems.

In this industry, the role of business advisory organisations, such as regional development boards may be to dampen the enthusiasm of some of the winery managers by suggesting that they develop a greater presence in the domestic market before considering exports in psychologically close markets. Or, the winery must be able to tap into a psychologically close overseas "niche market", where a premium price can be obtained. The majority of successful wineries have adopted these approaches to tapping into international markets.

Limitations and suggestions for future research

This research has several limitations, suggesting opportunities for future research. The results of this study are based on a survey of a successful regional Australian industry - the wineries. This industry-specific study is valuable in explaining why some firms have a greater propensity to export when compared with similar firms (in terms of size, product and location) and why some firms exhibit such divergent behaviour in regard to their exports. Therefore, it is suggested that replication studies be carried out for other industries. It must also be noted that the results of this study, except those relating to management characteristics, are explained in terms of industry-specific factors. Thus factors which did not appear to be significant in this study should be included in any

future examination of other industries or in the wine industry itself, due to changes that could occur over time.

Due to time constraints, only a limited number of interviews were carried out. However, these yielded very valuable insights into the wine industry. More large scale, in depth, case studies of the industry must be carried our to better understand the process involved.

It is also important to note that there are many stages beyond export adoption as well as various other modes of entry into international markets. Future studies will need to examine the changes that occur in these areas as the Australian wine industry develops and matures.

REFERENCES

Aaby, N. & Slater, S. 1989, Management influences on export performance: A review of the empirical literature 1978-88. *International Marketing Review,* **6**(4), pp. 7-26.

Albaum, G., Strandskov, J., Duerr, E. & Dowd, L. 1989, *International marketing and export management*. Addison-Wesley, Sydney.

Armstrong, J. C. & Overton, T. S. 1977, Estimating nonresponse bias in mail surveys. *Journal of Marketing Research,* **XIV**(August), pp. 396-402.

Australian Bureau of Statistics. 1999, *Australian Economic Indicators 1350.0*. AGPS, Canberra.

Australian Bureau of Statistics. 2002, *Characteristics of Small Business 8427.0*. AGPS, Canberra.

Axinn, C. 1988, Export performance: Do managerial perceptions make a difference? *International Marketing Review,* **5**(2), pp. 61-71.

Barker, A. T. & Kaynak, E. 1992, An empirical investigation of the differences between initiating and continuing exporters. *Asia Pacific International Journal of Marketing,* **4**(1), pp. 27-36.

Barrett, N. & Wilkinson, I. 1985, Export stimulation: A segmentation study of the exporting problems of Australian manufacturing firms. *European Journal of Marketing,* **19**(2), pp. 53-72.

Bilkey, W. 1978, An attempted integration of the literature on the export behavior of firms. *Journal of International Business Studies,* **9**(Spring-Summer), pp. 33-46.

Bilkey, W. & Tesar, G. 1977, The export behavior of smaller-sized Wisconsin manufacturing firms. *Journal of International Business Studies,* **8**(Spring-Summer), pp. 93-98.

Brooks, M. & Rosson, P. 1982, A study of export behaviour of small and medium-sized manufacturing firms in three Canadian provinces. *Export managment: An international context.* Editors M. Czinkota & G. Tesar. Praeger Publishers, New York.

Brouthers, K. 1995, The influence of international risk on entry mode strategy in the computer software industry. *Management International Review*, **35**(1), pp. 7-28.

Calof, J. & Beamish, P. 1994, The right attitude for international success. *Business Quarterly*, **59**(1), pp. 105-110.

Calof, J. & Beamish, P. 1995, Adapting to foreign markets: Explaining internationalization. *International Business Review*, **4**(2), pp. 115-131.

Calof, J. & Viviers, W. 1995, Internationalization behavior of small- and medium-sized South African enterprises. *Journal of Small Business Management*, **33**(4), pp. 71-79.

Cavusgil, S. & Naor, J. 1987, Firm and management characteristics as discriminators of export marketing activity. *Journal of Business Research*, **15**(3), pp. 221-235.

Cavusgil, S. & Nevin, J. 1981, Internal determinants of export marketing behavior: An empirical investigation. *Journal of Marketing Research*, **18**(February), pp. 114-119.

Cavusgil, S. & Zou, S. 1994, Marketing strategy-performance relationship: An investigation of the empirical link in export market ventures. *Journal of Marketing*, **58**(1), pp. 1-21.

Cellich, C. 1989, Training export executives of small companies. *International Trade Forum*, **25**(4), pp. 8-11,31-32.

Chetty, S. & Hamilton, R. 1993, Firm-level determinants of export performance: A meta-analysis. *International Marketing Review*, **10**(3), pp. 26-34.

Daly, K., Evangelista, F. & Kearney, C. 1993, Exporting manufactures from Western Sydney. *Economic Papers*, **12**(4), pp. 73-85.

Dominguez, L. V. & Sequeira, C. G. 1991, Strategic options for LDC exports to developed countries. *International Marketing Review*, **8**(5), pp. 27-43.

Dwyer, W. 1992, An analysis of the Australian wine exporter. *Discussion Paper Series*, University of Western Sydney, **E9208** .

