

Small to Medium Size Enterprises and Supply Chain Strategies

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Abstract

The purpose of this study is to develop a conceptual framework to analyze the supply chain management (SCM) strategies by small to medium size enterprises (SME) using Porter's competitive advantage model and to articulate a decision model for these companies. In order to better understand the challenges faced by SME in their quest for competitive advantage in the supply chain, it is critically important to understand their characteristics. Using this conceptual framework, we explore the global competition for SME to formulate supply chain strategies. The study will also examine the type of partnership and integration strategies for SME to improve their strategic positions within the supply chain and add value to the entire supply chain network.

Keywords: Supply Chain Management, SCM, Small to Medium Size Enterprises, SME, framework, strategy, global competition

1. INTRODUCTION

The purpose of this study is to develop a conceptual framework to analyze the supply chain management (SCM) strategies by small to medium size enterprises (SME) and to articulate a decision model for these companies. The structure of supply chain is going through rapid transformation (O'Keefe, 2001). Customer pressures for lower prices and higher quality of products/services are forcing suppliers to achieve greater cost-efficiencies, improve lead time, and improve supply chain efficiency. Manufacturers, distributors, and retailers are increasingly looking across the supply chain for more innovative and cost effective means to create a seamless flow of goods and information. SME have played a significant role in the global supply chain and in the landscape of global business competition (Chapman et al., 2000). According to Australian Bureau of Statistics

in Australia, SME represent 97 percent of all businesses and generating 49 percent of employment in private sector business. As reported by the US Small Business Administration (USSBA, 1999), SME are an integral part of the renewal process that pervades and defines markets and economies.

New and small firms play a critical role in innovation that leads to technological changes and productivity growth. With the emergence of the new technologies, new products, new services, new markets, and new management concepts, the pattern of competitive advantage for companies, particularly for small to medium size organizations, has changed and has subsequently led to new opportunities and new challenges. SME can gain competitive advantage through lowering inventory levels and costs, increasing productivity, improving business processes, and consequently

providing better customer service and satisfaction through supply chain management. In the following section, we discuss the characteristics of the SME companies, their strengths and weaknesses, and their challenges in supply chain management. In the subsequent sections, we articulate a conceptual framework to focus on supply chain management issues. The conceptual framework will address effective strategies to attain competitive advantage from their supply chain process in today's global marketplace. The final section will provide concluding comments about the managerial and technological implications of these business and decision models for SME.

2. SME CHARACTERISTICS AND CHALLENGES

In order to better understand the strategic roles of SME in the global business, it is important to recognize their inherent characteristics. SME are often independently owned and operated. They are closely controlled by the principal investors and decision makers with entrepreneurial spirit. The attitude, cultural values, and norms of owners can play a significant role in the adoption of new technology and strategy development (Stansfield, 2003). The decision maker formulates attitudes based on perception of their environment. The entrepreneur's attitudes influence his/her own behavior and decisions. Their behavior and decisions have a direct impact on the SME's capability. They also influence employee's attitudes and behaviors and thus affect the internal environment through the organizational culture and norm, which in turn indirectly affect the SME's capability further.

SME are also often characterized by lack of standardization and formal working relationships, having a flat organizational structure (Ghobadian and Gallear, 1996). They have a more organic organizational structure when compared to a more bureaucratic structure in large firms (Ghobadian and Gallear, 1996). These characteristics make SME more flexible to environmental changes (Storey and Gressy, 1995; Levy, 1998) as well as incurring lower overhead expenses. Consequently, they

have the potential of playing a significant role in global competition. In particular, SME who exhibit innovative behavior can use new information technologies as strategic tools to generate new products and services. They can use new technologies as a driving force behind new processes, new forms of business organization, new scope for consumers, new market opportunities, and supply chain management.

