Supply Chain Management for Small and Medium Size Enterprises

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ABSTRACT
In today’s dynamic business environment coupled with globalization, the survival of Small to Medium Size Enterprises (SMEs) will be determined by their ability to produce more, at a lower cost, in less time, and with few defects. Essentially, these enterprises need to improve their efficiency. SMEs form the largest group of manufacturing firms which provide manufacturing and support services to Large Enterprises (LEs) in many supply chains. Despite the fact that SMEs are now participating in the global business networks, supply chain inefficiency is still one of the most crucial issues facing the SMEs. Despite these challenges, SMEs can consider supply chain management (SCM) as strategic weapon to improve their performance in the competitive marketplace. In our research report, we first provide a broad over of supply chain management in general for SMEs. We further discuss the evolution of the internet in SCM and the performance parameters of the supply chain processes. Our research report includes discussions on the extended supply chain management for SMEs. We present a comparative analysis of supply chain processes in terms of different categorization of SMEs. We further provide three case studies ranging from developed countries to underdeveloped ones, discussing the effect of E-SCM, and the challenges implementing it on their respective SME scenarios. We conclude our report by providing some recommendations which can be implemented by SMEs to increase the adoption of E-Business & E-SCM in SMEs.

Keywords: Supply Chain Management, Small and Medium Enterprises, Just-In-Time, E-Business, E-Supply Chain Management, Value Chain, Enterprise Resources Management, Customer Relations Management, Enterprise Assets Management.
1. INTRODUCTION

The subject of the Supply Chain Management (SCM) has different aspects. It has its derivations in a number of fields such as purchasing, logistics and operations. Given its nature, it requires for cross boundary management to deal with an internal cooperation within the organization, in addition to external interorganisational integration. Many definitions have been applied to explain the term SCM. For example, it was once defined as —an integrating philosophy to manage the total flow of a distribution channel from supplier to ultimate customer. Another definition is —the management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole. SCM is also defined as —the simultaneous integration of customer requirements, internal processes, and upstream supplier performance. The different definitions have some features in common, including —an end-to-end coordination and a focus on integration with other entities in the chain to deliver value to the end customer. [1]

The SCM field is continually evolving and developing [2]. It represents a strategic shift in a company’s fundamental principles and culture, and extends to company’s partners to deliver a common goal of optimization and efficiency. In today’s dynamic business environment of free trade and globalization, cost effective SCM is a matter of survival as obtained goods and services account for up to 80 percent of sales revenue [1]. Based on that, the importance of effective SCM must be seen as a competitive advantage: a professional practice which is one at the heart of an organization’s corporate strategy [3]. In addition to this, the external pressures from consumers require organizations to focus on better quality, lower prices, shorter lead times, and greater cost efficiencies. Hence, there is a growing demand to take SCM as a holistic view in order to secure more profitable outcomes for all parties in the chain.

Small and Medium Size Enterprises (SMEs) comprise 70-90 per cent of enterprises in most emerging countries, and therefore make a large contribution to entrepreneurship, gross domestic product and employment. Many researchers found that SMEs have significant impacts on supply chain performance as they may function as suppliers, producers, distributors, and customers. Other researchers found that SMEs act as the first and second tier suppliers in the Large Enterprises (LEs) supply chain [2]. Thus, in addition to their vital role in generating employment and economic growth, SMEs form the largest and most important group of manufacturing firms which essentially provide specialty manufacturing and support services to LEs [4]

Though supply and process costs represent 30 per cent of SMEs average manufacturing budget and logistics cost incurs about 40 per cent of their total supply spending, SMEs are still more likely to have a differentiation advantage than a cost advantage. Superior quality, features, and customer service are methods that SMEs often use to distinguish their products and services from those of the more commoditized Large Enterprises.

More importantly, despite the fact that SMEs are now further participating in the global business networks, supply chain inefficiency is one of the most crucial issues facing the SMEs. For example, SCM appears to be a method for LEs to de-codemize their products to reap the best prices from the market and to shrink the differentiated product territory of SMEs. In addition to that, LE often expect various kinds of changes from their SMEs supply chain partners to minimize their system cost. Hence, sustainability, adaptability, and having the ability to meet changing needs are critical for SME as they do not have much flexibility in setting prices being a supplier to LEs and for this, streamlining their supply chain activities becomes equally important. [2]

E-Business expands the traditional supply chain processes by extending it capabilities for the betterment of SMEs. To compete successfully in the market today and better serve the customer demands it is imperative for SMEs to adopt extended supply chain processes enabled by E-business.