Erramilli, M. 1991, The experience factor in foreign market entry behavior of service firms. *Journal of International Business Studies*, **22**(3), pp. 479-501.

Ford, D. & Leonidou, L. 1991, Research developments in international marketing. *New perspectives on international marketing.* Paliwoda S J, Routledge, London.

Johanson, J. & Vahlne, J. 1977, The Internationalization process of the firm - A model of knowledge development and increasing foreign market commitments. *Journal of International Business Studies,* **8**(1), pp. 23-32.

Katsikeas, C. & Morgan, R. 1994, Differences in perceptions of exporting problems based on firm size and export market experience. *European Journal of Marketing,* **28**(5), pp. 17-35.

Leonidou, L. & Katsikeas, C. 1996, The export development process: An integrative review of empirical models. *Journal of International Business Studies,* **27**(3), pp. 517-551.

Leonidou, L. C. 1995, Export stimulation research:Review, evaluation and integration. *International Business Review,* **4**(2), pp. 133-156.

Lim, J., Sharkey, T. & Kim, K. 1993, Determinants of international marketing strategy. *Management International Review,* **33**(2), pp. 103-120.

Louter, P., Ouwerkerk, C. & Bakker, B. 1991, An inquiry into successful exporting. *European Journal of Marketing,* **25**(6), pp. 7-23.

Miesenbock, K. 1988, Small business and internationalisation: A literature review. *International Small Business Journal,* **6**(1), pp. 42-61.

Norusis, M. J. & SPSS. 1993, *SPSS for Windows, Professional Statistics Release 6.0.* SPSS Inc, New York.

Owen, K. 1993, *Business growth and export development: Issues for firms in rural areas.* The Rural Development Centre, University of New England, Armidale.

Philp, N. 1998, The export propensity of the very small enterprise (vse). *International Small Business Journal*, **16**(4), pp. 79-93.

Ramaseshan B & Soutar G . 1996, Combined effects of incentives and barriers on firms' export decisions. *International Business Review,* **5**(1), pp. 53-65.

Roux, E. 1987, Manager's attitude towards risk among determinants of export entry of small and medium-sized firms. *Managing export entry expansion.* P. J. Rosson & S. D. Reid, Praeger, New York.

Schiffman, L. & Kanuk, L. 1994, *Consumer behavior.* Prentice Hall, USA.

Simmonds, K. & Smith, H. 1968, The first export order: A marketing innovation. *British Journal of Marketing,* **2**, pp. 93-100.

Simpson, C. & Kujawa, D. 1974, The export decision process: An empirical inquiry .

Journal of International Business Studies, **5**(Spring/Summer), pp. 107-117.

Smith, A. & Zeithaml, C. 1999, The intervening hand: Contemporary international expansion processes of the regional bell operating companies. *Journal of Management Inquiry*, **8**(1), pp. 34-64.

Styles, C. & Ambler, T. 1994, Successful export practice: The UK experience. *International Marketing Review*, **11**(6), pp. 23-47.

Sullivan, D. & Bauerschmidt, A. 1989, Common factors underlying barriers to export: A comparative study in the European and US Paper industry. *Management International Review*, **29**(2), pp. 17-32.

Sullivan, D. & Bauerschmidt, A. 1990, Incremental internationalization: A test of Johanson and Vahlne's thesis. *Management International Review*, **30** (1), pp. 19-30.

Swift, J. 1991, Foreign language ability and international marketing. *European Journal of Marketing*, **25**(12), pp. 36-49.

The Bureau of Industry Economics. 1990, Impediments to manufactured exports. AGPS, Canberra.

Walters, P. 1993, Patterns of formal planning and performance in U.S. Exporting firms. *Management International Review*, **33**(1), pp. 43-63.

Weinzimmer, L. 1996, Identifying management factors that motivate domestic companies to pursue international activities. *Multinational Business Review*, **4**(2), pp. 94-103.

Wickramasekera, R. 1998, A Measure of the Stage of Internationalisation of a Firm. *Working Papers in Management* ,Charles Sturt University, Wagga Wagga **(4/98**).

Wiedersheim-Paul, F., Olson, H. & Welch, L. 1978, Pre-export activity: The first step in internationalization. *Journal of International Business Studies*, **9**(Spring-Summer), pp. 47-58.

Winer, B. J., Brown, D. R. & Michels, K. M. 1991, *Statistical principles in experimental design.* 3 edn. McGraw-Hill, New york.

WITH A LITTLE HELP…STRATEGIC USE OF NETWORKING AND PARTNERSHIPS BY A BORN-GLOBAL SME

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ABSTRACT

In recent years, research on born global companies (also known as international new ventures) has refocused attention on the internationalisation of small young firms. Born global manufacturers have used network connections and strategic partnerships as core elements of their internationalisation strategy but the use of this approach by born global service firms has yet to be fully explored. This study details the use of networking and partnerships by Pivot Maritime, a born global maritime training company, and demonstrates their important contribution to the successful establishment of the company's international business operations.