The characteristics of SME can determine strategic opportunities and challenges available to them in their supply chain. The entrepreneurial behavior of SME differentiates them from larger companies in the supply chain particularly in a cross-cultural dimension and global market. While SME's managers are more sales oriented, they do not have a well-developed overall strategic plan. According to Dodge and Robbins (1992), 64% of SME that failed did not have a business plan. SME managers tend to rely on their tacit knowledge rather than systematic techniques in supply chain management planning activities, such as vendor selection (Park and Krishnan, 2001). The competitiveness of an SME is defined by its flexibility to environmental changes and is dependent on its owner/manager (OECD, 1993) as adoption of a strategic planning approach is affected by its ownership structure (O'Regan and Ghobadian, 2002). However, they may have limited resources required for efficient supply chain management and find themselves encountering more barriers due to increased competition at national and international levels. This is true particularly when they do not have the resources to meet the demands of their trading partners in supply chain. SME that are subsidiaries of larger organizations may be able to access resources from their parent organizations (O'Regan and Ghobadian, 2002) and be able to overcome these challenges of limited resources. However, they are typically responsible for their local strategies and limited flexibility in their national and international strategies. Furthermore, the management focus tends to be operational rather than strategic. However, in order to take advantage of supply chain as a means for competitive advantage and succeed, these companies need to take a strategic approach to SCM. In particular, SME are challenged to balance their short-term

operational focus with long-term strategies and technological innovations. This in turn requires greater financial and technical resources. The lack of resources required for effective and efficient supply chain management is another major challenge for SME in adopting appropriate strategies for their supply chain management, particularly in their quest for global competition.

Small to medium suppliers are less resourceful and often play niche roles within the supply chain as commodity supplier, collaboration specialist, technology specialist and problem-solving supplier (Kaufman et al., 2000). The supplier topology divides along two dimensions: technology and collaboration. By dividing these dimensions into high and low categories, Kaufman et al. (2000) creates four distinct supplier strategies. The top left quadrant defines suppliers who use standard technologies and relate to customers through standard market contracts. These suppliers compete on the basis of low cost. These suppliers can be replaced since switching costs are low. These commodity suppliers design and sell parts to their customers as specified by their customers. The top right quadrant describes collaboration specialists. These suppliers use standard technologies which meet customer specifications and delivery schedules. However, these firms develop enhanced collaborative techniques to fulfill current and to anticipate future customer needs. These suppliers use vendor managed inventory (VMI) strategy. The collaboration essentially requires accurate and timely information. They reduce the customers' internal monitoring or administrative costs.

3. PORTER'S MODEL AND SME SUPPLY CHAIN MANAGEMENT

According to Porter (2001), the market position of a firm is the main focus of building strategies. In this framework, there are five forces that determine the competitive position and the strengths of a company: (1) negotiation power of suppliers, (2) threat of substitute products, (3) threat of new entrants, (4) competition with rivals, and (5) negotiating power of customers. While the strengths of each of the five forces varies considerably from industry to industry, any enterprise should examine its situation in the supply chain process and adopt strategies that could contribute to its competitive advantage and to the value of its business. The value chain concept developed by Porter (1985) suggests that competitive advantage stems from a series of discrete activities performed by an enterprise. In Porter's view, all firms perform a collection of activities to include market, design, produce, deliver, and support their products. The concept is an instrument for strategic planning and a means whereby firms could achieve differentiation in the market, improve operational efficiency, and select a competitive stance. The value chain concept offers a framework for visioning, strategic positioning and process formulation, each of which could possibly be beneficial to SME. The model identifies two types of value creating activities: primary and support. Within each of these activities a series of management activities make up an essential part in the firm's value chain. Primary activities, according to Porter (1985) include inbound logistics, operations, outbound



Figure 1. Porter's Model in Supply Chain Management Strategy

logistics, marketing and sales, and service. The support activities include firm infrastructure, human resource management, technology development, and procurement.

The SME effectiveness in the supply chain will consequentially be conditional on how well they integrate these activities. In this context, some issues may be posed such as how to design a supply chain and logistic structure, what channels of distribution to use, should one outsource specific materials or make them in-house, what kind of relationship to build with the suppliers and customers, and how to get direct information from the end consumers? Supply chain management (SCM) as a strategy for competitive advantage has gained prominence in both large and small organizations. An understanding of the supply chain management concept from the perspective of suppliers and, in particular, SME is crucial to the study of vertical

chain and their own businesses. About 80 percent of the supply chain members are SME and a major impact and savings may well be found with the SME within the supply chain (Smeltzer, 2002). By taking advantage of their position and criticality in the supply chain, SME can add value and contribute to the vertical integration essential in the supply chain. This creates advantages not just for themselves, but also for other members within their supply chain.