2. SMALL AND MEDIUM SIZE ENTERPRISES (SMEs)

Small and Medium Size Enterprises (SMEs) comprise 70-90 per cent of enterprises in most emerging countries, and therefore make a large contribution to entrepreneurship, gross domestic product and employment. Many researchers found that SMEs have significant impacts on supply chain performance as they may function as suppliers, producers, distributors, and customers. Other researchers found that SMEs act as the first and second tier suppliers in the Large Enterprises (LEs) supply chain [2]. Thus, in addition to their vital role in generating employment and economic growth, SMEs form the largest group of manufacturing firms which essentially provide specialty manufacturing and support services to LEs [4]

Based on the purpose of this paper, we can define SCM for SMEs as —a set of business activities including purchasing from the open market, manufacturing or processing of sub-components within the plant, and delivery to large enterprises using hired transportation to enhance value of end product and in turn to ensure long-term regular purchase orders [2].
2.1 SMEs Strengths and Weaknesses

Compared with LEs, SMEs are more cash focused, short term, and uncertain. Their key strengths tend to be behavioral, stressing qualitative differentiation and innovation. SMEs’ employees are more flexible, cooperative and quick decision-makers. SMEs also are able to encourage better internal communications and exploit internal knowledge.

On the other side, SMEs major weaknesses are the lack of: financial resources; technical advantages; and infrastructural facilities. Furthermore, they have few products, few customers, low volume and weak marketing skills. Moreover, they are having higher capital and transaction costs, strategic reliance on top management or CEO perceptions of market forces, and are lacking economies of experience and learning capacity, and generally are more vulnerable. [5]

2.2 Supply Chain Management (SCM) in SMEs

Supply chain management in SMEs is an approach that helps the organization to function in a more agile and cost effective manner by integrating the processes of various partners at all three levels – strategic, tactical, and operational. Even though globalization has increased pressure on some SMEs to continually reduce their prices against their quality and services, SCM can improve the performance of SMEs and increase their profitability by enhancing their ability to obtain supplies of the right quality, at the right time, and at the most favored prices.

On the other side, most SMEs do not employ SCM and view it as a one-way process that exerts customers’ power. In a study that assessed the degree to which SMEs are aware of the principles of SCM, it was revealed that only around 25 per cent had a strategy for operating SCM and of these only 10 per cent had a senior executive responsible for it. All respondents faced barriers to implementation, which included: overcoming traditional practices, insufficient knowledge of SCM, expenses, lack of time, lack of resources, and the need for external support. As a result, SMEs remain heavily managed by their large customers or LEs [3].

As previously mentioned, supply chain management in SMEs has three levels. These are supply chain integration, strategic planning and implementation, explained as follows:

2.2.1 Supply chain integration

It means integrating a company’s logistics with different functional areas and integrating the internal process with the external supply chain network to enable the company to better understand the full potential of its value-added activities and hence reduces operational costs, improves customer services, and provides a significant competitive advantage [2].

The increased global competition, the information revolution, and the emergence of new types of interorganizational relationships are the key factors that force supply chain integration. SCM integration could be improved through partnerships, alliances, cooperation, collaboration, trust, information and technology sharing, and a fundamental shift from managing individual functional processes to managing integrated chains of processes. Since all of these factors are overlapping and because partnerships have been recommended as having the potential to enhance some other major factors that improve integration, we will expand in this term. [2]

- Partnerships:

Among the above mentioned factors, partnerships have the potential to be the problem solving process that improves supply chain partners’ knowledge and learning experience. For SMEs, developing longstanding and effective partnerships requires some critical factors that include: the compatibility of the collaborating organizations in terms of culture, procedures and working practices, frequent communication, and the need to keep track of technological and other developments occurring outside of the relationship.
Additionally, some SMEs wish to engage in supply chain partnerships to use SCM to obtain differentiation advantage or complement the one they have by giving it scale, efficiency and leverage through partner firms. Although partnerships have promising benefits, it does increase a SME’s vulnerability to many potential problems when they consider entering into long-term, cooperative relationships with supply chain partners. First of all, the downsides to partnerships include the fact that LEs use SCM to commoditize their products to shrink the differentiated product territory of SMEs. Second, SMEs become potential acquisition targets of LEs when the supply chain works well. Third, as their operations get intertwined within a supply chain, LEs will have an advantage in valuing SMEs better and this may make them look less attractive to other buyers. Fourth, the choice to participate in a SCM initiative may not be a fully voluntary decision for the SME because it may be the resulting force a LE —supplier or customer—bullying the SME partner into a closer relationship, where the LE can more easily exploit the smaller partner. Finally, LEs remain the sole recipients of benefits because of their size and power dominance [2].