INTRODUCTION

The contribution of small and medium enterprises (SMEs) to international trade has long been recognised (Dowling et. al., 2000; Graham, 1999; Westhead, 1995) and in recent years SMEs have become increasingly active in pursuing opportunities in international business (Corviello & McAuley, 1999; Knight, 2000). In 1998, small businesses employing less than twenty people represented seventy seven per cent of exporting businesses in Australia, with this sector representing the strongest growth in the number of businesses exporting (Pink & Jamieson, 2000). More importantly, recent findings by the Australian Trade Commission suggest that this trend will continue as small and micro businesses become more aggressive in entering world markets (Harcourt & Goy, 2002).

One of the strongest illustrations of SME proactivity towards international trade is that demonstrated by born global firms (Rennie, 1993). These small and micro enterprises (also known as "international new ventures") are characterised by "observable and significant commitments of resources to international operations" from the very early stages of the firm's life (Oviatt & McDougall, 1994: 49). Characterised by a global vision from inception, born global firms are founded with the specific intention of moving directly into international markets (Oviatt & McDougall, 1995). In contrast to their "gradually globalising" counterparts (Harveston, Kedia & Davis, 2000: 92) born global firms appear to skip through key steps of the internationalisation process, with international expansion often preceding or concurrent with the development of domestic market activities (Bell & McNaughton, 2000).

Three of the main factors thought to have supported the phenomena of born global firms are the increasing role of niche markets for highly specialised and customised product offerings,

technological advancements that have decreased the costs of conducting business internationally, and greater accessibility to the knowledge and facilitating institutions that provide the means to internationalise (Knight & Cavusgil, 1996; Rennie, 1993). These environmental conditions appear to have made unique firm knowledge and swift response capabilities more relevant to international business success than the economies of scale and domestic market experience to which the success of large multinational enterprises has traditionally been attributed (Cavusgil, 1994; Liesch & Knight, 1999). At the same time, they have promoted the use of strategic alliances and networking by SMEs wishing to move into global markets (Bonk, 1996; Coviello & McAuley, 1999).

The benefits of strategic alliances and inter-firm networks for pooling resources, minimising the costs of business projects and gaining access to new markets and skills have attracted a considerable amount of research attention (Gulati, 1998; Lorenzoni & Lipparini, 1999; Park 1996). Network linkages enable firms to enhance their competitive capabilities while sharing the risks of business activities with their partner firms. As a result, the development of network relationships has become particularly popular with small entrepreneurial firms as a mechanism for overcoming the advantages of resource access and market power held by larger competitors (Hitt, Keats & DeMarie, 1998). Case research on born global firms has suggested that the utilisation of strong business networks is a key element in their internationalisation strategy (Jolly, Alahuhta & Jeannet, 1992; Oviatt & McDougall, 1994; Reuber & Fischer, 1997). However, research on born global firms has predominantly focused on experiences of manufacturing firms so the possible uses of such strategies by born global service firms to overcome the specific challenges of international service delivery is not well understood.

THEORETICAL BACKGROUND

Research on the use of networks by SME firms suggests that they can assist firms in four main ways: provision of market information, increased access to resources, enhanced credibility and greater strategic responsiveness. The potential for these mechanisms to assist born global service firms in their international service delivery is discussed in the following section.

Use of networks to provide information on markets and business opportunities

Networks can create conduits of information flows and knowledge formation critical to the firm's competitive performance, particularly where these relate to information about international market opportunities (Coviello & Munro, 1995). For small firms that lack the resources to engage in comprehensive environmental scanning and assessment, such conduits can provide critical information about niche market opportunities that may be too small or specialised to be profitable to larger firms, but could be successfully targeted by smaller players (Knight & Cavusgil, 1996). Networks can also provide key assistance with internationalisation for SMEs through the provision of information relevant to international markets, and shortening of the learning curve associated with undertaking international operations (Liesch & Knight, 1999).

Service firms operating in international markets face particular challenges in service delivery. For firms offering highly intangible services, production and consumption cannot be separated so a high degree of face-to-face contact is required between the service provider and client (Fletcher & Brown, 2002). The commitment of personnel and other resources to facilitate service delivery therefore means that such firms cannot move gradually into international operations but must "be on foreign soil from day one" (Patterson & Cicic, 1995: 77). For these firms, the information provided by network contacts ensures that resources are deployed appropriately for successful service delivery. For born global service firms, internationalising in the very early stages of the

company's life also precludes the application of experiential learning from domestic market operations to these issues, leading to greater dependency on external sources for information.

Networks as a source of resources and capabilities

One of the key business issues faced by SMEs in international markets is competing with relatively fewer resources and scale economies than their MNE counterparts (Boter & Holmquist, 1996; Jones, 1999). The challenge of obtaining sufficient resource support for internationalisation is exacerbated for born global firms by their lack of investment or established positions in other markets (Jolly et al., 1992). Developing alliances or partnerships with other network members can overcome this challenge by providing access to resources that the firm may be unable or unwilling to obtain outright (Combs & Ketchen, 1999; Dyer & Singh, 1998). This enables the firm to focus on its area of expertise rather than on the development of a fully-internalised worldwide business system (Jolly et al., 1992). Collaboration can also provide access to additional capabilities, which allows small firms to participate in larger business projects than they could otherwise undertake by contributing their area of specialisation to a larger pool of expertise (Miles & Snow, 1994).