4. SME SUPPLY CHAIN STRATEGIES

According to the Global Supply Chain Forum (Lambert and Cooper 2000), supply chain management is defined as: "the integration of key business processes from end-user through original suppliers who provide product, services, and information that add value for customers and other stakeholders." Figure 2 shows a relatively simple and

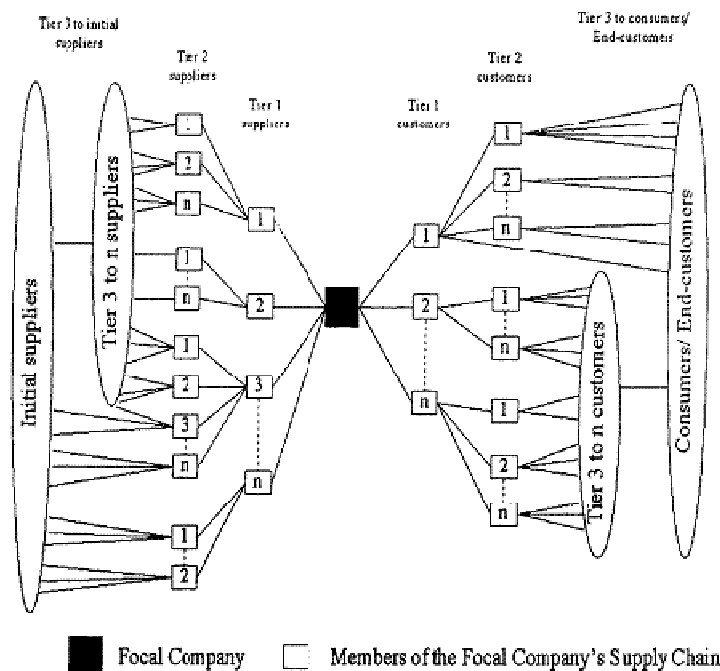


Figure 2. Supply Chain Network Structure (Adapted from Lambert and Cooper 2000)

integration of global SCM.

This understanding will better formulate internal business strategies of suppliers by supporting both the objectives of the supply

generic supply chain that links a company with its suppliers upstream, and its distributors and customers downstream. Upstream supply chain includes the organization's first tier suppliers-who

themselves can be manufacturers and/or assemblers-and their suppliers. Such a relationship can be extended to the left, in several tiers, all the way to the origin of material. Downstream supply chain includes all the processes involved in delivering the product/service to the final customers. It will actually end when the product reaches its final consumer. Thus, there are physical flows in the form of raw materials, work-in-process inventories, and finished products/services between supply chain echelons. Supply chain also includes the movement of information and money, and the procedures that support the movement of a product/service. Managing these physical, informational, and transactional flows effectively and efficiently requires an integration approach that promotes organizational relationship and fosters the sharing of strategic and technological efforts.

In this context, any large or small firm may be viewed as a part of a network of suppliers and customers as illustrated in Figure 2. Here demand and supply are the core elements. The competitiveness between suppliers and customers in the supply chain partly relies on how effective and efficient the information about various elements of demand and supply are being handled between the parties in the supply chain and how efficiently various demands are fulfilled. Customer pressures for lower prices and higher quality of product/services are forcing retailers, manufacturers, and distributors to achieve greater cost efficiency and improve lead time, thus making supply chain efficiency a key factor in gaining competitive advantage. Companies can improve their strategic positions within the supply chain by providing quality products/services to customers and strive to add value to meet the needs of the entire supply chain network. In this context, it is critical that SME link their business strategies to that of the supply chain network. Given the characteristics of a typical SME, this focus could become a unique capability for an SME.

Partnerships and Integrated Strategy

Partnerships are business relationships based on mutual trust and openness as companies share risks and rewards leading

to such an advantage (Muskin, 2000). The ability of a firm to extend beyond traditional corporate boundaries by working with partners will increase efficiencies and success.

Traditionally, in the market economy, products and services are produced to meet the forecasted demand. Firms in a supply chain are tightly integrated and focused on high-volume, maximum utilization of working capital, and cost efficiency in their supply of products/services. The optimum competitive decision is often accepted as achieving economies of scale and/or economies of scope. Productive processes are arranged so as to optimize the utilization of production and distribution capacity. In this economy, sharing technology and expertise with customers or suppliers was considered risky and thus unacceptable. There has been much emphasis on insourcing and vertical integration in supply chain strategies and little emphasis on outsourcing and cooperative and strategic buyer-supplier partnership (Sabbaghi and Sabbaghi, 2004). For example, in computer industry, companies such as IBM or Digital Equipment Corporation tended to provide most of the key elements of their own computer systems, from operating system and application software to the peripherals and electronic hardware, rather than sourcing bundles of subsystem modules acquired from third parties. Products and computer systems typically exhibited closed, integral architectures; and there was little or no interchangeability across different companies' systems, kept existing customers' hostage. Each company maintained technological competencies across many elements in the chain, and emphasized the value of its overall systems-and-service package, determined to stave off competitors who might offer better performance on one or another piece of the package.