- **Alliances**

SMEs alliance and network activity is supposed to help the SME overcome size and resource constraints through increased innovation and reduced costs and uncertainties, generally leading to higher survival rates. However, SMEs not only have higher transaction costs in such linkages, but they also increase those costs to larger partners, to the point where the LEs may require compensation from the SMEs.

- **Sharing Information**

It is believed that sharing of information among supply chain partners is the most critical driver for establishing trust between partners. However, various hindrances for information exchange among partners include the conservative attitude of some partners who want to share information but do not want to release commercially sensitive data.

### 2.2.2 Strategic supply chain planning

With the growing complexity of SME’s business in terms of size and scope, SME will possibly carry higher expenditure and considerable risk and will need to switch over from simple financial plans and budgets to forecast based planning where a SME can begin to plan its future rather than just responding to changes within the marketplace. All of these points make strategic planning a more crucial process for SMEs to survive and grow [5].

The four strategic planning steps for SMEs are: network optimization by designing the least cost network focusing on customer demand; network simulation by testing alternative models to predict supply chain behavior; policy optimization by developing the best operating rules; and robustness designing by anticipating unforeseen circumstances and possibilities.

The strategic supply chain planning in SME is considered the responsibility of top management or of the owner and is done only for short term. Planning processes vary among SMEs with respect to a few key variables: past success, planning efforts, current operating results, top management or owner’s attitude, values, aspirations and desires towards change.

- **SME’s Growth**

The long-term development of the business in different life cycle stages must be guided by a coherent growth strategy which has been formulated within the framework of identified environmental trends, competitive activity, market opportunities, and recognition of the existing skills, competencies, and resource requirements of the firm. However, growth opportunities for SME raise greater organizational complexity, simply because the existing capacity of the organization is overtaxed [5].

In a broader way, on a growth based approach SMEs may be divided into two main groups – growth oriented (to grow and create the most valuable company) and quality-of-life (to provide an income for the owners). Thus, the growth of the SME is influenced by entrepreneur’s ability to pursue a differentiated strategy and progress through discrete stages of growth; make structural and strategic changes to determine the growth prospects of business; and choose the enterprise environment which is constrained by the entrepreneur’s past experience.

Superior competitive strategies are essential if the organization is to achieve not only absolute growth rates...
but also growth relative to competitors in the market. Most SMEs, however, do not formally define or understand their competitive strategy, a factor that often serves to weaken their position in their chosen market [5].

2.2.3 Implementation of SCM

Implementation of supply chain initiatives is highly dependent on some organization’s factors. Those factors are either barriers or enablers to the implementation of SCM within the organization.

- **Enablers to successful implementation**

Some of SME’s criteria that have enabling effects are their actors greater degree of maneuverability, personal contact with the employees and customers, greater sense of responsibility in the owner and employee, and greater flexibility to cater to limited and fluctuating demands.

Critical factor to the successful implementation of SCM in SMEs include: value (relationship between cost and benefit); risk (probability of success), method (the approach adopted to balance value and risk), visibility in the whole supply network. Another factor to be considered is the heavy thrust on supply chain partner’s commitment to any new strategic direction as well as the involvement of the suppliers, distribution centers, and other stakeholders. Skills, nonetheless, are needed in dealing with SMEs supply network to ensure that their partners can deliver to the required standard [2].

- **Barriers to successful implementation**

On the other side, the barriers to successful SCM implementation may include: the lack of finance; high level of demand; high intensity of competition; lack of managerial skills; absence of frameworks to establish alliances among supply chain partners; IT being considered as a function and not as part of business strategy; lack of integrated information systems; and the lack of tools to measure the effectiveness of a supply chain alliance.

Additionally, SMEs have other shortcomings like their decreased capacity for using modern machineries, less scope for division of labor, higher cost per unit of output, inability to meet uncertainty, unutilized by-products, and poor storage and warehousing functions [2].

Another research also identified some barriers that may prevent SMEs from adopting SCM, including: lack of skilled individuals to drive supply chain development, lack of power in the supply chain, doubts that benefits exist outside current practices, lack of interest through the supply chain to participate, lack of trust among supply chain members, lack of knowledge/experience of electronic trading, geographical distance from customers/suppliers [1].

Moreover, SME business transactions suffer an absence of clearly defined departmental responsibilities and departmental boundaries due to the overlapping of responsibilities between the management and planners. Hence, the information needs in SMEs to plan their internal supply chain matters are different from the LEs. For instance, SMEs prefer logical reasoning approach over systematic planning approaches (such as aggregate production plans, production forecast, etc.), hence, they may find the traditional approaches and methodologies used by their large partners to streamline the internal processes are not suitable (such as Kanban, JIT, etc.).