Previous research on born global firms has found the use of network structures as an alternative to the internalisation of resources to be a distinguishing characteristic of born global firms (see Oviatt & McDougall, 1994). For born global service firms, this strategy offers particular advantages for the service delivery process. Service performances that necessitate face-to-face contact between the service provider and client require access to appropriate facilities and a physical environment conducive to service delivery (Bitner, 1992). If these are not readily available, they may have to be developed by the service firm in order to ensure that the quality of the service offering is maintained. Service firms that can utilise network partnerships to gain access to partner facilities may therefore offset a substantial element of the resource commitment associated with international operations by circumventing the need to invest in such facilities themselves. For born global service firms, this can overcome the lack of capital and resources from domestic operation that might otherwise constrain internationalisation.

Network assistance with enhancing the legitimacy, credibility and marketing of service firms

In addition to providing information to the firm about the industries and markets in which it operates, network connections can also enhance the legitimacy and credibility of member firms (Cropper, 1996). For service firms whose products are highly intangible, this has particularly important implications. Since customers can rarely pre-test or inspect the service before purchase, they must rely more heavily on other signals, such as the company's image, its reputation, and word of mouth, to assess the product's quality and differentiate it from alternatives (Zeithaml, Berry & Parasuraman, 1993). Internationalising in the very early stages of the company's life means that born global companies do not have the advantage of a domestic market history to provide business credibility (Jolly et al., 1992). Thus for born global service firms, building the company's profile and generating positive word-of-mouth through credible sources such as customers and business partners is fundamental to achieving an international market presence (McDougall, Shane & Oviatt, 1994).

Network assistance with facilitating responsiveness and customisation of service delivery

Networks enhance organisational flexibility by enabling firms to better perceive and interpret changes within their operating environment and facilitate speedier and more appropriate responses (Harrison & St John, 1996). Links to information networks are therefore key to the identification and leverage of new market possibilities. For example, contacts in local markets may be able to inform service providers about cultural issues that may have to be accommodated in service provision (Goodwin & Elliot, 1995), and the degree of customisation that the service product may therefore require (Fletcher & Brown, 2002). The focus on rapid penetration of niche markets associated with born global companies (Jolly et al., 1992) makes this a critical issue as such windows of opportunity are often narrow and associated with very short life cycles (Bell & McNaughton 2000). By highlighting opportunities for product refinement and innovation, feedback from local markets also facilitates a move away from dependence upon a single product offering and stabilisation of the company's market presence (Oviatt & McDougall, 1995).

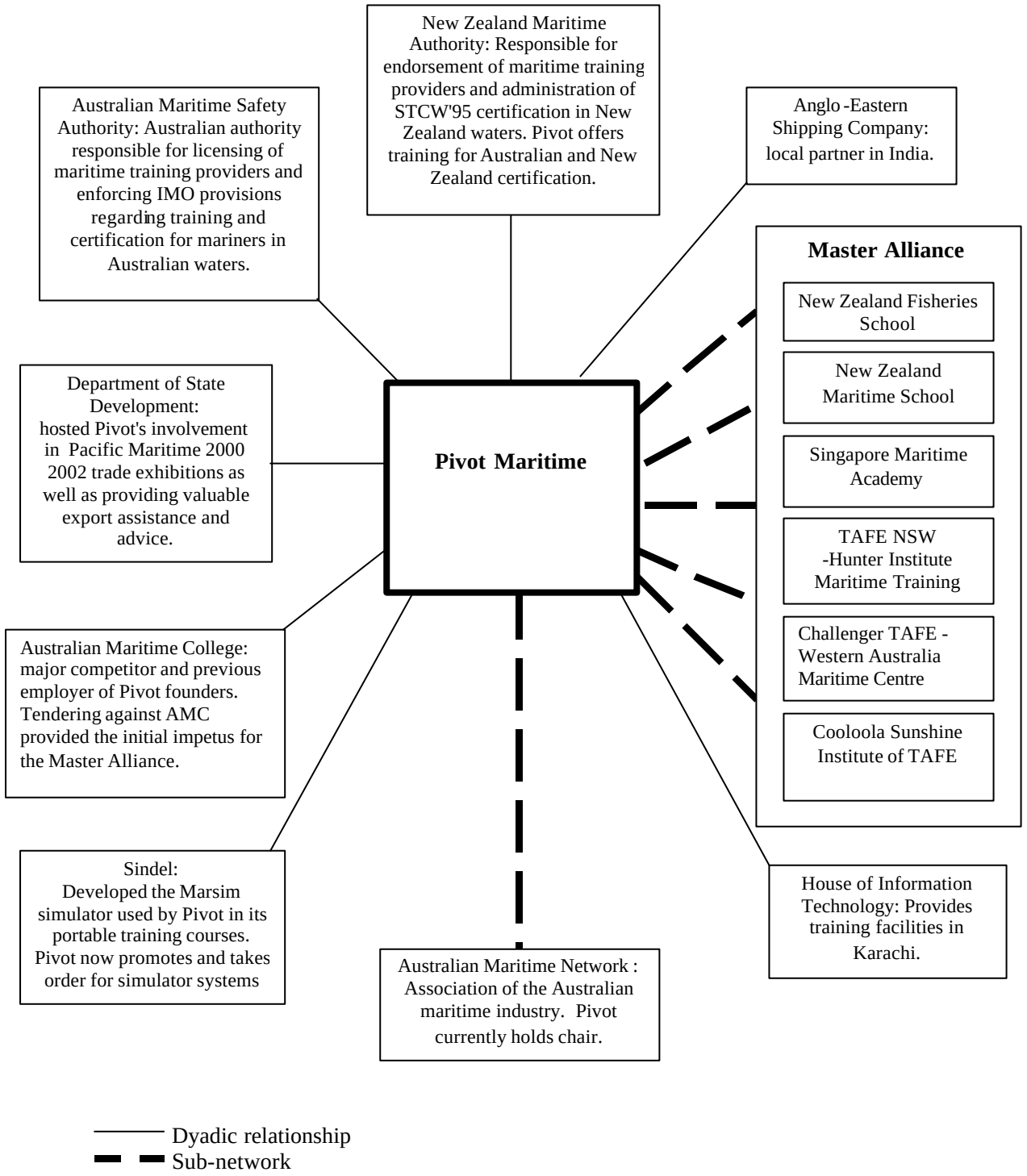
RESEARCH METHOD

To investigate these issues, the study examined the operations of Pivot Maritime Pty Ltd, a maritime training company founded in 1999. Pivot was chosen as the focal organisation because it fit the criteria for a born global company of being international from inception. Firstly, the company conducted its first offshore classes within 18 months of its founding, which is consistent with the definitional time frames for born global firms used by academic researchers and statisticians (Oviatt & McDougall, 1997; Rennie, 1993; Wickramasekera & Bamberry, 2001). Secondly, the company was founded with the specific intention of focusing on operating in overseas rather than domestic markets. In 1997, the International Maritime Organisation announced amendments to the International Convention for Seafarers Training Certification and Watchkeeping (STCW'95) which required all international shipping mariners qualified under the previous convention to undergo additional training and apply for re-qualification by February 1, 2002. (This deadline has now been conditionally extended to August 1, 2002). A key component of the training involved the use of simulator systems, which at that time were all fixed site and meant that mariners holding Australian qualifications had to travel to Australia to upgrade their certification. Recognising a market opportunity for portable training delivery, Pivot's founders invested in developing a portable simulator system that could be taken to offshore locations to cater specifically to mariners who wished to undertake their STCW'95 training without having to travel to Australia to do so. The company has since branched into other areas of portable maritime training and Pivot's founders currently estimate that approximately 80% of the company's business is conducted in overseas markets.

Semi structured interviews were conducted with the four founders of Pivot, the company's operations manager and key members of Pivot's organisational network. Written notes were taken during interviews, with company documents providing additional information and triangulation of interview data. Data analysis was conducted using QSR's N5 software.

RESULTS AND DISCUSSION

Figure 1: Organisational structure of the Pivot Network



The utilisation of network relationships has been a cornerstone of Pivot's business philosophy from its inception. As one of the founders explained,

We're good but we're small, so the only way to grow was through [relationships]… in the industry and…with other training institutions.

Pivot's organisational network structure includes two distinct sub-networks. One is the maritime industry network, which is formally recognised by Pivot's membership of the Australian Maritime Network, an industry association sponsored by the Department of Transport. The other is the Master Alliance, which is a commercial entity established as an alliance of network partners.

AMNET

The Australian Maritime Network (AMNET) is an umbrella body that was established in 1995 to promote Australia's maritime industry. AMNET's focus is to facilitate and increase the flow of information within the maritime industry and between the industry and the general public. This is achieved by providing a forum for debate and discussion about industry issues, and promoting the industry to other sectors of the community, including government and other industries (AMNET website, 2002). Through its position as current chair of AMNET Pivot is able to stay abreast of issues and trends emerging within the maritime industry and be involved in industry initiatives undertaken to develop and promote the sector.

The Master Alliance

The Master Alliance was founded in June 2000 and officially launched as an independent enterprise at the International Conference on Engine Room Simulators in 2001 (Pivot Maritime, 2001). The alliance is governed through an agreement that was negotiated between members towards "raising the individual profiles [of members] in the marketplace and providing increasing opportunities to sell their services within Australia and overseas" (Pivot Maritime, 2000a). According to Pivot's commercial director:

This alliance provides the largest maritime and seafood training capability in Australasia and offers the maritime community a unique opportunity to deal with one provider who has the extensive experience, reputation and capability to cater for all their training, education and research needs…. This strategic advantage will increase the competitive strength of individual members and will promote greater growth and cost efficiencies with alliance members.

The Master Alliance has its own business plan and members are expected to "pull out their chequebooks" as part of being involved with the alliance. Because member organisations also operate independently, however, the Master Alliance is promoted and operated as a distinct entity.

It's critically important that Master is seen as separate to its members, so that people within and external to the alliance can see what each member is doing and be clear on whether it is for Master or themselves. Otherwise they will say [of members] "they are doing this to get benefits for themselves, not for the alliance".