The supply chain strategy in the market economy has been designed to "push" products to the customer based on forecasted demand. It focuses on supporting a tightly integrated enterprise geared toward mass production of goods at the lowest possible price. The production processes across the supply chain are synchronized for efficient utilization of all

resources. Information technology, however, acts as an enabler for operational optimization across the supply chain by offering better forecasts that are customer driven in addition to robustly synchronizing the sourcing, production, and processes across the supply chain in order to achieve optimal performance even if the forecasts are not perfect. For example, in car manufacturing, cars are traditionally manufactured to match forecasted demand that lacks much customer input.

However, in the new information economy, also called the internet economy or the web economy, the focus is exclusively on customer needs. To this end, the firms collaborate in a network of trading partners, each specializes in one or more core competencies (be it shipping, manufacturing, marketing, billing, order entry, or procurement services), and divest itself of non-core activities beyond those associated with sourcing, manufacturing, or distributing products/services. In this network economy, information technologies, digital networking and communication infrastructures provide a global platform over which people and organizations interact, communicate, collaborate, and search for information. The internet has created more sophisticated customers who demand innovative, personalized products/services delivered at their convenience. It has also expanded the very definition of the word "customer", so that it now includes employees, distributors, suppliers, business partners, and shareholders. As a result of these changes, a company's competitive position in this internet economy depends on its ability to deliver customized, relevant, highly responsive service to every participant in these networks of economic relationships. This new economy has led to the rapid emergence of business networks and new business models within and outside the firm to satisfy the strategic need for competitive flexibility. In this new economy, the supply chain is geared toward the customer "pulling" products customized to their specific needs, and the firm's resources are organized to meet the unpredictable demand patterns of the customer. Therefore, the benefits of supply chain management integration promote organizational relationships that in turn foster the sharing

of information technology and strategic efforts.

Partnership in supply chain management, in this network economy, has led to the development of various cooperative arrangements among various supplier and retailers. Jagdev and Thoben (2001) identify three types of collaboration and partnership between independent companies: (1) supply chain type of collaboration based on long-term collaboration where the participating companies in the supply chain must operate synchronously to meet customer demands; (2) Extended enterprise type of collaboration, most integrated form of collaboration, where the information and decision systems, and respective production processes are integrated; and (3) virtual enterprise type of collaboration, as a short-term collaboration where the participating companies, without system integration, are loosely related to bundle their competencies to meet customer demand. The type of partnership would determine the effective strategies that SME may consider and the perceived value added in the supply chain. For example, in vendor-managed inventory system, the responsibility of stock management is handed over to the supplier (Hvolby and Trienekens, 2002). This would make it possible for the supplier to adjust production and distribution planning to changes in consumer demand. In this system, SME as the suppliers would be able to access the retailer's information systems to view stock levels and future requirements. On the other hand, Advanced Planning Systems (APSs) make it possible to include suppliers and customer relations in the planning procedure to optimize a whole supply chain on a real-time basis (Kennerly and Neely, 2001). They would support collaborative planning among several partners in a network by shared access to information about known and expected material requirements and resources (Hvolby and Trienekens, 2002).

Collaborative computer-based information systems have become a major trend in today's business (Grossman, 2004). SCM evolved with the aim of integrating disparate functions like forecasting, purchasing, manufacturing, distribution, sales and marketing into a harmonious ecosystem that

would envelop the company's suppliers and customers. SCM promised to align all participants to act in unison to serve the end customer. Collaboration would enable managers to stop optimizing their individual silos to work together with partners—both internal and external—to achieve efficiency and effectiveness across the value chain. A truly collaborative partnership would encompass multiple customers and suppliers. OEMs would regularly communicate product availability, supply plans and product content changes to distributors and other channel partners. Based on upstream forecasts and product changes, the channel partners would communicate demand requirements to manufacturing service providers. In this fashion, members of the outsourced supply chain would be assured of accurate, up-to-date information to help them make decisions that elicit common, supply chain-wide benefits. While collaborating, there is distinction between big and small companies. It is between agile, flexible and adaptable organizations that can survive in an environment of rapid change, constant uncertainty and disruptive technologies.

Involving suppliers early and giving them influence over design is associated with greater contributions of suppliers to cost reduction, quality improvement and design for manufacturability (Liker, 1998). Increasing competitive parity in the areas of cost and quality has forced global manufacturers to seek other sources of competitive advantage with new product development rapidly becoming the focal point in the quest for sustained growth and profitability. The essence of today's new product development strategies is the simultaneous development of the new product and the accompanying manufacturing process such that quality is enhanced; costs reduced, and lead times shortened. The implementation of the integrated product development (IPD) process has come to depend on the use of multi-functional teams. Supplier involvement promotes better resource utilization, the development and sharing of technological expertise, and network effectiveness (Birou and Fawcett, 1994). Evaluation and monitoring of performance metrics is one of the key aspects of

integration process, partnerships, and strategy.

5. CONCLUSION

Suppliers need to participate fully in Internet-enabled sourcing (e-sourcing) processes. Suppliers often lag behind buyers because they see the new technology sourcing approach as a threat rather than an opportunity. Suppliers also must deal with the varied software, platforms and processes of multiple customers. As SME, they often have fewer resources for an implementation effort. Of course, companies undertaking an e-sourcing initiative can increase supplier buy-in by clearly communicating their strategic e-sourcing intentions and by emphasizing the mutual benefits of greater collaboration; explaining the extent to which e-sourcing participation distinguishes otherwise equal suppliers; and pointing out the opportunities for increased sales. For example, Hartford Computer Group, a small supplier to one division of General Electric, joined GE's private online exchange and consequently was able to sell to GE as a whole. The result was a 250 percent increase in sales. It is not unusual for buyer companies to subsidize Internet-enablement as part of their supplier-development efforts (Brooks and Donavon, 2003).

According to the International Labor Organization's publication (2000), SME account for between 40 and 80 per cent of non-agricultural employment in the Asia-Pacific region. While 40 to 50 per cent of the non-agricultural workforce is working in SME in such countries as Australia, Indonesia, Malaysia, the Philippines and Singapore, the figure is as high as 74 per cent in Japan. Regardless of the stage of economic development among the Asia-Pacific countries, SME are generally considered as major sources of employment generation. Promotion of such enterprises, therefore, is generally regarded as part of an employment-intensive industrialization strategy. The characteristics of SME suggest that the survival and success of these companies depend on their ability to compete in the market with providing/producing more at less cost, in less time, and higher quality. In particular, in the supply chain process, SME can

improve their strategic positions by providing quality products/services to customers and strive to add value to meet the needs of the entire supply chain network. This study has developed a conceptual framework describing the SME strategies in a supply chain network. It is critical that SME link their business strategies to that of the supply chain network within the competitive advantage model in procurement strategies as well as in customer relationship. In this new information economy, the supply chain is geared toward the customer "pulling" products customized to their specific needs, and the firm's resources are organized to meet the unpredictable demand patterns of the customer. SME that exhibit innovative behavior can use partnership and integration strategies along with new information technologies to provide new products and services, business value to customers. In particular, given their size and entrepreneurial character, they can use new technologies as a driving force behind new processes, new forms of business organizations, new scope for consumers, and new market opportunities. The characteristics of SME suggest that the survival and success of these companies depend on their ability to compete in the market with providing/producing more at less cost, in less time, and higher quality. In particular, in the supply chain process, SME can improve their strategic positions by providing quality products/services to customers and strive to add value to meet the needs of the entire supply chain network. This study has developed a conceptual framework describing the SME strategies in a supply chain network. It is critical that SME link their business strategies to that of the supply chain network within the competitive advantage model in procurement strategies as well as in customer relationship. In this new information economy, the supply chain is geared toward the customer "pulling" products customized to their specific needs, and the firm's resources are organized to meet the unpredictable demand patterns of the customer. SME that exhibit innovative behavior can use partnership and integration strategies along with new information technologies to provide new products and services, business value to customers. In particular, given their size and

entrepreneurial character, they can use new technologies as a driving force behind new processes, new forms of business organizations, new scope for consumers, and new market opportunities.

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