- **Supply chain management’s effects on SMEs**

On one hand, SCM can provide quality and leverage benefits for the SME. It provides an opportunity for these organizations to improve some of the issues like customer service and responsiveness, leadership, communications, electronic trading, and develop more clarity on their business strategy and core competences. It also provides a reduction in cost, risk, product development cycle time, waste, procurement and inventory. Good reasons for SMEs to implement SCM include that: SMEs do not function as a collection of formal structured departments; SMEs which were previously working as suppliers to large organizations have now become an important entity in decision making on their strength of innovation; and the change from contractual relationship towards partnership induces the progressive integration of buyers and suppliers, which becomes evident in the institution of specific coordination mechanisms (co-design, self-certification, self-qualification, JIT, etc.) and the widespread use of information technology. Furthermore, size and budget constraints restrict SMEs from the adoption of technology and development of new skills and hence SCM is a necessary means for them to be able to compete.
On the other side, SCM implementation may have some drawbacks on SMEs. SMEs may face the pressures to produce the best quality, at the cheapest price, and within the shortest manufacturing lead time. Moreover, their limited power and resources make it difficult for the organization to cope with the challenges of shorter product life cycle and mass customization which put higher demands on the company’s ability to adjust its production planning to the frequent changes to orders by their first and second tier buyers. To overcome this challenge and with the absence of forward and advanced planning techniques and to avoid delays, SMEs may sometimes need to carry extra safety stock but this further affects the next levels in the supply chain network. SMEs may lose business with other organizations by entering into long-term contractual relationships with a particular contractor. Besides, SMEs may get exposed to greater control hazards from LEs while reducing its private differentiation advantages.

Reasons why SCM implementation may have negative effects on SME’s poor performance include that: SMEs did not implement and engage in SCM with the same strategic focus as their partners did to improve the chain’s performance, extend the chain, and develop new product quality and customer service. In other words, SMEs did not appear to implement SCM as deeply as LEs did [2].

3. THE EVOLUTION OF E-BUSINESS IN SUPPLY CHAIN

The evolution of supply chain goes back to transportation and warehousing at the initial phase. In the second stage with the help of the World Wide Web, manufacturing, procurement, and order management functions were added to the supply chain. With the advent of EDI and decision support systems, suppliers and customer functions were integrated in the third stage. Nowadays, with the help of information technology, many other functions such as product development, marketing and customer services are also added to extend the supply chain from suppliers to customers [8]. Figure 2 further illustrates this.

As shown in the Figure 3 on the following page, the supply chain is a system which includes material suppliers, production facilities, distribution services and customers linked together via the feed forward flow of materials and the feedback flow of information. [8]. In fact, it confines Supply chain management confines the notion of an organization to coordinate the activities from procurement to the final customer. Each component of the supply chain management activity supports another by focusing on each component operation across firms’ boundaries.
4. **E-BUSINESS AND SCM PERFORMANCE**

Previous studies have measured organizational performance relying on both financial and non-financial criteria [8]. Although financial performance is the ultimate aim of any business organization, other indicators such as innovation, market share, customer focus, supply chain design, performance metrics, trading partner management, inventory management, returns management, employee training and management, and other non-financial performance indicators may also be equally important in evaluating the impact of SCM performance. There is a lot of scope for e-business which can influence these nonfinancial performance indicators significantly. [8].

Factors Influencing the Supply Chain:
- Purchase order cycle time
- Order lead time & Delivery lead time
- Supplier cost saving initiatives
- Information carrying cost
- Buyer-Supplier partnership level
- Supplier rejection rate
- Accuracy of forecasting techniques
- Operational cost
- Effectiveness of distribution planning schedule
- Customer perceived level of value
- Total Supply Chain cycle time
- Responsiveness to urgent deliveries

5. **EXTENDED SUPPLY CHAIN MANAGEMENT & SMES**

With the goal of optimizing entire supply grids, success requires —systems thinking, a business discipline derived from general systems theory. Most workers involved in supply chain management, however, are not trained to think of optimizing the whole system, just the parts of the system (silos) encompassed by their responsibilities and activities. Figure 4 illustrates the participants and shared business processes of extended supply chain management systems enabled by electronic commerce [12].

5.1 **5.1 Inter-supply chain collaboration**

Multi-divisional companies typically operate multiple supply chain management systems to handle multiple plants and distribution channels. Value chains are being made into multiple-path, multiple-node value Webs. An extended SCM system can allow traditional, tightly linked systems to share information across channels and provide new opportunities for optimization across multiple, external supply chains [12].