Pivot's founders see a clear differentiation between the company's membership of AMNET and the Master Alliance in terms of what each network facilitates and how the company's membership is to be managed.

AMNET is about getting people to share information. Master is an alliance. It's about saying "we can lower our costs and do more [business] if we do it together."

Network provides information on markets and business opportunities

Much of Pivot's information about industry issues is accessed through its involvement in AMNET, and the company's founders see the communication that is facilitated by AMNET as one of the key benefits of the company's involvement. This includes communication with other industries and government agencies, as AMNET also functions as a representative body for the maritime industry in such relationships.

While AMNET is a major conduit for Pivot's information about industry and market developments, this is complemented by the informal networks of professional and personal contacts in which company members participate. The varied backgrounds of Pivot's founders gives the company access to a broad range of contacts and information and it is Pivot's ability to access and act on such information that has underpinned its competitive success to date. The company also sees this as a major element of the contribution it is able to make to the Master Alliance.

We're able to be flexible. So if we hear about a tender that closes in, say, a week, we can act on that. Some of our partners are much bigger and more bureaucratic and they can't respond in that sort of time frame so that's what we can do.

Networks as a source of resources and capabilities

Offering flexibility in the location of training courses has meant that access to suitable facilities is a key issue for Pivot's service delivery. The company has addressed this by negotiating agreements with strategic partners in local markets to obtain access to partner facilities, which has enabled Pivot to hold a greater degree of control over the quality of the facilities and obviated the need to use costlier locations (such as hotel facilities) for course delivery. In cases where the partners are educational institutes the partnership agreements have included the transfer of responsibility for course bookings and student administration to the local partner, relieving Pivot of the administrative burden of making these arrangements from Australia.

Network relationships have also enabled Pivot to obtain valuable assistance in generating exposure for the company and overcoming some of the challenges of establishing an international scope of operation. According to Pivot's founders, one of the most instrumental partners in this process has been the Tasmanian Department of State Development (DSD). For example, Pivot's representation at the Pacific 2000 and 2002 Maritime Exhibitions in Sydney was facilitated by inclusion as a member of the Tasmanian contingent hosted by the DSD. Involvement in this major trade exhibition has been critical to developing Pivot's profile in the maritime industry. Pivot was able to use the exhibition as a forum for exhibiting their simulator and demonstrating their training programs, thereby providing potential clients with an opportunity to trial the simulator system and evaluate Pivot's service offerings. Pivot was also able to host representatives from Sindel, the manufacturers of their simulator system, as guests at the convention, which enabled both companies to gain valuable feedback on how their products were perceived by customers and how these could be developed in the future. Without DSD's support, participation in the exhibitions would have placed a prohibitive draw on Pivot's company resources, and as Pivot has expanded internationally DSD has also provided invaluable advice on issues such as processing overseas payment of course fees and other aspects of international business.

Collaboration with network partners has enabled Pivot to engage in a much broader range of activities than it could sustain with its current base of physical, financial and human resources. With the company in a period of rapid growth, this issue of expanding the company's human resource capabilities has been particularly relevant. Due to the IMO deadline for the completion of STCW'95 upgrade training, Pivot has had to accommodate high short-term demand for these courses, which has been achieved through the use of contracted training staff. This has enabled Pivot to avoid committing to the employment of additional full time staff until the company has clarified how these will be deployed in the future. Several of the individuals that Pivot has brought in as contractors on particular projects have come from partner institutions, which has generated benefits for both parties.

We've been able to say "hey come and work on this with us", so we get to borrow their expertise and they get to do something different and build up their resume.

Pivot's involvement in the Master Alliance is perhaps the most illustrative example of the company's network approach to facilitating its business activities. It's involvement in the alliance has been driven by the realisation that as the company diversifies into other types of maritime training, many of its customers will require services and competencies that Pivot cannot provide. Through the Master Alliance, member organisations have been able to collaborate on larger projects and then subcontract the work between them. As one Pivot founder explained

Everyone in Master has their own speciality, their own area of expertise. For example, Hunter [Institute of Technology] is responsible for all the engineering work, while Pivot does all deck side training. By bringing those together, we can tender for contracts that we could never compete for on our own so even though everyone only gets a slice, the pies are bigger.

Network assistance with enhancing legitimacy, credibility and marketing of service firms

As a very young company, one of Pivot's key challenges in establishing itself has been building the company's profile. As one of Pivot's founders explained,

We knew how long the STCW'95 training would last for…it was an opportunity to get [the business] started within three years. The intention was to use that as a springboard to get a profile, get some market share, and then move on to other things.

In this, its most valuable resource has been the personal reputations of its founders, and the assistance of network partners.

It's a very small, tight-knit industry and it's one of those industries where people know you personally. People didn't know Pivot but they knew us so we were able to ring them and say "this is what we're doing and where, come and see us and see what you think".

This was a particular advantage for Pivot when attracting business for the offshore STCW'95 courses, since many of the mariners seeking re-qualification had known the Pivot founders when they were instructors at the Australian Maritime College. Although potential students were unfamiliar with Pivot Maritime as a training institution, they were able to evaluate its course offerings on the basis of their previous tuition under Pivot's instructors. Positive word of mouth and referrals from students has also generated a number of other benefits for the company. For example, Pivot's partnership agreement to use the facilities of an IT training institute in Karachi

for its courses in Pakistan was initiated by the institute's owner after he completed a Pivot training course.

Pivot's network partners have also assisted the company in overcoming a number of challenges that it has faced in operating in overseas locations. Increased security measures by a number of national governments have prevented Pivot from conducting training courses in Pakistan and required the company to make alternative arrangements for its Pakistani students. With the assistance of its partners in Singapore, Pivot was able to fulfil its teaching commitments by transferring the location of its courses from Pakistan to Singapore. Pivot has also been able to outsource much of its marketing activities in local markets, enabling company members to concentrate on other areas, such as conducting the training courses and developing other training programs. In India, for example, Pivot's partnership with Anglo-Eastern Shipping Company transfers responsibility for local advertising for Pivot courses to Anglo-Eastern, who then bill Pivot for any advertisements placed on their behalf.

Network assistance with facilitating responsiveness and customisation in service delivery

As Pivot has established itself as a company it has relied on network partners for feedback on the company's performance and for suggestions on how it could better accommodate the needs of its customers. The importance of this feedback was demonstrated very soon after Pivot was founded in an incident that the company's founders consider critical to its development. Initially, Pivot charged a flat fee per course to its shipping company clients on the understanding that the course had to run "with a minimum of five students but no more than twelve" (due to the conditions of Pivot's training licence). As one of the founders explained,

The companies began selling seats on the course to other people and effectively getting their people trained for free. Word got around that Pivot was giving people special rates and preferential treatment and when we heard about it we realised we were losing money and credibility. So we changed our charges very quickly.

With this feedback, Pivot was able to respond to customer concerns and avert a situation that could have been disastrous to its reputation and ability to generate business.

Customer feedback has also helped Pivot to make its services more responsive to student requirements. For example, a postal strike in Mumbai resulted in an inadvertent delay to a number of Indian students receiving their course certification from Pivot. Without this documentation, they could not apply to the Australian Maritime Safety Authority (AMSA) to upgrade their qualifications and maintain their permission to work on ships in Australian ports. This incident led Pivot to negotiate an arrangement with AMSA whereby the company could fax notification of course completion directly to AMSA, so that mariners could apply to have their qualifications upgraded immediately after completing the course. In this instance the company was able to add value to its relationships with both parties by assisting the relationship between them.

CONCLUSION

Pivot Maritime's experiences in developing an international market presence suggest that the benefits of a network orientation that have been demonstrated by previous research on born global manufacturing firms may also apply to born global service firms. Some of the advantages provided through network relationships relate specifically to the challenges of delivering a high

contact service in numerous local markets. As such, the extent to which they may be relevant to born global providers of other types of service offering requires further research. However, the assistance provided by network members with challenges such as establishing the company's reputation, accessing information on niche market opportunities and tendering for business projects in international markets is consistent with prior research on born global firms and other categories of internationalising SMEs. This study therefore provides additional support for the value of a network orientation for SMEs expanding their operations in this way.

REFERENCES

Australian Maritime Network. 2002. www.amn.asn.au. Accessed 26th March.

Bell, J. & McNaughton, R. 2000. ***"Born global" firms: a challenge to public policy in support of internationalisation.*** Paper presented at the International Marketing Educators' Conference: Marketing in a Global Economy, Buenos Aires, Argentina.

Bitner, M. J. 1992. Servicescapes: the impact of physical surroundings on customers and employees. ***Journal of Marketing***, 56 (2): 57- 72.

Bonk, E. T. 1996. The information revolution and its impact of SME strategy: the International Economic Co-operative Forum as model. ***Journal of Small Business Management***, 34 (1): 71-78.

Boter, H. & Holmquist, C. 1996. Industry characteristics and internationalisation processes in small firms. ***Journal of Business Venturing***, 11: 471-487.

Cavusgil, S. T. 1994. Born globals: a quiet revolution among Australian exporters. ***Journal of International Marketing***, 2 (3): 1-4.

Coombs, J. G. & Ketchen, D. J. Jr. 1999. Explaining inter firm co-operation and performance: towards a reconciliation of predictions from the resource based view and organisational economics. ***Strategic Management Journal***, 20: 867-888.

Coviello, N. E. & McAuley, A. 1999. Internationalisation and the smaller firm: a review of contemporary empirical research. ***Management International Review***, 39 (3): 223-256.

Coviello, N. E. & Munro, H. J. 1995. Growing the entrepreneurial firm: networking for international market development. ***European Journal of Marketing***, 29 (7): 49-57.

Cropper, S. 1996. Collaborative working and the issue of sustainability. In C. Huxham (Ed.), ***Creating collaborative advantage***: 80-100. London: Sage.

Dyer, J. H. & Singh, H. 1998. The relational view: cooperative strategy and sources of interorganisational competitive advantage. ***Academy of Management Review***, 23 (4): 660-680. .

Dowling, P. J., Liesch, P. W., Flint, J. A., As-Saber, S., Chan, K. & Innes, P. A. 2000. Strategies in exporting firms: a study of Australian small to medium enterprises exporting to Asia. ***Journal of Australian and New Zealand Academy of Management***, 6 (2): 1-19.

Fletcher, R. & Brown, L. 2002. ***International marketing: An Asia-Pacific perspective*** (2nd ed). Frenchs Forest, NSW: Prentice Hall.

Goodwin, J. S. & Elliot, C. J. 1995. Exporting services: developing a strategic framework. ***SAM Advanced Management Journal***, 60 (1): 21-27.

Graham, P. G. 1999. Small business participation in the global economy. ***European Journal of Marketing.*** 33 (1/2): 88-102.

Gulati, R. 1998. Alliances and networks. ***Strategic Management Journal***, 19: 293-317.
Harcourt, T. & Goy, F. 2002. ***Knowing and growing the exporter community***. Canberra: Australia Trade Commission.

Harrison, J. S. & St John, C. H. 1996. Managing and partnering with external stakeholders. ***Academy of Management Executive***, 10 (2): 46-61.

Harveston, P. D., Kedia, B. L. & Davis, P. S. 2000. Internationalisation of born global and gradual globalising firms: the impact of the manager. ***Advances in Competitiveness Research***, 8 (1): 92-99.

Hitt, M. A., Keats, B. W. & De Marie, S. M. 1998. Navigating in the new competitive landscape: building strategic flexibility and competitive advantage in the 21st century. ***Academy of Management Executive***, 12 (4): 22-50.

Jolly, V. K., Alahunta, M. & Jeannet, J-P. 1992. Challenging the incumbents: how high technology start-ups compete globally. ***Journal of Strategic Change***, 1: 71-82.

Jones, M. V. 1999. The internationalisation of small high-technology firms. ***Journal of International Marketing***, 7 (4): 15-41.

Knight, G. 2000. Entrepreneurship and marketing strategy: the SME under globalisation. ***Journal of International Marketing***, 8 (2): 12-32.

Knight, G. A. & Cavusgil, S. T. 1996. The born global firm: a challenge to traditional internationalisation theory. ***Advances in International Marketing***, 8:11-26.

Liesch, P. W. & Knight, G. A. 1999. Information internalisation and hurdle rates in small and medium enterprise internationalisation. ***Journal of International Business Studies,*** 30 (2): 383-393.

Lorenzoni, G. & Lipparini, A. 1999. The leveraging of interfirm relationships as a distinctive organisational capability: a longitudinal study. ***Strategic Management Journal***, 20: 317-338.

McDougall, P. P., Shane, S. & Oviatt, B. M. 1994. Explaining the formation of international new ventures: the limits of theories from international business research. ***Journal of Business Venturing***, 9 : 469-487.

Miles, R. E. & Snow, C. C. 1994. ***Fit, failure and the Hall of Fame: how companies succeed or fail.*** New York: The Free Press.

Oviatt, B. M. & McDougall, P. P. 1994. Towards a theory of international new ventures. ***Journal of International Business Studies***, 25 (1): 45-65.

Oviatt, B. M. & McDougall, P. P. 1995. Global start-ups: Entrepreneurs on a worldwide stage. ***Academy of Management Executive***, 9 (2): 30-44.

Oviatt, B. M. & McDougall, P. P. 1997. Challenges for internationalisation process theory: the case of international new ventures. ***Management International Review,*** 37 (2): 85-99.

Park, S. H. 1996. Managing an interorganisational network: a framework of the institutional mechanism for network control. ***Organisation Studies***, 17 (5): 795-824.

Patterson, P. G. & Cicic, M. 1995 A typology of service firms in international markets: an empirical investigation. ***Journal of International Marketing***, 3 (4): 57-83.

Pink, B. & Jamieson, C. 2000. ***A portrait of Australian exporters: a report based on the Business Longitudinal Survey.*** Canberra: Australian Bureau of Statistics.

Pivot Maritime. 2000a. Pivot newsletter June 2000.
http://www.pivotmaritime.com/PIVOTNL3.htm. Accessed April 27th 2002.

Pivot Maritime. 2001. Pivot newsletter June 2001.
http://www.pivotmaritime.com/PIVOTNL6.htm. Accessed April 27th 2002.

Rennie, M. 1993. Born globals. ***McKinsey Quarterly***, 4 : 45-52.

Reuber, A. R. & Fischer, E. 1997. The influence of the management team's international experience on the internationalisation behaviours of SMEs. ***Journal of International Business Studies***, 28 (4): 807-826.

Westhead, P. 1995. Exporting and non-exporting small firms in Great Britain: a matched pairs comparison. ***International Journal of Entrepreneurial Behaviour and Research***, 1 (2): 6-36.

Wickramasekera, R. & Bamberry, G. 2001. Born globals within the Australian wine industry: an exploratory study. Working paper No 1/01 April. Charles Sturt University Management Discipline.

Zeithaml, V. A., Berry, L. L. & Parasuraman, A. 1993. The nature and determinants of customer expectations of service. ***Journal of the Academy of Marketing Science***, 21 (1): 1-12.