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An Empirical Study on the Impact of Supply Chain Practices on Competitive Position of MNEs in Malaysia

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ABSTRACT

Effective supply chains provide opportunities to create sustainable competitive advantage and enhance the competitive position of companies. This paper attempts to study the impact of supply chain practices on competitive position of a company. This research surveyed senior managers in various MNEs in Malaysia. The results show that efforts in: (1) improving customer satisfaction, (2) selecting the right suppliers, (3) improving the efficiency of operations and (4) implementing the right quality practices have significant impact on the competitive position of the company.

Keywords: Supply Chain Management, Competitive Position, MNE, Malaysia

INTRODUCTION

New realms of technology and globalization have created a plethora of business opportunities and challenges to be tapped and mastered. Effective supply chains provide opportunities to create a sustainable competitive advantage (Tracey, Lim, & Vonderembse, 2005). According to Handfield and Nicholas (1999), to stay competitive, business enterprises are responsible to manage a network of upstream firms (suppliers) that provide inputs and a network of downstream firms (customers)

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that deliver products and services. Serving the right customers, finding the right suppliers, and fostering trust with the right partners have a great impact on current as well as future business performances. Traditional organizational boundaries are a thing of the past. Business enterprises today focus on their Supply Chain Management (SCM) to improve product quality and lead time due to stiff competition from global markets and increased levels of customer's expectation (Simchi-Levi, Kaminsky, & Simchi-Levi, 2000; Tan, Lyman, & Wisner, 2002). SCM can play a proactive role in enhancing competitiveness and profitability (Tracey, Lim, & Vonderembse, 2005).

SCM is defined as a process for designing, developing, optimizing, and managing the internal and external components of the supply system in a manner that is consistent with the overall objectives and strategies (Spekman, Spear, & Kamauff, 2002). Globalization and worldwide competition are facilitating innovation in the ways businesses are being conducted and thus changing business strategies. Christopher (1998) has stated that an effective SCM is a powerful tool to achieve competitive advantage for all parties in the supply chain. According to Tan (2001), the ultimate goal of SCM is to integrate various members of the supply chain in a seamless manner to achieve a high level of customer satisfaction, and thus a long-term competitive advantage. In this research, we have identified the SCM practices that impact the competitive position of a company. The contributions of this paper are twofold. First, there are very few empirical studies that link SCM practices to competitive position of a firm (Tan, 2001; Tan, Lyman, & Wisner, 2002). A low response rate and failure to test for non-response bias make generalization of results, based on these studies, difficult. Our study adds to the body of literature that deals with the efficacy of SCM practices. Second, few studies of this nature are carried out in this part of the world (Hua, 2002; Kumar, & Phrommathade, 2006; Sheu, Yen, & Chae, 2006). Our study fills the gap by specifically studying the MNEs in Malaysia.

THEORETICAL BACKGROUND

SCM coordinates and integrates the activities of supply chain members into a seamless process at a minimum cost (Cox, Blackstone, & Spencer, 1995). Any inefficiency incurred by any of the supply chain members can impact the performance of the whole chain. This is because the inefficiencies get translated into increased costs. Transferring the costs either upstream or downstream ultimately make their way to the consumers (of course, limited to the extent a market can absorb). Therefore, the competitiveness of the firm and the supply chain gets eroded (Cigolini, Cozzi, & Perona, 2004). Day (1994) has explained the link between SCM and competitive position of a firm based on core competencies. The development of these competencies can be explained by the resource-based theory (Lim, Sharkey, & Heinrichs, 2006). Resource-based theory asserts that possession and deployment

of unique combination of resources within a firm allow the firms to develop distinctive (core) competencies or capabilities (Barney, 1991; Hamel & Prahalad, 1994). Any market-driven organization to compete with the competitors must sustain certain core competencies, such as process management, integration of knowledge, and diffusion of learning. These competencies help the firms to design better business processes such as SCM, that yield competitive advantage by providing enhanced customer value. According to Quayle (2003), consumer pressures for lower prices and higher quality of service are forcing firms to make supply chain efficient and this enhances the competitive position of the firms. Higher level of integration between the members of the supply chain can improve the competitive position of supply chain and individual firms (Tan, 2001). Tracey, Lim, and Vonderembse (2005) have empirically shown that there is a strong relationship between SCM capabilities of a firm and its business performance. Thus, there is a direct link between effective management of a supply chain and competitive position of firms in the supply chain. Competitive position of a firm results from the assessment of what the firm offers in comparison to its competitors (Gorynia, 2004). The basic measures of the competitive position of a firm are its market share and financial position. Other measures like product quality, customer loyalty, and reputation are also used as additional measures of competitive position (Gorynia. 2004). In this research, we have used these measures to capture the competitive position of a firm.

WHY STUDY MULTI-NATIONAL ENTERPRISES (MNEs)?

Recent studies have shown that a majority of world's manufacturing will be carried out in South-east Asia in the next couple of decades (Sector Based Public Policy in the Asia Pacific Region, US-AEP 1999) for many reasons such as: (1) proximity of raw materials, (2) proximity to huge markets, (3) lower costs, and (4) a perceived lack of rigidity in the regulatory structure. MNEs play a very significant role in a country's economy and are the primary force behind the globalization effort (Li, 2003). Customer and supplier linkages that are stimulated by MNEs increase demand for local inputs and help to broaden and deepen the economy (Williams, 1999). The constant pressure to keep the costs down has forced many MNEs to re-locate to countries that can help them cut costs without sacrificing quality. Malaysia has more than 3000 MNEs in various sectors (Foreign companies in Malaysia, 2001). Lau (2002), while discussing the future of Asian management research, opines that one of the potential areas is conducting theoretical and empirical researches to study various management issues in MNEs. MNEs, in addition to FDI (Foreign Direct Investment), bring in the much-needed current technology, systems, processes, and knowledge to the developing (host) countries so that there is a win-win situation for the host country and the MNEs (Sim & Pandian, 2003). MNEs are in a better position than the local companies to implement new ideas, technologies, and processes because of their strong global

presence, accessibility to various technologies, and financial position. This research addresses the implementation of SCM practices and their impact on competitive positions of MNEs. Based on the survey of literature, the authors are not aware of any study related to SCM practices within MNEs in Malaysia.

MNEs IN MALAYSIA

According to UNCTAD (United Nations Conference on Trade and Development), there are more than 60,000 parent firms that together own more than 587,000 foreign affiliates. Together, these parent-firms and affiliates account for about 25% of the world's economic production and employ more than 80 million people worldwide (UNCTAD, 2007). In Malaysia, there are about 3090 MNEs (Foreign companies in Malaysia, 2001) and they are categorized according to their types of establishments, industry/sector, and nationality. The MNEs most common methods of doing business in Malaysia are as: wholly owned subsidiaries (46.8%), subsidiaries (24.1%), joint ventures (13.2%), associate companies (12.5%), representatives (2%), distributors (0.7%), sales agents (0.5%), and franchises (0.2%). The composition of MNEs based on the country of origin is: Japan (18.5%), USA (13.8%), UK (11.7%), France (6.8%), Germany (6.8%), Australia (4.2%), Netherlands (4.2%), and Singapore (3.2%). The composition of MNEs based on the industry/sector is: Manufacturing (13.6%), Construction and Engineering (11.0%), Electronics and Electrical (9.3%), Trade/Retail (8%), Chemicals and Petrochemicals (6.3%), and Consultancy services (6.2%). International Data Corporation (IDC) predicts that the outsourcing market for logistics will rise from US$ 8.6 billion in 2002 to 40.0 billion in 2007, with the most significant opportunities in China, Singapore, and Malaysia. Many MNEs in Malaysia form a part of the global supply chain for many products. For example, computer hard disks manufactured in Malaysia are sold in USA.

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Resource-based theory has adequately explained the development of core competencies that can be used to design better supply chain practices (Barney, 1991; Hamel & Prahalad, 1994; Lim, Sharkey, & Heinrichs, 2006). These practices, in turn, improve the competitive position of a firm. What are the supply chain practices that constitute supply chain management? Quayle (2003) studied the SCM practices in UK among SMEs. He identified 18 different SCM practices such as supplier development, e-commerce, new technology, time-to-market, staff development, leadership, strategy, team working, and waste reduction that are essential to improve the competitive position of a company. We use the SCM practices proposed by Tan (1999) and subsequently used in other studies (Tan, 2001; Tan, Lyman, & Wisner,

2002). Tan (1999) has considered more SCM practices such as collaboration, trust, ethical practices, continuous improvement efforts, and infrastructure drivers. This list of SCM practices is more comprehensive than the list used by Quayle (2003). A study on SCM practices has been done in Malaysia using the model proposed by Tan (1999). Hua (2002) has studied the impact of SCM practices on competitive position of the firm among SMEs in Malaysia. He has obtained data from 143 SMEs and has found that only 40 (28%) SMEs practice SCM in their organizations. According to Quayle (2003), this result is not surprising. Since the customer dominance in SMEs is high, the strategic focus is on cost and efficiency rather than collaboration, innovation and added value. The MNEs are different compared to SMEs in terms of size, capital investment, access to technology and systems and many other factors. The SCM practices that are used in this study can be broadly classified into four categories: (1) Supply chain management strategies and drivers (2) Supplier selection and formation of strategic alliances, (3) Quality practices and operations efficiency, and (4) Customer relationships. The constructs that come under each of these categories are: Supply chain management strategies and drivers — (1) Linking corporate strategy and SCM efforts and (2) Drivers influencing SCM; Supplier selection and formation of strategic alliances — (1) Supplier selection and (2) Establishing strategic partnership with selected suppliers; Quality practices and operations — (1) Efforts in improving operations efficiency and (2) Implementing quality practices; Customer relationship — (1) Efforts in improving customer satisfaction and service. In this research, we have also identified the sub-dimensions of each of these SCM practices by performing factor analysis. The theoretical framework used in this study is given in Figure 1.

SUPPLY CHAIN MANAGEMENT STRATEGIES AND DRIVERS AND THEIR IMPACT ON COMPETITIVE POSITION

Supply chain and competitive strategies must have the same goal (strategic fit), for any company to be successful. The strategic fit refers to the consistency between the customer priorities that the competitive strategy hopes to satisfy and the supply chain capabilities that the supply chain strategy aims to build. Any company that achieves this fit has a competitive edge and therefore, enhanced competitive position (Chopra & Meindl, 2004).

The essence of SCM is that it is a strategic weapon to develop a sustainable competitive advantage by reducing investment without sacrificing customer satisfaction (Lee & Billington, 1992). Since each level of the supply chain focuses on a compatible set of objectives, redundant activities and duplicated efforts can be reduced. Besides, supply chain partners openly share information that facilitates their ability to jointly meet end-user's needs (Simatupang & Sridharan, 2002). Every

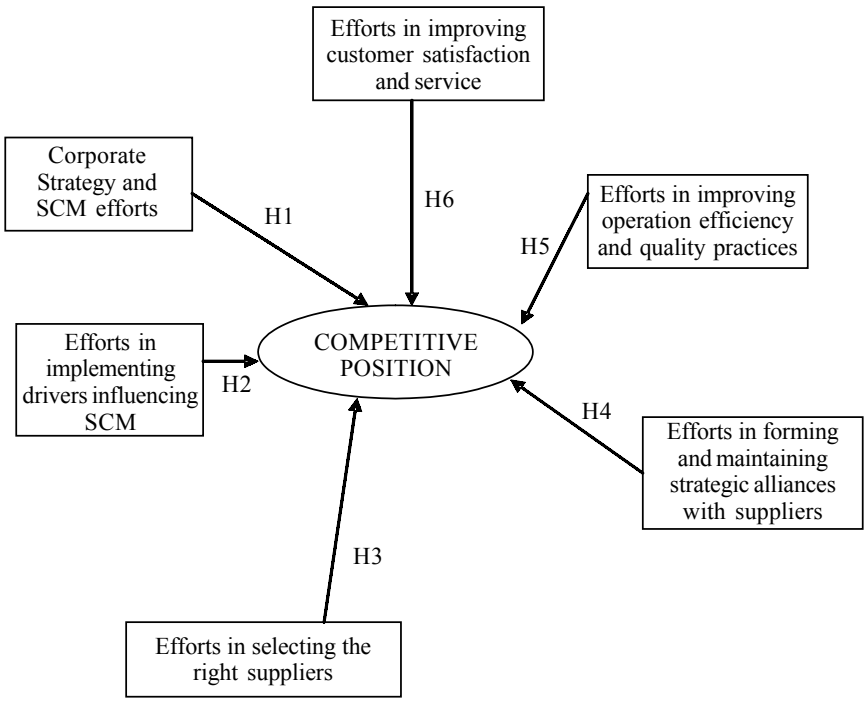

Figure 1 Research Framework for the study

industry can be described as a combination of one or more supply chains. Despite their vital role in industry, supply chains have been fragmented, resulting in slow and sequential material flow downstream and slow movement of data upstream. The disconnected flow of information and inventory has led to lack of real-time information and build-up of excess inventory to buffer against uncertainties in supply and demand. Increased inventory carrying costs, longer lead times, and difficulty in responding positively to real-time changes decreases profits and weakens customer goodwill (Taylor, 1997). Frohlich and Westbrook (2001) have found that extensive and balanced integration leads to better performance in terms of marketplace, productivity, and non-productivity indicators compared to firms having narrow or biased integration with the suppliers or customers.

Drivers of SCM

The five main drivers of a supply chain are: (1) facilities infrastructure, (2) inventory, (3) transportation infrastructure, (4) information management, and (5) trust and commitment between the supply chain members. The first four drivers have already

been discussed in Marien (2000) and we have added the fifth driver in this research since practitioners and academicians have accepted the importance of roles of trust and commitment in SCM. *Facilities* and their corresponding capacities is a key driver of supply chain performance in terms of responsiveness and efficiency and these, in turn, have a direct impact on the competitiveness of a firm. The amount of *inventory* in a supply chain has a direct impact on the responsiveness and efficiency of operations of a company. Higher inventory results in higher responsiveness but lower efficiency and lower inventory results in lower responsiveness but higher efficiency. Optimum inventory is the level that provides a trade-off between responsiveness and efficiency. *Transportation* infrastructure has a direct impact on the costs of operation and inventory levels and therefore, on the responsiveness and efficiency of operations. *Information* is a vital driver that makes a supply chain efficient and responsive. The members in a supply chain must have the right type of IT to enable fast and efficient transfer of information (Rutner *et al*., 2001). The right information exchanged between the members at the right time can help improve the performance of all members in a supply chain (Chopra & Meindl, 2004) by reducing the bullwhip effect (Hau, Padmanabhan, & Whang, 1997). Information is a key factor in managing and coordinating the supply chain and therefore, has to be carefully managed so that all the supply chain members can achieve their objectives. Latest developments in information and communications technology have enabled effective coordination between the supply chain members (Sheu, Yen, & Chae, 2006; Wieder *et al*., 2006). Many researchers have discussed the roles of *trust and commitment* as building blocks in supply chain coordination and integration (Kwoh & Suh, 2005; Mohr & Spekman, 1994; Perry, Sengupta, & Krapfel, 2004). Supply chain co-ordination and integration have a significant impact on the firm's capability to maximize the potential for converting competitive advantage into profitability. A poor co-ordination among the supply chain members can result in dysfunctional operational performance and can impact the overall competitive results (Simatupang & Sridharan, 2002).

Based on the above arguments, we posit the following hypotheses:

H1: There is a positive relationship between a company's efforts in achieving a "strategic fit" and the competitive position of the company.

H2: There is a positive relationship between a company's efforts in implementing drivers of SCM and the competitive position of the company.

Supplier Selection and Formation of Strategic Alliances and their Impact on Competitive Position

A supplier is a strategic element in a company's upstream supply chain. Chandra and Kumar (2000) argue that the sourcing process is vital to the success of any supply chain. This is because the sourcing process has a direct impact on the quality of products, cost of products, responsiveness of the supply chain, and

efficiency of the supply chain. The sourcing process includes: (1) selecting the right suppliers, (2) developing them, (3) maintaining proper relationship with them, and (4) monitoring the supply performance. Sarkar and Mohapatra (2006) claim that to develop an effective partnership with suppliers, it is essential to reduce the supply base to a manageable level. Many organizations have moved away from having too many suppliers to a few reliable and trusted suppliers. For example, in automobile industry in Japan there are a few suppliers supplying the critical parts. This has helped the industry to successfully implement lean production systems (Chopra & Meindl, 2004). Hyot and Huq (2000) argue that the development of a sustainable competitive advantage requires an efficient information flow, trust as well as willingness to collaborate between the supply chain members. However, creating, developing and maintaining a successful alliance with the suppliers is a very daunting task (Whipple & Frankel, 2000). Parkhe (1993) highlights that although the frequency of strategic alliance formation with the suppliers has increased, inter-firm linkages have been frequently accompanied by problems of instability, poor performance, and termination. Despite problems, having close relationship with suppliers is critical for any company. Companies have to be very selective in choosing the right supplier. This can be accomplished by monitoring the performance of the suppliers over a period of time. The indicators that are used to measure the performance of suppliers are: on-time deliveries, customer complaints, back orders, and stock-outs. According to Gulati (1995), trust between the members in a supply chain develop after repeated engagements (several transactions over a period of time). Once the trust is established, forming and maintaining strategic alliances become a simple exercise.

Based on the above arguments, we posit the following hypotheses:

H3: There is a positive relationship between a company's efforts in selecting the right suppliers and the competitive position of the company.

H4: There is a positive relationship between a company's efforts in forming and maintaining strategic alliances with suppliers and the competitive position of the company.

Quality Practices and Operations Efficiency and Their Impact on Competitive Position

Of all the factors that have a direct impact on the competitiveness of a company, the two most prominent factors are: Quality practices and Operations efficiency. A key to the success for any company is to produce quality products, efficiently. These two factors are closely linked. Quality practices result in improvements in operations efficiency. An example company to validate this claim is Motorola Corporation. Motorola has been able to enhance its competitive position through its continued emphasis on superior quality practices and increased operations efficiency (Bemowski, 1995). Many researchers have established links between competitive

position, quality practices and operations efficiency of a company (Kumar & Phrommathed, 2006; Leat, Marr, & Ritchie, 1998; Yavas, 1995). For example, Kumar and Phrommathed (2006) have asserted that increasing operations efficiency eventually improves adaptability and customer service level of the organization. These have a direct impact on the competitive position of the firm; Leat, Marr and Ritchie (1998) have shown that improvement in quality practices such as quality assurance schemes help to improve competitive position of a firm.

Based on the above arguments, we posit the following hypotheses:

H5: There is a positive relationship between a company's efforts in improving the quality and operations efficiency and the competitive position of the company.

Customer Relationships and Their Impact on Competitive Position

A customer is a strategic element in a company's downstream supply chain (Xu & Walton, 2005). The significance of relationships with customers and their impact on the performance and competitive position of a company are well established (Lummus, Duclos, & Vokurka, 2003; Power, 2005; Spekman, Kamauff, & Myhr, 2002). Companies have restructured and reengineered to increase organizational effectiveness in satisfying customers. To achieve excellence, managers need to look beyond the organizational boundaries and develop strong relationships with customers to create value (Fawcett & Magnan, 2002). Many organizations have started to realize that enhanced relationships with customers can lead to customer loyalty and retention, higher profitability, and enhanced competitive position of the company. Information Technology and Information Systems play a key role in fostering such relationships. There are many DSS, IS, ERP systems with data mining capabilities available to collect and analyze customer information (Ngai, 2005). Types of customers and behavior patterns of the customers have immediate effect on the operations of the company. The customers have to be segmented to identify strategically important customers and efforts must be made to develop strong relationships with them (Xu & Walton, 2005).

Based on the above arguments, we posit the following hypothesis:

H6: There is a positive relationship between a company's efforts to improve the strength of relationships with the customers and the competitive position of the company.

METHODOLOGY

This study was carried out through a questionnaire survey. The population for the study consisted of all MNEs in Malaysia and the listing of these companies was obtained from the list of foreign companies compiled by Commercial Intelligence

Service, London. The directory listed 3090 companies in 29 different categories of industries. From this list, 650 companies were randomly chosen to cover the major sectors (strata) like Manufacturing, Construction and Engineering, Electronics and Electrical, Trade, Chemical and Petrochemicals, and Consultancy Services. The financial and time constraints enabled us to choose only about 650 companies. The target respondents were middle/senior management staff familiar with the corporate strategies and supply chain operations of their companies. The sampling unit was a company.

The questionnaire was based on the survey instrument proposed and used by Basnet, Corner, and Tan (1999), Tan (1999), and Wisner and Tan (2000). The survey instrument was developed based on the constructs described earlier. The survey instrument focused on a number of factors related to SCM, like issues affecting workflow and information flow among supply chain members, strategic relationship with suppliers, and supply chain performance measures. The respondents were expected to fill the responses to various items using a 5-point Likert scale. Table 1 gives some sample questions under each construct. The various items used in the questionnaire were subjected to reliability tests and the Cronbach Alpha ranged from 0.7321 to 0.9026 (except for one construct, Efforts in improving operation efficiency — Cronbach Alpha – 0.6012) indicating that questionnaire design was highly reliable (Nunnally, 1970). Table 2 gives information on the Cronbach Alpha values for various constructs.

Table 1 Sample questions under each construct

SNo	Sample questions under each construct
1	**Corporate Strategy and SCM efforts**
	How important are the following issues in your firm's SCM efforts?
	Determining customer's need
	Improving production/operation efficiency
	Assisting suppliers to improve their operations efficiencies
	Use of formal information sharing with suppliers and customers
	Improving the level of trust and co-operation among supply chain members
	Communication of strategic needs of individual members of supply chain
	Reducing response time across supply chain
2	**Supply chain drivers**
	How much does each of the following issue influences your firm's SCM?
	Competition from other supply chain
	Lack of co-operation among members
	Lack of trust among members
	Inadequate use of technology/systems
	Weaknesses in inventory management
3	**Selection of preferred suppliers**
	How important are the following factors in selecting a preferred supplier?

	Reputation
	Ethical standards
	Technical expertise and industry knowledge
	Financial position
	Quality of materials/products/services
	Ability of meet delivery commitments
	Commitment to quality and continuous improvement
4	**Strategic partnership with selected suppliers**
	If you have strategic partnership with your supp. how successful is it in terms of:
	Improving your firm's profitability
	Improving the quality of products/services
	Reducing inventory levels
	Improving co-operation and communication
5	**Operation issues**
	How important are the following activities in your operations?
	Simplifying/standardizing components
	Simplifying/standardizing processes
	Supplier involvement in product design
	Quick product development time
	Preventive maintenance
6	**Quality issues**
	How important are the following quality issues in your firm?
	Setting quality guidelines and benchmarking
	Top management commitment to quality
	Employees involvement in continuous improvement
	Importance of quality rather than cost during purchasing
7	**Customer satisfaction**
	How important are the following issues with respect to customer satisfaction?
	Ethical standard
	Commitment to continuous improvement
	Ability to meet commitment
	Frequent communication/interaction with customers
	Sharing of information with customers
	Determining customer's expectations
	Continuously getting customer feedback and reviewing

RESULTS

Out of the 650 questionnaires sent, only 103 companies (15.8%) responded. Table 3 gives information about the profile of the companies. Of the 103 companies, 75 companies (75.7%) were manufacturers and the remaining 28 companies (24.3%) were service organizations. The companies responded had their parent company in USA (9.7%), UK (20.4%), European Union (34%), and Japan (31.1%). Among the 103 companies, 52 (50.5%) were wholly owned subsidiaries, 42 (40.8%) were joint

Table 2 Cronbach values for reliability tests on various constructs

Constructs	Cronbach Alpha
Corporate Strategy and SCM Efforts	0.7978
Drivers Influencing SCM	0.8289
Strategic Partnership with Suppliers	0.8849
Selection of preferred supplier	0.9026
Efforts in improving operation efficiency	0.6012
Quality Practices	0.8703
Efforts in improving customer satisfaction and service	0.8493
Level of Performance (dependent variable)	0.7321

ventures, and the remaining belonged to distributorship and franchise. About 48% of the respondents indicated full-scale use of SCM practices (Supplier relationship management, Customer Relationship Management (CRM), Quality system, JIT/ TQM practices, Information management including technology, and Implementation of ERP and other systems) in their companies and the remaining 52% indicated partial use of SCM practices.

Table 3. Profiles of the Respondents

Characteristics	Frequency	%age
Origin of Parent Company:		
1. USA	10	9.7
2. U.K	21	20.4
3. European Union	35	34
4. Japan	32	31.1
5. Others	5	4.9
Total	103	100
Type of Establishment — Form of Partnership		
1. Wholly owned	52	50.5
2. Joint venture	42	40.8
3. Distributorship	3	2.9
4. Franchising	2	1.9
5. Others	4	3.9
Total	103	100
Business Function		
1. Raw material extractor/manufacturer	10	9.7
2. Component /parts producer	18	17.5
3. Final product manufacturer	50	48.5
4. Wholesaler, retailer, trading company	7	6.8

(*Continue*)

Table 3 (*Cont*)

Characteristics	Frequency	%age
5. Service provider	13	12.6
6. Others	5	4.9
Total	103	100
Number of employees		
1. 1-10	9	8.7
2. 11-50	15	14.6
3. 51-100	18	17.5
4. 101-200	34	33
5. >200	27	26.2
Total	103	100
Issued and Paid-up capital (RM)		
1. <=50000	5	4.9
2. 50001 – 100000	12	11.7
3. 100001 – 500000	1	1
4. 500001 – 5000000	20	19.4
5. 5000001 – 50000000	49	47.6
6. >50000000	16	15.5
Total	103	100
Classification of organizations		
1. Manufacturing	75	75.7
2. Service	28	24.3
Total	103	100
Nature of products/services		
1. Commodity	6	5.8
2. Made to stock / standardized	37	35.9
3. Made to order / Customized	50	48.5
4. Special / Unique	10	9.7
Total	103	100
Customer Base		
1. One at time	0	0
2. A few key customers	77	74.8
3. A lot of customers / mass market	26	25.2
Total	103	100
Practice of Supply Chain Management		
1. Full-scale use	49	47.6
2. Partial use	54	52.4
3. Not used at all	0	0
Total	103	100
Strategic Partnership with Suppliers		
1. Yes	55	53.4

(*Continue*)

Table 3 (*Cont*)

Characteristics	Frequency	%age
2. No	48	46.6
Total	103	100
Evaluation of Supplier's Performance		
1. Yes	82	79.6
2. No	21	20.4
Total	103	100
Certification program on suppliers		
1. Yes	30	29.1
2. No	73	70.9
Total	103	100
Quality procedures and SOP		
1. Yes	98	95.1
2. No	5	4.9
Total	103	100
Achievement of ISO Certification		
1. Yes	77	74.8
2. No	26	25.2
Total	103	100
Position of the Respondent		
1. Senior Manager	40	38.8
2. Manager	63	61.2
Total	103	100

Nonresponse Bias

In spite of follow-ups through e-mails and phone calls, the response rate was only 15.8 per cent. Mail surveys with a return of about 30% are considered satisfactory to generalize the results (Cooper and Schindler, 2001) and low response rates affect the generalizability (Armstrong and Overton, 1977). Therefore, we tested for non-response bias. According to Armstrong and Overton (1977), sample elements that respond after prodding are more like nonrespondents. The responses were received in two "waves". We received 60 responses during the first wave and 43 responses during the second wave. We tested for the (non) existence of nonresponse bias based on the responses received during the first and second waves. We statistically studied the means of all the measures under each of the constructs. Based on the independent t-tests between the two samples (first and second waves), we did not find significant differences between the means of the samples for all the measures indicating that there were no nonresponse bias.

Competitive Position of MNEs (Dependent Variable)

The MNEs were asked to compare their level of performance in comparison to their competitors (Gorynia, 2004). We had to use relative position because the companies were not willing to divulge information on actual financial and non-financial performances. Eight measures were used to assess their relative position: reputation, product/service quality, selling price, lead-time and delivery commitment, relationship with customers, relationship with suppliers, profitability, and overall competitive position based on market share and other factors. Table 4 gives the perception of MNEs on their performances relative to their competitors. From the table, it can be seen that majority of MNEs perceived that they performed better than their competitors in various measures. It can be seen that the mean values are greater than 3.5.

Table 4 Various Dimensions of Competitive Position and their mean values

Dimension of Competitive Position	Very High (%)	High (%)	Average (%)	Low (%)	Very low (%)	Mean
Reputation	35.9	57.3	6.8	0	0	4.29
Product/Service Quality	44.7	47.6	7.8	0	0	4.37
Selling Price	14.6	40.8	44.7	0	0	3.7
Lead Time and Delivery commitment	34	50.5	15.5	0	0	4.18
Relationship with customers	35.9	59.2	4.9	0	0	4.31
Relationship with suppliers	17.5	71.8	10.7	0	0	4.07
Profitability	17.5	39.8	29.1	13.6	0	3.61
Overall competitive position (based on market share and other factors)	25.2	51.5	16.5	3.9	2.9	3.92

Corporate Strategy and SCM Efforts (Independent Variable)

This construct captures the business objectives and SCM efforts among MNEs in Malaysia. A factor analysis was conducted on all the 19 variables that defined this construct and the following five factors, that explained 78% of the total variance, were obtained: (1) Operation and logistics improvement, (2) Trust, cooperation, and

expansion activities, (3) Communication and information sharing, (4) Proximity to customers and feedback from customers, and (5) Cooperation with suppliers.

Drivers Influencing SCM (Independent Variable)

This construct captures the various drivers of SCM practices. A factor analysis was conducted on all the nine variables that defined this construct and the following two factors, that explained 78% of the total variance, were obtained: (1) Drivers that enhance trust, commitment, and cooperation among supply chain members and remove weakness in inventory and (2) Infrastructure drivers (IT, other internal and external).

Selection of Preferred Suppliers (Independent Variable)

This construct identifies the criteria adopted by MNEs in selecting preferred suppliers and provides an understanding of factors considered in the selection process. A factor analysis was conducted on all the 26 variables and the following six factors, that explained 78% of the total variance, were obtained: (1) Materials, products, and services provided, (2) Continuous improvement and complaint handling services, (3) Supplier's reputation, (4) Incentive and contractual issues, (5) Supplier's financial position and willingness to share information, and (6) Location and strategic importance.

Benefits of Strategic Partnership with Suppliers (Independent Variable)

Strategic partnership with suppliers is essential for an effective SCM and the partnership benefits both the suppliers and the manufacturers. A factor analysis was conducted on all the nine variables and the following two factors, that explained 73% of the total variance, were obtained: (1) Improvement in product quality, customer satisfaction, and reduced inventory levels and (2) Improvement in firm's performance.

Efforts in Improving Operation Efficiency (Independent Variable)

Operating efficiency is vital for the growth of any organization and this construct looks at the factors that MNEs consider vital for improving the operations efficiency. A factor analysis was conducted on all the 10 variables and the following four factors, that explained 70% of the total variance, were obtained: (1) Simplification of components, (2) Simplification of processes, (3) Implementation of practices such as JIT, and (4) Product design and development.

Quality Practices (Independent Variable)

Quality practices of a company provide the competitive edge to succeed in business. This construct identifies the quality practices that are practiced in MNEs in Malaysia. A factor analysis was conducted on all the 11 variables and the following three factors, that explained 75% of the total variance, were obtained: (1) Top management commitment and employee reward program, (2) Employee involvement and training program, and (3) Implementation of quality systems.

Efforts in Improving Customer Satisfaction and Services (Independent Variable)

This construct identifies the efforts made and the factors that are important for customer satisfaction. Customer satisfaction plays a very crucial role in improving the competitive position of the firm. A factor analysis was conducted on all the 22 variables and the following six factors, that explained 84% of the total variance, were obtained: (1) Commitment and communication with customers, (2) Implementation of new technology to meet customer expectations, (3) Customer service and feedback systems, (4) Implementation of ethical practices and flexibility, (5) Operations review and customer incentive systems, and (6) Proximity and sharing of information.

Extent of use of SCM Practices in MNEs

This section addresses the question: Do MNEs bring in new technologies, systems, and practices to the host (developing) country? An answer to this question is important because MNEs play a very significant role in a country's economy by bringing in the much-needed Foreign Direct Investment (FDI) and technology (Li, 2003). We propose to answer this question by looking at the mean values of 28 factors that we have identified after performing a Factor Analysis on the 106 variables under the seven SCM practices. Table 5 gives the mean values for the 28 factors.

To facilitate the interpretation of various mean scores given in the table, we devise the following classification scheme: (1) a score between 1 and 2.33 indicate low level of usage, (2) a score between 2.33 and 3.00 indicate moderately low level of usage, (3) a score between 3.00 and 3.67 indicate moderately high level of usage, and (4) a score between 3.67 and 5 indicate a high level of usage.

Some mean scores (highlighted in Table 4) are a cause for major concern. Firstly, infrastructure drivers fall in the moderately low level of usage category with a score of 3.00. This implies that appropriate infrastructure in terms of technology, systems, and processes are not prevalent in many MNEs. This observation is supported by the fact that many MNEs (about 50%) indicated that they do not use modern technologies and processes like EDI, e-commerce, and JIT practices. Unless

Table 5 Mean values of various dimensions of SCM practices

SNo	Dimension	Mean (SD)
1	Operations and logistics improvement	4.56 (0.326)
2	Trust, cooperation and expansion activities	4.36 (0.331)
3	Communication and Information sharing	4.33 (0.302)
4	Location and feedback from customers	4.14 (0.296)
5	External consultants and suppliers	**3.54 (0.214)**
6	Drivers that enhance trust, commitment and cooperation	**3.37 (0.224)**
7	Infrastructure drivers	**3.00 (0.201)**
8	Improving product quality, customer satisfaction, and reducing inventories	3.97 (0.196)
9	Improving firm's performance	3.92 (0.234)
10	Materials, products, services provided – suppliers	4.48 (0.278)
11	Continuous improvement and handling of complaints – suppliers	4.21 (0.301)
12	Supplier's reputation	4.12 (0.324)
13	Supplier's financial position and willingness to share knowledge	**3.66 (0.264)**
14	Location of suppliers and strategic importance	**3.66 (0.230)**
15	Incentives and contractual issues	**3.65 (0.221)**
16	Simplifying components and limited suppliers	4.12 (0.322)
17	Simplifying process and preventive maintenance	4.10 (0.300)
18	JIT practices	3.81 (0.305)
19	Product design and development	3.41 (0.236)
20	Employment involvement and training	4.14 (0.329)
21	Top management commitment and reward program	4.12 (0.321)
22	Product and quality systems	3.83 (0.296)
23	Commitment and communication with customer	4.46 (0.299)
24	Technology and meeting customer's expectations	4.27 (0.312)
25	Customer service and feedback	4.24 (0.306)
26	Ethical practices and flexibility	4.23 (0.315)
27	Operations review and incentives	3.99 (0.294)
28	Proximity and sharing information with customers	3.20 (0.211)

the proper infrastructure is in place, it is difficult to manage the supply chains efficiently. Secondly, proximity to customers and sharing information with the customers fall in the moderately high category with a score of 3.20. This implies that many of the MNEs have not devised proper mechanisms and systems to have close relationships with the customers. Close relationship with the customers is one of the key factors to ensure success of any supply chain. Thirdly, the drivers to enhance trust and commitment among the supply chain members fall in the moderately high category with a score of 3.37. Fourthly, product design and development fall in

the moderately high category with a score of 3.41. This may be due to the fact that most of the product design and development activities are done at the headquarters of the parent company. Unless this activity takes place in Malaysia, we cannot claim complete transfer of knowledge and development of local expertise by the MNEs. Fifthly, three variables linked to suppliers fall in the moderately high category with a score of about 3.65. As indicated earlier, MNEs have to devise mechanisms to select the right suppliers, develop the suppliers, and have strategic alliances with the suppliers. In summary, in MNEs many practices of SCM are well implemented but some important practices are yet to be well implemented and used.

Hypothesis Testing

SCM practices have impact on the competitive position of the company.
This hypothesis was tested using Multiple Regression Analysis. The dependent construct was competitive position of the firm and the independent constructs were: (1) corporate strategy and SCM efforts, (2) drivers influencing SCM, (3) strategic partnership with suppliers, (4) selection of preferred suppliers, (5) efforts in improving operation efficiency, (6) quality practices, and (7) efforts in improving customer satisfaction and service. We could have run the regression model with these seven constructs as "latent constructs" and the 28 variables (obtained after factor analysis) under these constructs as manifest or observed variables. Since the sample size was small, we treated these seven constructs as manifest variables. According to Hair *et al*. (2006), the ratio of sample size to independent variables cannot fall below 5. If it falls, then the accuracy of the results becomes questionable.

Based on the F-value (9.365) and *p*-value (0.000) it can be concluded that the regression as a whole is significant. The *R*-square value for this regression is 0.627 indicating that 62.7% of the variance in the dependent variable has been explained by the independent variables. Of the seven independent variables, four variables have been found to be statistically significant. They, in the order of importance, are: (1) efforts in improving customer satisfaction and service (Standardized beta = 0.916, *t*-value = 3.382, *p*-value = 0.002), (2) selection of the preferred supplier (Standardized beta = 0.887, *t*-value = 4.299, *p*-value = 0.000), (3) efforts in improving operation efficiency (Standardized beta = 0.629, *t*-value = 2.158, *p*-value = 0.037), and (4) quality practices (Standardized beta = 0.409, *t*-value = 2.292, *p*-value = 0.027). Table 6 indicates the significance of various independent variables.

DISCUSSIONS

This research indicates that the full-scale practice of SCM among MNEs in Malaysia is only about 48% and some important SCM practices have not been implemented and used. About 53% of the companies have indicated that they have a strategic

Table 6 Coefficients table of Regression

Model	Unstandardized Coefficients	Standardized Coefficients (Beta)	t-value	Sig.
Constant	-2.877		-1.063	0.294
Corporate Strategy and SCM Efforts	0.004584	0.292	1.228	0.227
Drivers influencing SCM	0.004719	0.241	1.851	0.072
Strategic partnership with suppliers	0.007271	0.400	1.660	0.105
Selection of preferred suppliers	0.008023	0.887	4.299	**0.000***
Efforts in improving operation efficiency	0.129	0.629	2.158	**0.037***
Quality Practices	0.006321	0.409	2.292	**0.027***
Efforts in improving customer satisfaction and service	0.112	0.916	3.382	**0.002***

R-squared = 0.627, R = 0.792, Adj. R-squared = 0.583, Std error = 0.467
* significant at 0.05 level

relationship with their suppliers (refer to Table 3). This percentage is in close agreement with studies done in USA and New Zealand by Wisner and Tan (2000). In USA, 55.7% of the companies reported strategic alliances with suppliers and in New Zealand, about 52% of the companies reported such alliances. The ratings of SCM practices by Malaysian firms is in close agreement with the results found in USA by Tan (2001), with high importance on on-time activities and determining customer's needs and low importance on geographic proximity and information-sharing agreements. This indicates that the relationships of the companies with their suppliers/customers depend very much on the traditional issues such as delivery and quality and depends very less on modern SCM concepts such as supply chain integration and information sharing. There has not been much progress in Malaysia in using more advanced ideas such as supply chain teams, EDI etc.

This research shows that the following four SCM practices (in the order of their importance) have impact on the competitive position of a company: (1) efforts in improving customer satisfaction and service, (2) selection of preferred supplier, (3) efforts in improving operation efficiency, and (4) quality practices. It is not surprising that customer satisfaction and service are considered the most important. Listening to VOC (Voice of Customer) and sharing that information with all the members in the supply chain enables a company to produce the right product at right time and in right quantities (Simatupang & Sridharan, 2002). The MNEs in

Malaysia can do better by listening to VOC to improve their competitive positions. As already stated, selecting the right suppliers and forming strategic alliances with them are keys to the success of SCM. The companies must move away from the age-old more-the-merrier concept of selecting suppliers.

The companies must have a system of continuously monitoring the performance of the suppliers. The performance measures for the suppliers may include: conformance of the product and services, on-time delivery, flexibility, willingness to share knowledge/information, willingness to participate in product development and communication systems. The companies must concentrate on few selected suppliers who consistently show high performance and form strategic alliances with them. With adequate systems to listen to VOC and to select the right suppliers, it is relatively easy for companies to improve their operational efficiencies. It is the operational efficiencies that help to cut costs and improve profitability for all members in the supply chain. It is quite interesting to note that the respondents have identified quality practices as the least important dimension. This indicates that the companies no longer view quality as an "order winner" but as an "order qualifier". The companies that do not produce quality products cannot survive and compete in the fierce market and quality is taken for "granted" by the customers. This implies that companies cannot use quality as a major "competitive weapon". True SCM demands a business transformation in which managers attempt to mitigate uncertainty by exchanging appropriate information and exploiting opportunities through the creative use of one's suppliers and customers by evaluating the value added and then leveraging the expertise/capability throughout the entire supply chain (Chopra & Meindl, 2004).

Limitations and Directions for Future Research

This study has relied only on the questionnaire survey. But deeper insights can be obtained by conducting in-depth interviews with various decision makers in a supply chain. The generalized results of this study are also limited by less number of respondents in spite of mailing questionnaire to 650 companies and "following up" with phone calls and e-mails. While assessing the competitive position of the company, this study has depended solely on the perception of the company when compared to the competitor. The study has not made use of hard data to validate the claims made by the companies, as many of the respondents were not willing to share sensitive information. The future studies can take into account these factors and consider (1) obtaining a larger sample size by contacting more companies, (2) conducting in-depth interviews with the top management of the companies to get insights into SCM practices and the issues related to them, and (3) getting hard data to validate the claims made by the companies about their competitive positions.

Conclusions

We can conclude that many of the MNEs are not realizing the full potential of an effective SCM. In fact, our survey revealed only about half of the respondents practice full-scale SCM. Even the companies that practice SCM, do not use advanced ideas like supply chain teams, EDI, information sharing etc. The effects of globalization have changed the expectation level of the customers. Many of the factors like quality that were considered as "order winners" a decade ago are no longer winners but only qualifiers. The customers expect more at reduced cost. A sure way to cut costs and improve service is by having effective and efficient SCM. This can be done by: listening to VOC, selecting preferred suppliers and forming strategic alliances with them, continuously improving the operational efficiency, and making effective use of information and IT. MNEs have better access to innovative process and technology compared to local companies. MNEs can play a pivotal role in Malaysia in the introduction of novel SCM concepts that can be emulated by the local companies.

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