5.2 **SME collaboration:**

Small to medium enterprises represents a whole new world of potential suppliers that can be tapped as a result of the Internet smashing the barriers of cost and complexity of traditional EDI-based systems. Supply, demand, production planning, and logistics can be optimized by extending automation opportunities to SME suppliers. Even the smallest SME will likely have access to a fax machine and a Web browser. Because these simple touch points can be reached by the Web, SCM business processes can be extended to virtually any SME, anywhere, anytime.

5.3 **Supplier collaboration:**

Supply chains today have to function as a real-time business ecosystem. The richness and low cost of the Internet makes it possible to add new collaboration links with existing suppliers—and their suppliers—for forecasting, logistics, replenishment, bidding and ordering.
5.4 Customer interaction:

Today’s leading businesses are rushing to provide their customers with e-commerce resources. As customer-facing applications come online they must be integrated with the extended supply chain management systems. Ultimately, as such applications go live, the results can be customer-centered supply chain management. Customer information and behavior captured at the point of sale is the lifeblood of customer data warehouses and decision support systems.

Electronic commerce makes customer-driven, value-chain optimization a reality. The emerging demand pull model implies a revolution in supply planning, logistics and mass customization, as well as opportunities to slash massive distribution costs, typically eight percent of sales, through improved planning decisions that match customer and partner needs precisely. An e-commerce platform allows an enterprise to extend supply chain automation to its suppliers’ suppliers and its customers’ customers, forming dynamic trading networks: end-to-end supply grids containing real-time business process facilities and shared data warehouses of information for decision support. Figure 5 portrays the impact of electronic commerce on traditional supply chain management.

Electronic commerce opens up new possibilities to involve SMEs in real-time supply grids. Extended Supply Chain Management applications expand the scope of traditional SCM systems by coordinating multiple suppliers, internal/external SCM systems, and SMEs (including 75% of manufacturing concerns) to create collaboration and meet global market demand. An extended supply chain management system differs with traditional SCM systems in the extent to which a company can integrate with its suppliers, trading partners, customers and their customers. By sharing information all the way from the point of sale to the inventory levels of suppliers’ suppliers, all participants in an extended supply chain system can gain competitive advantage, optimizing performance and profits.

The key is that through electronic collaboration—increased collaboration with traditional suppliers, new SME suppliers, multiple supply chains and customers—all participants can gain breakthrough advantage. The holistic view of the entire supply chain is accompanied by a holistic bottom line for the entire channel. Trading partners can go so far as price indexing rather than negotiated fixed prices in order to equally share gains or losses due to price fluctuations. [12]

6. E-BUSINESS ON SME’S SCM

Based on a Swedish study we have pin-pointed 7 processes of SMEs supply chain management process where the usage of internet is applied. They are:

- Purchasing/Order Processing /Procurement
- Customer Service
- Customer Order Processing
- Inventory Management
- Relations with Vendors/ Integration with Manufacturing
- Transportation
- Production Scheduling

This division was based on the researchers’ judgment and knowledge of the current Swedish industry situation. The rationale behind these sub-groupings was to investigate whether there are any correlations, or differences, between relative size or industry affiliation among the Swedish SMEs, and the use of Internet in their SCM. The most popular application area of the Internet is purchasing/procurement, followed by customer service, customer order processing, inventory management, vendor order processing, relations with vendors, and transportation. Production scheduling is the area that the Internet is used the least by the responding firms. [7]
7. Comparative Analysis

Based on the Swedish study, a comparative analysis of E-SCM on two types of categorization of SMEs—was done.

1. Company Size and 2. Operation Type

7.1 Company Size:

Based on the industries in Sweden, we explored how the usage and rate of usage of the Internet differed between various companies. The differentiation of companies was based on the number of employees (smaller companies, 10 to 24 employees; larger companies, 25 or more employees). We looked at how the process mentioned in the section before are adopted by which types of companies more. They are illustrated in the figure below:

Some of the findings here are somewhat surprising; one would initially have expected that larger companies in general would utilize the Internet more than smaller companies; nevertheless, our findings strongly indicate that smaller companies seem to use the Internet more, both in general terms (98% versus 84%) but also in most of the individual SCM application areas. Only in three application areas (vendor order processing, production scheduling, and vendor relations) do the larger companies report a higher level of usage. This might indicate that it is easier for smaller companies to adopt new technologies and that technology integration is less complex in these firms than in their larger counterparts.

7.2 Operation Type:

The other comparative analysis was done in terms company operational function, whether it is a manufacturing company or service company. The fact that manufacturing companies consistently reported higher levels of Internet usage in their SCM is not surprising. Manufacturing firms, over the years, have attempted to use technology to improve inventory management as well as the in-bound and out-bound flow of materials and goods. The only exception here is the area of purchasing/procurement where service companies reported a marginally higher level of usage (81% versus 80%) [4]. The reason for this might be that many Swedish manufacturing SMEs already have established a relationship with their suppliers and a considerable portion of the purchases are still handled through simple telephone calls [7].

Below is the list of divisions:

**Manufacturing Companies lead in:**
- Inventory Management
- Transportation
- Customer Processing Order
- Customer Service
- Production Scheduling
- Vendor Relations

**Service Companies lead in:**
- Purchasing/Procurement

Other areas where internet is used in service companies:
- EDI programs with vendors in inventory management
8. Case Study:

8.1 CANADA:

SMEs are the lifeblood of the Canadian economy. SMEs—enterprises of fewer than 500 employees—account for 99 percent of Canadian companies and contribute significantly to job creation and economic growth. For instance, between the third quarter of 2002 and the third quarter of 2003, SMEs created 36 percent of net new jobs in Canada. E-business enables these firms to substantially reduce costs and streamline operations to produce better and faster service, remaining competitive in today's fast-paced global economy. Net Impact Study: The SME Experience found that a typical firm adopting advanced ebusiness solutions could increase profits by 150 percent, after increases in revenue and decreases in cost brought about by the transformation of business processes. [11]

Overall, in 2003, Canadian SMEs outperformed their international counterparts, with higher rates of IBS adoption than SMEs in the E.U. across all industry categories, and adoption rates generally similar to U.S. SMEs. In fact, more Canadian SMEs claimed financial benefits from IBS adoption—both increase in revenue and decrease in cost of goods sold, and in sales, general and administrative expenses—than did SMEs in the U.S. and the E.U. SMEs are increasingly cognizant of this trend, and look for the bottom-line benefits of technology adoption. However, the high overall results for Canada mask the fact that adoption is uneven across firm size and sector. While small firms (fewer than 100 employees) led their international counterparts in adoption rates for customer-focused solutions, and financial, accounting and procurement solutions, medium sized firms (100 to 500 employees) lagged internationally. [11]

Nationally, across IBS types, very small firms lead in the use of online marketing, sales, purchasing and supply-side management solutions Medium-sized SMEs, meanwhile, are using basic applications, such as e-mail and websites, but continue to lag far behind both larger enterprises and their smaller counterparts in adoption of more advanced technological solutions. Specifically, advanced e-business applications, such as e-procurement, supply chain management, accounting, finance management and human-resource management, are not being used by medium-sized SMEs despite their substantial cost-saving and profit enhancing potential. [11].

8.2 SWEDEN:

In Sweden, SMEs constitute a significant portion of the economy. Over 99% of all enterprises in Sweden are classified as SMEs and altogether, the SME sector accounts for 60% of total private employment. Furthermore, the SME sector represents as much as 66% of the total net investments made in Sweden. [6] The main objective of the paper that we have chosen is to study to what extent Swedish SMEs are using the Internet in the operations and management of their supply chains and to establish a foundation for further research in this area. The major research objectives are to determine the extent of the Internet utilization in the following areas: purchasing and procurement, inventory management, transportation management, order-
processing, customer service, production scheduling, and interaction with vendors.

The majority of the survey respondents (91%) reported that they use the Internet in one or more decision areas of their supply chain. This is expected since according to the 2003 Information Society Index compiled by IDC/World Times Sweden as a country has, over the years, maintained a top position as one of the world’s strongest information technology users. In addition, the International Data Corporation (IDC) has found Sweden to be the most sophisticated nation when it comes to information technology and Internet adoption. The paper indicates that the most popular application area of the Internet is purchasing/procurement, followed by customer service, customer order processing, inventory management, vendor order processing, relations with vendors, and transportation. Production scheduling is the area that the Internet is used the least by the responding firms. The data also shows that more than 80% of the firms applied the Internet in some part of their purchasing procedures. Obviously, this high rate of usage in purchasing/procurement can be attributed to the fact that it is an important element of the day-to-day operational excellence of most firms. The availability of e-marketplaces and online shops has made it easier for companies to conduct this part of their business activities more online. Also, the second highest ranking of the customer service area is not surprising since about 75% of the Swedes use the Internet. [7].

In the following sections we have further discussed the process of SMEs in which internet is being used.

8.2.1 Purchasing: The adoption of the Internet in the purchasing area of the supply chain has been growing in recent years (Lancioni et al. 2003). The findings support this notion and show that the Internet is widely used in this area of the supply chain in the surveyed SMEs. The Internet is utilized in a host of procurement activities such as checking, confirming and validating price quotations, communicating with vendors, online purchasing catalogues, arranging for returned/damaged goods, dealing with warranty issues and the EDI program with vendors. It is obvious that the Internet has impacted purchasing more than any other SCM decision area. Purchasing activities and negotiations can be conducted on the Internet with ease and in a timely fashion. In addition, electronic ordering, e-marketplaces, and online shopping intelligent agents such as shop and price bots have facilitated online purchasing. Communication with vendors is strongly represented here as communication requirements have been a motivating factor of Internet adoption by SMEs.

8.2.2 Inventory Management: The most popular application of Internet in this decision area is the communication to customers regarding inventory rather than communication to vendors. For instance, notifying customers of delays in order shipment was rated the highest in terms of Internet usage which is preceded by communication of out-of-stocks to customers, sales forecasting, and communicating to warehouses on out-of-stocks and emergencies.

8.2.3 Transportation: The use of the Internet in transportation has grown considerably in recent years. This has resulted in the expansion of trade, significant cost savings between carriers and shippers, and improved customer service for buyers.

8.2.4 Order Processing: Order processing has been the second most popular application of the Internet in supply chain management. The Internet brings various opportunities for improvement such as streamlining of the quotation process and lowering the overall purchasing costs to the firm.

8.2.5 Customer Service: The availability of the Internet and affordable customer service representatives around the world has made it possible for many firms to outsource this aspect of their business in order to save costs and provide a more convenient method of service to their customers. In addition, the Internet can be utilized for customer complaints, technical service, emergency situations that may occur and affect the whole supply chain, and to sell to customers directly.

8.2.6 Production Scheduling: The Internet has provided companies with the ability to expand production operations internationally while at the same time becoming more efficient. The Internet facilitates the coordination of production schedules and supply requirements both nationally as well as internationally and enables corporations to take advantage of low labor costs in other countries such as China, India, or the Philippines.

8.2.7 Vendor Relationships: The establishment of a relationship and the creation of an atmosphere of collaboration as well as co-operation with vendors are essential in the effective management of the supply chain. In previous research, the Internet has proven to be an important tool in bringing suppliers and buyers together. Internet can help firms to improve their relationships with vendors. The use of the Internet in this application area surpasses production scheduling and transportation management.
The paper that we have chosen has shown that Swedish SMEs are using the Internet in several areas of their SCM in order to respond to an ever increasing global competition. These firms use the Internet in their SCM to a large extent, but the level of applications is relatively low with potential to improve the use of the Internet in all decision areas of SCM in the study. Further integration of the Internet in these areas can prove the efficiency of the operations of the SCM. [7]

8.3 Challenges for the Developed Countries in adoption of E-SCM for SMEs

• Atomistic approach required:
  Developed markets may inherently have more atomistic quantitative disturbances due to the sheer number of components sourced from multiple vendors to produce more technical and complex products there than generally found in developing markets. Indeed, the disturbances reported in the SCV framework for developed markets were collected from the transportation industry. When quantitative disruptions do occur in developing markets, they tend to be holistic rather than atomistic in contrast to what is found in developed markets. The literature provides two plausible reasons for this. First, foreign buyers often impose higher product standards and delivery terms which no one firm can meet alone. In response, more collaborative or holistic supply networks are forged by channel members in developing markets to meet these demands. So when disruptions do occur, they are more likely to be holistic as reported in the present study. Second, as developing countries make infrastructure upgrades (e.g., runway or port expansions) to attract foreign trade, they often discount initiatives to make supply chains more efficient by improving network components. [13]

• Two Sides of the coin of increasing internet adoption among SMEs:
  SME managers planning electronic supply chain strategies. It also has relevance for supply chain management and operations managers in evaluating their SCM decision areas. The analysis can be used as a benchmark for these managers to further improve the competitive advantage of the firm. This study also demonstrates that adoption of the Internet in SCM decision areas and the frequency of usage are two sides of the same coin.

• Costly and difficult to implement

• Some believed that old ways of doing business: strong reliance on personal connections

• Lack of time

• Smaller firms are concerned about their ability to recruit and hire proper staff

8.3 INDIA & PAKISTAN

Indian industry spends an exceptionally high amount of 14 percent of its gross domestic product (GDP) on logistics. Close to 22 percent of the aggregate sales, amounting to over US$25 billion is tied up in inventories in the supply chain network countrywide. Hence, it has become necessary for Indian organizations to look for methodologies and processes to get maximum benefits of supply chain management which produces maximum efficiency both within and beyond their operations. Most of the Indian firms have realized the importance of performance measurement of supply chain based on the available literature about all measures influencing the supply chain performance. [8]

According to the Pakistan SMEs Policy, the firm having employment size up to 250, paid capital up to Pak Rupees 25 Million and annual Sales up to Pak Rupees 250 Million are Small and medium-sized enterprises (SMEs). SMEs sector is the backbone of Pakistan economy, SMEs play very important role in the social and economic development of Pakistan. According to more recent estimates there are approximately 3.2 million business enterprises in Pakistan, (44% Rural & 56% Urban), where they produce a wide range of goods and services, provide employment for a large number of skilled and semiskilled workers, account for a substantial proportion of manufacturing output, and make a major contribution to the country’s balance of payments. In overall terms, SMEs account for about 30% of Pakistan’s GDP, 15% of investment, and 78-80% of employment of non-agriculture labor force. They also play a prominent role as existing or potential producers of export goods. SMEs may thus be justifiably characterized as the principal building blocks of the Pakistani economy, providing the country with many opportunities for increased employment (including female employment) and poverty eradication on the one hand, and enhanced productivity, competitiveness and international market penetration on the other. [9]
Barriers in the SME sector for these countries:
- Excessive Regulation
- Energy Shortage
- Water shortage
- Difficulties in marketing and selling products
- Obsolete technology
- Limited R&D support
- Lack of capital and financial resources • Low skill mix of the labor / work force
- Limited productivity of works.
- Rising competition due to imported products

As because of a lack of resources E-SCM solutions become very difficult for developing countries like these. One possible solution might be adopting cloud computing. Cloud computing platform can work better to globalize and computerize the supply chain and to bring harmony in all the parts and function of the supply chain. By the developing Cloud computing for SMEs, can avoid capital expenditure (CapEx) on hardware, software, and services. The service provider will be only paid for what they are providing or what one use that service. Cloud computing solutions for SMEs should include supply chain management (SCM), enterprise resource planning (ERP), customer relationship management (CRM), manufacturing resource planning (MRP), and enterprise asset management (EAM). Enterprise Supplier Management, enterprise performance management. To develop this cloud computing platform a complete support of Government Ministries and support of the bodies that are directly responsible for the development of SMEs in Pakistan and India, are requisite. [9]

9. RECOMMENDATIONS & CONCLUSION:

After analyzing various papers we came up with the following recommendations & conclusions:
- SMEs are not scaled-down copy of large organization in experiences and business processes.
- SMEs rely on a few main customers, face a limited number of competitors and focus on qualitative competitive factors such as personalized service rather than cost and price factors which demands the effective planning and management of their supply chain activities.
- SME views SCM as exertion of power by customers and is perceived as one-way process.
- The practice of SCM in SMEs is a classified under various categories like supply chain integration, implementation and strategy and planning.
- The challenges for adopting SCM practices in SMEs are primarily based on the reasons that these organizations are relatively opportunistic and in contact with relatively few rivals; more cash focused, short term and instill better communications and incentives for exploiting internal knowledge restricts the application of supply chain practices in SMEs.
- Under the high customer dominance (LEs) with a strategic focus on efficiency and cost the survival of SMEs is dependent on their ability to provide/produce more, at less cost, in less time, with few defects, using fewer resources.
- Despite of these challenges, SMEs can consider SCM as strategic weapon to improve their performance in competitive market.
- SCM can help SMEs to establish better relationships with their customers or LEs and hence derive the opportunity to improve their learning curve.
- Adoption of SCM by first-tier and second-tier SMEs can help to consolidate the component level requirements of their customers or LEs at few stages and in turn it can help to boost the profit of their own and overall supply chain.
- Industry associations and sector councils can play a key role in sponsoring creation of e-business solutions that are easily adaptable and scalable among SMEs within their sector.
- Use of cloud computing can alleviate the need of hefty investment & other requirements, enabling adoption of ERP, MRP and other solutions.
- Certifications procedures should introduced to validate the credentials business vendors by the regulators in
order create a sense of accreditation in encouraging the adoption of IT.

- Greater need for collaborative approaches between large firms and their small suppliers and distributors, and with industry associations that can help increase awareness of the benefits of ebusiness among their memberships.

- Complete support of Government Ministries and support of the bodies that are directly responsible for the development of SMEs are requisite.
REFERENCES:


