CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter begins with briefly mapping the SCM journey. The chapter proceeds by noting from the extant literature, the conceptual studies made by earlier researchers in the area of SCM from the perspective of the OEM and the other entities of the supply chain considered in this study. This is followed by highlighting the research conducted in India on SCM. The chapter concludes by noting the findings from the literature review and the motivation for the current study. The terms factors, critical dimensions, and constructs have all been synonymously used in this study. Similarly, the terms supply chain partners and trading partners have been synonymously used in this study.

2.2 EVOLUTION OF SUPPLY CHAIN MANAGEMENT

The origins of the concept of SCM are unclear, but its development was initially along the lines of physical distribution and transport (Croom et al 2000) based on the concept of Forrester (1961), who identified the dynamics of response to changes in demand in supply chain situations. Forrester introduced a theory of management that recognized the integrated nature of organizational relationships in distribution channels. Another precursor can be found in the total-cost approach to distribution and logistics (Heckert and Miner 1940, Lewis 1956 and Croom et al 2000). Both these approaches show
that focusing on a single element in the chain cannot assure the effectiveness of the whole system (Croom et al 2000). The evolution of SCM has moved from disparate functions of logistics, transportation, purchasing and supplies and physical distribution to focus on integration, visibility, cycle time reduction and streamlined channels (http://www.develop.emacmillan.com, accessed on 26.11.07). The concept of SCM has received increasing attention from academics, consultants and business managers’ alike (Chan and Qi 2003). Various subject areas such as purchasing and supply, logistics and transportation, marketing, organizational behaviour, network, strategic management, management information systems and operations management have contributed to the explosion of SCM literature (Chen and Paulraj 2004a).

The philosophy of SCM evolved and merged into a common body of knowledge that encompassed all the value adding activities of the manufacturers and logistics providers (Tan 2001). Lummus and Vokurka (1999) pointed out that despite the acceptance of the concept of managing the supply chain and partly due to certain limitations in understanding the concept; growth of integrated SCM has been slow. The authors listed the reasons for the slow growth, which included: (a) lack of guidelines for creating alliances with supply chain partners, (b) failure to develop measures for monitoring alliances, (c) inability to broaden the supply chain vision beyond procurement or product distribution to encompass larger business processes, (d) inability to integrate the company’s internal procedures, (e) lack of trust inside and outside a company, (f) organizational resistance to the concept, (g) lack of buy-in by top managers and (h) lack of integrated information systems and electronic commerce linking firms. Jayaram et al (2004) quoted the following reasons for firms’ failure to excel in managing supply chains, namely: 1) managing cross-functional linkages has proved harder than anticipated, 2) managing boundary-spanning linkages is even harder than managing intra-firm, cross-functional interfaces and 3) not paying
adequate attention to structural issues such as the design of supply chains involving both boundary spanning and cross functional linkages. Some guidelines provided by Lummus and Vokurka (1999) for successful planning and implementation of SCM are as follows:

- Link supply chain strategy to overall business strategy, to align supply chain initiatives to business objectives.
- Identify supply chain goals and develop plans to ensure that every process is individually capable of meeting supply chain goals.
- Manage the sources of supply by developing partnerships with suppliers to reduce the costs of materials and receive materials as needed.
- Develop a supply chain information systems strategy that can support decision making at all levels of the supply chain and offers a clear view of the flow of products.

Lee (2000) and Chin et al (2004) pointed out that SCM involves the flows of material, information and finance in a network consisting of customers, suppliers, manufacturers and distributors. Coordination and integration of these flows and their correlated activities within and across companies through improved supply chain relationships to achieve a sustainable competitive edge are critical for effective SCM. Burgess and Singh (2006) noted from literature that the increase in interest in the area of SCM is due to: a) diminishing returns derived from intra-enterprise improvement initiatives, b) restructuring of industries as a result of technological innovations, c) response to globalization, d) deregulation and dynamic markets and e) developments such as lean operations, just-in-time
(JIT) and outsourcing. Burgess et al (2006) noted that while interest in SCM is immense, it is clear that much of the knowledge about SCM resides in narrow functional silos such as purchasing, logistics, Information Technology (IT) and marketing.

Analytically, a supply chain is simply a network of material processing cells with supply, transformation and demand as its characteristics (Davis 1993). From a practical standpoint, the supply chain concept arose from a number of changes in the manufacturing environment, including the rising costs of manufacturing, the shrinking resources of manufacturing bases, shortened life cycles, the leveling of the playing field within manufacturing, and the globalization of market economics. The current interest has sought to extend the traditional supply chain to include “reverse logistics” i.e., to include product recovery for the purposes of recycling, remanufacturing and re-use (Beamon 1998). Managing the supply chain means managing across traditional functional areas in the company and managing interactions external to the company with both suppliers and customers. This cross-boundary nature of management supports incorporating supply chain goals and capabilities in the strategic plan of the company (Lummus and Vokurka 1999). If SCM is to mature as a discipline there needs to be further progress in clarifying it’s domain, it’s central problems, it’s core components, it’s theories, and its theoretical map (Croom et al 2000 and Storey et al 2006). Croom et al (2000) pointed out that the multidisciplinary origin and evolution is reflected in the lack of robust conceptual frameworks for the development of theory on SCM. SCM aims to integrate the various structures and processes of the supply chain, facilitating and coordinating the flow of goods and services, and the flow of information necessary to provide the value that customers demand (Sridharan et al 2005). Fassoula (2006) noted that the supply chain process is a core business process of major importance for the realization of business strategy. Harland et al (2006), through an extensive
literature review, evaluated SCM under four test criteria, namely: coherence, quality, breadth and depth of knowledge and discipline-debate. The authors concluded that SCM is yet a developing discipline.

2.3 RESEARCH ON SCM: PERSPECTIVE OF OEMs

2.3.1 Purchasing and Supply Management

Tan et al (1998b) suggested that a firm’s practice of SCM is reflected by its degree of involvement in ten interrelated areas of supply base management, supplier development and customer-supplier integration, such as establishing a quality assurance programme for a supplier’s product and process, visiting the supplier’s facility regularly and sharing sensitive information with suppliers, etc.

Narasimhan and Das (1999) considered SCM practices as a set of activities related to purchasing and supply base management, such as early supplier involvement in product and process design, supplier responsiveness to order volume and delivery changes, and use of appropriate measurement/reward systems in purchasing.

Based on empirical studies, Carr and Smeltzer (1999) studied the relationship of strategic purchasing to SCM. The factors of the study were Level of strategic purchasing, Supplier communication, Supplier responsiveness and Change in supplier market. Their findings indicated that strategic purchasing is positively related to supplier responsiveness, changes in the supplier market, supplier communication and firm’s performance.

Hsu et al (2006) developed and validated a supplier selection measurement scale with the following factors, namely, Supplier quality, Supplier service and Strategic management fit.
2.3.2 Supply Chain Integration

Narasimhan and Jayaram (1998) considered two core elements, namely, supplier integration and customer integration in their `decisions-oriented’ framework of supply chain.

Frohlich and Westbrook (2001) conceived supply chain integration as a set of activities that manufacturers use to integrate their operations with both suppliers and customers. The activities include: access to planning systems, sharing production plans, joint electronic data interchange (EDI) access/networks, knowledge of inventory mix/levels, packaging customization, delivery frequencies, common logistical equipment/containers and common use of third-party logistics.

Dong et al (2001) referred to supply chain integration as a set of decisions related to supplier management and coordination: using EDI, information sharing (e.g. demand forecasts and costs), sharing joint cost savings and working with suppliers to improve the management of their (second tier) suppliers.

Lambert and Cooper (2000) adopted a process view of SCM and suggested that creation of value requires the management and integration of key business processes across the supply chain, namely, customer relationship management, customer service management, demand management, order fulfillment, manufacturing flow management, procurement, product development and commercialization, and returns.

Das et al (2006) defined supplier integration as a state of syncreticism among the supplier, purchasing and manufacturing constituents of an organization, and operationalised supplier integration as a bundle of
practices that include internal and external practices. Their findings provided empirical support for the concept of an optimal set of supplier integration process.

Alvarado and Kotzab (2001) included in their list of SCM practices, concentration of core competencies, use of inter-organizational systems such as EDI, and elimination of excess inventory levels by postponing customization toward the end of the supply chain.

Salvador et al (2001) focus on a firm’s interactions with its suppliers and customers for managing material flow (e.g. the practice of Kanban, EDI and JIT linkage) and for ensuring materials quality (e.g. information exchange on quality).

2.3.3 Logistics and Transportation

Ellram and Cooper (1990) have taken a logistics and transportation perspective of SCM and defined SCM as the management of entire flow of products along the supply chain.

2.3.4 Collaboration and Commitment

Fawcett et al (2006) identified the levels of commitment needed for SCM implementation, namely, top management commitment, broad-based functional support, channel support, and infrastructural commitment. The authors proposed a composite model for supply chain governance consisting of three main components, namely, functional excellence, cross-functional and inter-organizational teams and a modified reporting structure.
Based on their study, Finley and Srikanth (2005) identified seven requirements that must be satisfied by organizations to achieve successful collaboration in supply chains, namely, Strategic alignment, Unified channel, Contiguous participants, Connectivity in quasi-real time, Channel wide metrics, Downstream demand and Evidence of benefits.

2.3.5 Conceptual Frameworks and Empirical Investigations

Lambert et al (1998) developed a framework to increase the understanding of SCM. The authors suggested that the SCM framework consists of three main elements, namely, the structure of the supply chain, the supply chain business processes and the SCM components.

Kuei et al (2001) modified the quality management constructs of Saraph et al (1989) and organizational performance constructs of Madu et al (1996), and studied the relationships between SCM practices and performance in organizations. The study identified three critical success factors of supply chain excellence, namely: supplier relationships, IT-driven change and customer focus.

Tan et al (2002) identified six aspects of SCM practices through factor analysis, namely: supply chain integration, information sharing, supply chain characteristics, customer service management, geographical proximity and JIT capability.

Wong (2003) proposed a SCM excellence model, which consisted of six constructs, namely, leadership, customer focus, cooperative relationship, management by fact, continuous improvement and business excellence.
Adopting the “Modern Logistics” (e.g., Lee and Billington 1992) approach, Cigolini et al (2004) introduced a set of SCM techniques (e.g., Design for SCM, Facilities network redesign, etc.) and SCM supporting tools (information tools, coordination and control tools, and organization tools) that could be used to analyze and describe SCM strategies.

The SCOR model integrates the concepts of business process reengineering, benchmarking and process measurement into a cross-functional framework involving purchasing, operations, and logistics functions (Huan et al 2004). Lockamy and McCormack (2004) investigated the relationship between supply chain planning practices and supply chain performance based on the four decision areas of the SCOR Model Version 4.0 (PLAN, SOURCE, MAKE, DELIVER) and nine key supply-chain management planning practices derived from supply-chain management experts and practitioners. The findings indicated that under each of the four decision areas of the SCOR model, at least one activity had a significant impact of supply chain performance, namely, Demand planning within PLAN, Supplier transactional collaboration activities with SOURCE, Make Planning process with MAKE and Delivery process measures with DELIVERY.

Tracey et al (2004) developed an explanatory model and accompanying measurement instrument. Their model contained three main groups, namely: Degree of Assimilation (independent variables), containing six constructs (Technology Innovation, Internal Relationships, External Relationships, Product Development, Transportation and Inventory Management); SCM Outcomes leading to customer value (Intervening variables), containing five constructs (Production Efficiency, Product Delivery, Response to Demand, Product Quality and Competitive Pricing); and Measures of Performance (Dependent variables), containing four items
Min and Mentzer (2004) proposed a theoretical framework and developed a measurement scale. Their framework contained the constructs of Supply Chain Orientation (SCO), Supply Chain Management (SCM) and Performance (PERF). The constructs under SCO were (1) Top Management Support, (2) Compatibility, (3) Norms, (4) Credibility, (5) Benevolence and (6) Commitment. The constructs under SCM were (1) Agreed Vision and Goals, (2) Agreed Supply Chain Leadership, (3) Information Sharing, (4) Long Term Relationship, (5) Risk and Reward Sharing, (6) Process Integration and (7) Cooperation. The PERF variables were (1) Availability, (2) Growth, (3) Product and Service Offerings, (4) Profitability and (5) Timeliness.

Chen and Paulraj (2004b) proposed a conceptual framework grounded on a paradigm of strategic management theory that emphasized the development of “Collaborative advantage” as opposed to “Competitive advantage”, and developed a measurement instrument with the following critical dimensions, namely: Competitive Priorities, Environmental Uncertainty (Supplier, Demand and Technology uncertainty), Customer Focus, Top Management Commitment, Strategic purchasing, Information technology, Supply network structure, Supply management (Supplier base reduction, Long-term relationships, Communication, Cross-functional teams, Supplier involvement) and Logistics integration. The two performance indicators were Supplier performance and Buyer performance.

Burgess et al (2006) focused on consolidating the constructs proposed by Chen and Paulraj (2004b), Min and Mentzer (2004) and Tracey et al (2004). The final outcome was a set of seven constructs, namely:
leadership (capturing the strategic nature of SCM and the need for senior management team to be proactively involved), Intra- and inter-organizational relationships (focusing on the nature and type of social and economic associations between stakeholders both within and between organizations), logistics (describing the issues associated with movement of materials within and between entities in a supply chain), process improvement orientation (processual arrangements that facilitate interactions within and between organizations, with a view to continually improving them), information system (covering aspects of communication both within and between organizations), and business results and outcomes (capturing performance related outcomes that organizations accrue from adopting strong SCM orientation).

Stadtler (2005) extracted the essence of SCM in the form of a framework, which was called “The House of SCM”. The framework contained Competitiveness and Customer service, Choice of Partner, Network of Organizations, Leadership, Information and Communication Technology, Process Orientation and Advanced Planning, as building blocks.

Li et al (2005) developed a measurement instrument by identifying six measures of SCM concept, namely, strategic supplier partnership, customer relationship, information sharing, information quality, internal lean practices and postponement, and two supply chain performance measures, namely, delivery dependability and time to market. The authors however, pointed out that even though the above constructs capture the major aspects of SCM practices, they cannot be considered complete and other factors, such as total quality management, internal integration geographical proximity, cross functional teams, agreed vision and goals, and supply chain leadership are also identified in the literature.
2.3.6 Quality Management in Supply Chains

Theodorakioglou et al (2006) empirically investigated the relationship between the implementation of supplier management practices and the intra-firm quality management practices, from the buyer’s perspective. The authors considered information sharing/communication, joint actions, relationship handling, supplier support, relationship quality, as the factors of supplier management practices. Their findings indicated a positive significant correlation between Supplier Management practices and total quality management practices.

Based on gap analysis Seth et al (2006) presented a conceptual model to measure service quality in supply chains. The authors found the gaps were bi-directional and covered both inter-organizational and intra-organizational transactions in the supply chain. They concluded that the gaps were between supplier and focal firm, focal firm and distributor, and distributor and customer.

Lo et al (2007) conducted an empirical study in china to assess the impact of supply quality management (SQM) practices on improvements in quality across organizations. The authors proposed a framework that contained Quality-focused supplier selection practices, Long-term-oriented supplier development practices, and Mutual-benefit-emphasized supplier integration practices to cover the aspects of SQM system. Their findings demonstrated that quality conscious management practices speed up the implementation of SQM practices and that SQM practices have their influence on both supply quality and organizational quality performance.
2.3.7 Reverse logistics

Bernon and Cullen (2007) proposed a framework adopting three management approaches, namely, integration, collaboration, and evaluation, for managing reverse logistics. The findings of their empirical investigation in the UK retailed sector indicated that an integrated supply chain approach would significantly reduce product returns and not only enhance profitability of retailer but also have a positive effect on sustainable distribution.

2.4 Research on SCM: Perspective of Trading Partners

The scope of the present study involves identification of the critical factors covering the aspects of SCM and developing conceptual framework from the perspective of the trading partners as well. Some of the studies conducted from the perspective of each of the trading partners, namely, Suppliers, LSPs and Retailers, have been given in this section.

2.4.1 Research on SCM: Perspective of Suppliers

Suppliers have become an essential part of the strategy aimed at improving the competitiveness of a buying firm. The quality of the supplied materials is critical for the quality of the finished products. Therefore any study on SCM would not be complete unless the perspective of the supplier is considered. Review conducted on the extant literature revealed that there seems to be very few conceptual studies oriented towards SCM, from the perspective of the Supplier (Tier-1 and Tier-2). However, considerable number of studies on buyer-supplier dyadic relationships has been evidenced, which would indicate issues on which the supplier has to concentrate on for
improving buyer as well as supplier performance. These studies have included supplier performance as one of the components of measures of performance.

For example, Shin et al (2000) studied the impact of a supply management orientation on the supplier’s operational performance and buyer’s competitive priorities, namely, cost, quality, delivery, and flexibility. The findings indicated that an improvement in supply management orientation of the supplier improves both the suppliers and buyers’ performance, which is a win-win situation for the supply chain.

Simpson et al (2002) implied that in addition to the routinely evaluated factors of Quality, Price, Delivery, the Channel Relationship is also a major criteria. This indicates issues on which the buyer-supplier dyad needs to work for improvement in performance of both the entities.

Paulraj and Chen (2005) mentioned that suppliers have a significant direct impact on cost, quality, technology, speed, and responsiveness of buyer firms, and strategic outsourcing is considered as a source of great advantage.

Koh et al (2007) proposed a framework and investigated the impact of SCM practices followed by small and medium enterprises (SMEs) and the resulting performance of SMEs. The authors considered the two factors, namely, Strategic Collaboration and Lean Practices and Outsourcing and Multi-Suppliers for their study to represent SCM practices. Their findings indicated that SME’s SCM practices have a direct impact on Operational Performance and an indirect impact supply chain related Organizational Performance.
2.4.2 Research on SCM: Perspective of LSPs

More and more organizations have realized that competitive advantage also comes from the delivery process wherein timely movement and strategic storage of materials and goods would enhance service delivery to the customer. Review of literature indicates availability of considerable research contribution in the area of logistics. The extant literature indicates that conceptual studies seem to have been concentrated on service quality assessment with reference to services offered and its influence on performance. The studies have been conducted on services offered, namely, Transport, Warehousing, etc., at the minimal level, and Third party logistics, etc., at the macro level. However, there seems to very few conceptual studies addressing the issue of SCM from the LSP’s perspective.

2.4.2.1 Warehouse

Neo et al (2004) assessed the quality of service offered by a Warehouse of a 3PL company in Singapore by developing an instrument using the SERQUAL format. Their findings indicated that customer values reliability such as documentation accuracy, picking accuracy, and

2.4.2.2 Logistics management

Chiu (1995) and Gunasekaran and Ngai (2004) identified the critical success factors in effective logistics management that included: good planning in a logistics system, a well-designed distribution system, the prudent selection of allied companies, close relationships with trading partners, good logistics investment analysis, the elimination of communication barriers to logistics management, the commitment of top management, and continuous improvement in logistics.
The survey conducted by Boyson et al (1999) revealed that profit growth and the evolution of stronger core competencies as the most important drivers behind the outsourcing of logistics functions by organizations, and financial stability, customer service capability and price of services were rated as the most important characteristics for planning logistics outsourcing relationships.

Lynch et al (2000) proposed a framework for studying the effect of logistics capabilities (process capabilities and value added services) and strategies (process leadership and differentiation) followed by the companies on firm performance in the retail grocery industry. Their findings indicated the existence of a positive relationship between process capabilities and cost leadership strategy, and that cost leadership strategy were positively related to performance.

Zhao et al (2001) proposed a framework to study the effects of logistics capabilities (customer-focused and information-focused) of the firms on firm performance. Their findings indicated that customer-focused capabilities significantly related to firm performance, and even though information-focused capabilities revealed no direct impact on firm performance, they had an influence on the customer-focused capabilities, which in turn significantly influenced firm performance.

Mentzer et al (2001a), based on their study on logistics service quality, presented an empirical support for the following nine logistics service quality constructs: personal contact quality; order release quantities; information quality; ordering procedures; order accuracy; order condition; order quality; order discrepancy handling; and timeliness.
Gunasekaran et al (2004) listed the critical success factors in logistics operations that include: (1) Strategic alliances with large clients and local Third-Party Logistics (TPL) providers across the world, (2) Web-based information systems, Networking and Relationship Management, (3) Key Performance Indicators for logistics management control, (4) Customer Relationship Management, (5) Joint ventures, (6) Innovation and (7) Benchmarking.

Gunasekaran and Ngai (2004) proposed a conceptual framework for Third Party Logistics Management that contained the following dimensions, namely, Logistics facilities, Global network of partners, Information technology, and Quality assurance. The case analysis conducted by the authors in Hong Kong indicated the critical success factors for logistics performance.

Lai (2004) empirically studied the services offered by LSPs in Hong Kong under three different factors, namely, Value-added logistics services, Technology-enabled logistics services, and Freight forwarding Service. The findings of the study indicated that LSPs are of four types, namely, Traditional freight forwarders, Transformers, Full service providers and Nichers, based on the level of services offered by the Logistics Service Providers.

Sahay and Mohan (2006) conducted a survey to determine the extent of usage of third party logistics practices in India and to establish the impact of usage of TPL services on business results. Some of the issues they focused on are: (1) importance of various logistics activities to organizations, (2) extent of usage of services offered by TPL service providers for carrying out specific logistics activities, (3) the benefits of using third party logistics services on specific business objectives, (4) the overall satisfaction with third
party logistics service providers, and (5) the future plans of current users of third party logistics services.

Nilsson (2006) found from their research that further development of the logistics discipline and thus of importance for logistics management, is the identification of understanding and sense-making of concepts, techniques and models in logistics.

2.4.2.3 Information technology

Power and Simon (2004), based on their survey conducted in Australia for determining some of the primary characteristics of organizations actively implementing SCM enabling technologies, noted that through a combined use of product numbering, bar-coding and EDI, organizations have the available means to enable specific SCM practices such as quick response, cross-docking, use of advance shipment notification, and vendor management of inventories.

2.4.3 Research on SCM: Perspective of Retailers

Magi and Julander (1996), proposed a conceptual model for assessing the relationships between perceived service quality, customer satisfaction, Customer Loyalty, Labour Productivity, and Profitability in a Swedish retail grocery setting. The authors used the following dimensions to represent perceived service quality, namely, Assortment, Store ambience, Personnel interaction, and Personnel promptness. The authors summarized their findings by pointing out that the relationship between perceived service quality, customer satisfaction and customer loyalty on the one hand, and profitability on the other, should not be regarded as a simple bivariate linear relationship.
Grewal et al (2003) found from their study that when customers’ wait expectations are negative, their evaluations of the store’s atmosphere are lower, and they suggested ways to enhance wait expectations by: (1) having sufficient sales and customer service employees on the sales floor; (2) investing in technology such as efficient checkout equipment and kiosks to provide customer information; and (3) enhancing store atmospherics through visual communications (signs and graphics), lighting, colours, music and scents.

Thang and Tan (2003) proposed stimulus-organism-response (S–O–R) framework to study Stimulus-Response relationship of consumer retail behaviour with particular focus on how consumer perception of the attributes of store image affects their preference of stores. The attributes of store image considered in their study were merchandising, store atmosphere, in-store service, accessibility, reputation, promotion, facilities and post-transaction service. Their findings indicated that merchandising, accessibility, reputation, in-store service and atmosphere of the stores significantly influenced consumer preferences.

Verhetsel (2005) investigated the impact of neighborhood characteristics on the relative attractiveness of product categories within a store, with special attention for the differences between hypermarkets and supermarkets.

Cortinas et al (2004) proposed a retail store loyalty management model and identified the following service elements to assess customer satisfaction, namely, Range and variety, Convenience of Service, Store atmosphere, Information, and Prices.
Reed et al. (2004) investigated the impact of the introduction of a computer assisted selling process (CASP) on customer’s perceptions of the overall buying process for buying a car. Their findings indicated the CASP was well received by the customers.

The study by de Moerloose et al (2005) on implementation of information kiosks in the retail store identified various advantages to customers and retailers. For example customers had online access to product information that is updated on a regular basis, yet at the same time they could approach employees for advice or they could try the product offline. On the other hand retailers could improve service through personalizing customer information or attending to customer suggestions and complaints.

2.5 RESEARCH ON SCM IN INDIA

The necessity of an effective and efficient SCM has been realized by many Indian organizations and India is trying to carve a niche in the globalized world by responding to the demanding requirements. The growing trend of many automobile OEMs, world over, not only outsourcing many of their requirements from Indian organizations but also opening their own manufacturing setups have given a new thrust to the economy as well as a huge boost to other entities of the supply chains (e.g., Suppliers, LSPs, etc.).

Research on SCM in India has highlighted the various significant points regarding the existing level of implementation as well as those issues that are specific to Indian conditions, which could be a hindrance to the seamless growth of effective and efficient supply chain management. However, authors have also pointed out the various initiatives taken by the Government of India in improving the infrastructure facilities as well as modification in statutory laws, as a step in the right direction.
Until recently, Indian companies have tended not to focus on their operations, preferring to devote management time to marketing and finance (Chandra and Sastry 1998). This view is now changing due to two main driving forces:

- the growth of multinational corporations bringing the approaches used successfully in the developed world and competing in the Indian domestic market (Dangayach and Deshmukh 2003).

- competition from companies based in developing world countries with a lower cost base than India (such as China) who can, with low transport costs, export products and still offer a cheaper price in the Indian market (Baker 2002 and Dhandapani et al. 2004).

While emerging markets offer opportunities they also bring along new rivals. Information networks and technological convergence are redefining the rules of economic and trading relationships within the country. Hence, it has become necessary for Indian organizations to look for methodologies and processes that produce maximum efficiency both within and beyond their operations (Sahay 1999).

The traditional “Protective” economic, industrial and organizational boundaries have been demolished (Saxena and Sahay 2000). Changes in the environment have been so dramatic and sudden that Indian organizations have realized the inappropriateness of competing effectively in isolation from their suppliers and other associates of supply chain (Sahay and Mohan, 2003).
Chandra and Sastry (2002), based on the findings from their survey done in India in 2001, mentioned that SCM is about recognizing interdependencies between functions and between members of the chain and developing effective strategies to synchronize decisions, and found that this objective is amiss with most firms even today.

Faroqi (2002) and Dhandapani et al (2004) noted that Indian organizations are looking for collaboration with supply chain partners to cope up with the increasing uncertainty of supply networks, globalization of business, proliferation of product variety and shortening of product life cycles. Initially, these were adopted by only the larger organisations but, with computer-based solutions becoming increasingly affordable, the trend is more widespread.

Sahay and Mohan (2003) pointed out that managing supply chain in such a vast country is most challenging for any organisation because of business practices followed.

Chandra and Sastry (2002) reported that Indian manufacturing continues to lag in adoption of efficiency enhancing technologies in warehousing and transportation sectors, and most Indian products and dispatches are still not bar coded with distributors remaining the not so good adopters of efficiency enhancing technologies. As per the authors the reasons for failure of such chain efficiency enhancing technologies are: (a) lack of easy availability of these technologies and consultants who would implement (especially in small industrial centers); (b) government regulations like excise and octroi (which forces irrational location of warehouses and leads expenditure of “evasion energy” by vendors and distributors); (c) lack of promotion of these technologies by industry associations and the government; and (d) deployment of low cost manual labour in most of these operations.
Sahay et al (2003) concluded based on their findings from a survey done in India in 1998 that many firms, having evolved their supply chain strategies, are in their phase of implementation.

Reviewing the returns management situation in India, Ravi and Shankar (2005) expressed apprehensions about the ultimate fate of the various brands of automotive products manufactured and distributed in India when these products complete their life cycle.

Avittathur and Swamidass (2006) noted that all three major US automakers are engaged in auto component production in India for supplying their assembly operations in India, USA, and in other parts of the world. The authors found from their review a lack of serious investigation on supply chain in developing countries such as China and India.

Jharkharia and Shankar (2006) explored the dissimilarities in supply chain practices among different sectors of Indian manufacturing industry, namely, Auto, Engineering, Process and FMCG (Fast Moving Consumer Goods) sectors. The authors observed from the study that the companies in the auto sector significantly differ from those in the other sectors in the adoption of SCM practices and Engineering and auto sectors have some similarities in certain aspects of SCM.

2.6 RESEARCH ON PERFORMANCE MEASURES

Traditional performance measures such as profitability are less relevant for measuring supply chain performance because they tend to have an "individual focus" and fail to consider chain-wide areas for performance improvement (Lai et al 2002), and an effective method is lacking (Chan and Qi 2002).
Kaplan and Norton (1992) recorded inadequacies in the traditional performance measures and suggested a Balanced Scorecard. Gunasekaran et al (2001) proposed a framework for measuring the performance of supply chains in which the metrics were classified into strategic, tactical and operational levels. Bhagwat and Sharma (2007) also developed a BSC for SCM that measured and evaluated day-to-day business operations from four perspectives, namely: finance, customer, internal business process, and learning and growth.

Some indicative references from the perspective of various issues, namely, various functions of SCM, studies in the Indian context, perspective of Retailers, perspective of LSPs and from conceptual/empirical studies from the perspective of the overall supply chain are indicated in Tables 2.1 to 2.5 respectively below.
Table 2.1 Some indicative references of various functions of SCM

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<tr>
<th>Author(s) and Year</th>
<th>Methodology</th>
<th>Study</th>
<th>Findings/Outcome</th>
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<td>Tan et al (1998b)</td>
<td>Empirical Study</td>
<td>Enhancing firm’s quality through supply base management.</td>
<td>• Operational quality approaches and supply base management practices were positively correlated to firm performance disparate approaches should be implemented concurrently to gain significant competitive advantage.</td>
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| Lambert et al (1998),    | Empirical study based     | To develop a normative model to guide future research | • Adopted process approach and Proposed a framework for SCM.  
  Lambert and Cooper (2000)| findings                  |                                                   | • Suggested that creation of value requires the management and integration of key business processes across the supply chain.                                                                                     |
| Croom et al (2000)       | Review                    | Categorization of literature linked to SCM | • Stressed the need for theoretical work  
<p>|                           |                                         | • Proposed a framework classifying the articles according to content-oriented and methodology oriented criterion.                                                                                           |</p>
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<tr>
<td>Shin et al (2000)</td>
<td>Empirical Study in USA</td>
<td>Studied the impact of a supply management on the suppliers’ operational performance and buyers’ competitive priorities</td>
<td>• The factors of Supply Management were Long Term Supplier-buyer relationships, Supplier Involved Product Development, Quality Focus in Selecting Suppliers and Reduced Supplier Base. Supplier’s performance indicators were Cost, Delivery Reliability, Lead-Time, On-Time delivery and Quality and Buyer’s Performance indicators were cost, quality, delivery, flexibility. • Findings indicated that an improvement in Supply Management improves both supplier and buyer Performance.</td>
</tr>
<tr>
<td>Croom (2001)</td>
<td>Case Study</td>
<td>Supplier Collaboration in New Product Development Process</td>
<td>• Identified that both operational and relational competencies are critical factors in the performance of the NPD process</td>
</tr>
<tr>
<td>Tan (2001)</td>
<td>Review</td>
<td>Evolution of SCM</td>
<td>• Presented a summary framework for evolution of SCM • Proposed a Definition of SCM</td>
</tr>
<tr>
<td>Gunasekharan et al (2001)</td>
<td>Review</td>
<td>Development of performance measures for supply chain environment</td>
<td>• Based on literature review developed a framework for measuring the strategic, tactical and operational level performance in a supply chain. • Proposed a list of measures from the above three levels</td>
</tr>
<tr>
<td>Author(s) and Year</td>
<td>Methodology</td>
<td>Study</td>
<td>Findings/Outcome</td>
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| Simpson et al (2002)| Survey        | Supplier Evaluation Process  | • Implied that in addition to the routinely evaluated factors of Quality, Price, Delivery, the *Channel Relationship* is also a major criteria.  
• Provided insights as to what criteria are most important to the firms that serve as the suppliers' customers (quality, continuous improvement and innovation, well maintained facilities and capabilities, customer orientation and open communication, and logistics and distribution issues. |
| Tan et al (2002)    | Empirical Study | To identify the prevalent SCM and supplier evaluation practices | • Identified the following SCM practices, namely, supply chain integration, information sharing, supply chain characteristics, customer service management, geographical proximity and JIT capability.  
• Identified the following supplier evaluation criteria, namely, product and delivery assessment, capacity assessment and information assessment. |
| Power and Simon (2004)| Empirical Study | Extent of implementation of SCM enabling technologies | • Based on extent of implementation, the organizations were grouped as Strategic, Tactical and Reactive.  
• Identified a significant relationship between company size, industry sector and the extent of implementation. |
<table>
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<th>Findings/Outcome</th>
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</table>
| Ravi and Shankar (2005) | Theoretical  | Interaction among the major barriers, which hinder application of reverse logistics in automobile industries in India | • Identified the barriers for implementing reverse logistics management.  
• Utilized the Interpretive Structural Modeling methodology to understand the mutual influences among the barriers. |
| Theodorakioglou et al (2006) | Empirical Study  | Relationship between implementation of supplier management practices and the intra-firm quality management practices, | • Considered information sharing/communication, joint actions, relationship handling, supplier support, relationship quality, as the factors of supplier management practices.  
• The findings indicated a positive significant correlation between Supplier Management practices and total quality management practices. |
• The bidirectional gaps cover both inter- and intra-organizational transactions in the supply chain. They include the gap between supplier and focal firm, focal firm and distributor, and distributor and customer. |
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<th>Findings/Outcome</th>
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</table>
| Bernon and Cullen (2007) | Empirical Study | Reverse Logistics Management in the UK Retail Sector | • Proposed a framework adopting three management approaches, namely, integration, collaboration, and evaluation, for managing reverse logistics.  
• Findings indicated that an integrated supply chain approach would significantly reduce product returns and not only enhance profitability of retailer but also have a positive effect on sustainable distribution. |
| Koh et al (2007) | Empirical Study in Turkey | Impact of SCM practices on performance of SMEs | • SME’s SCM practices were Strategic Collaboration and Lean Practices and Out Sourcing and Multiple Suppliers. The performance indicators were Operational Performance and Supply Chain Related Organizational Performance. |
Table 2.1  (Continued)

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<th>Author(s) and Year</th>
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<th>Study</th>
<th>Findings/Outcome</th>
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| Lo et al (2007)    | Empirical Study in China   | Examined the impact of Supply Quality Management (SQM) practices on Quality across organizations. | • Proposed a theoretical framework and categorized SQM practices as supplier selection, long-term-oriented supplier development and supplier integration. The measures of performance were Supply Quality and Organizational Quality Performance.  
• The findings indicated that quality conscious management (Customer Focus, Continuous Improvement and Total Involvement) practices speed up the implementation of SQM practices.  
• Suggested that organizations can implement various SQM practices to enhance their organizational quality performance through controlling supply quality. |
Table 2.1  (Continued)

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<th>Findings/Outcome</th>
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• Suggested avoiding certain errors while implementation, namely, failure to (a) include specific long-term objectives, (b) relate key measures to performance drivers by means of cause-and–effect relationships and (3) communicate the contents of and rationale for balanced score card.  
• Suggested that while the specifics of balanced SCM scorecard will differ from organization to organization; it is beneficial to build upon a standard framework. |
Table 2.2  Some indicative references of studies done in India

<table>
<thead>
<tr>
<th>Author(s) and Year</th>
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<th>Study</th>
<th>Findings/Outcome</th>
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<tbody>
<tr>
<td>Sahay (2003)</td>
<td>Review</td>
<td>Trust in customer – supplier relationships</td>
<td>• Provided insights to supply chain managers to examine and manage their supply chain relationships.</td>
</tr>
</tbody>
</table>
| Sahay et al (2006)| Questionnaire Survey| State of SCM practices in India            | Noted that • Organizations have aligned their Supply Chain Objectives with Business Strategies.  
|                   |                     |                                            | • It is imperative to integrate the three dimensions of supply chain objectives, supply chain processes and management focus for the achievement of business strategy. |
Table 2.3 Some indicative references of studies done on Retailers

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<th>Author(s) and Year</th>
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| Magi and Julander (1996) | Empirical Study in Sweden grocery retailers | Relationship between perceived service quality and customer loyalty and | • The following dimensions were used to represent perceived service quality, namely, Assortment, Store ambience, Personnel interaction, and Personnel promptness.  
• The relationship between perceived service quality, customer satisfaction and customer loyalty on the one hand, and profitability on the other, should not be regarded as a simple bivariate linear relationship. |
| Grewal et al (2003) | Case Study in goods store selling luxury items in USA | Effects of wait expectations and store atmosphere evaluations on patronage intentions in retail settings | • The findings indicated that when customers’ wait expectations are negative, their evaluations of the store’s atmosphere are lower.  
• The authors suggested that customer wait expectations could be enhanced by: (1) having sufficient sales and customer service employees on the sales floor; (2) investing in technology such as efficient checkout equipment and kiosks to provide customer information; and (3) enhancing store atmospherics through visual communications (signs and graphics), lighting, colours, music and scents. |
Table 2.3 (Continued)

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<th>Author(s) and Year</th>
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<th>Study</th>
<th>Findings/Outcome</th>
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<tr>
<td>Thang and Tan (2003)</td>
<td>Empirical Study in Singapore</td>
<td>Consumer perception of store image and preference to retail store</td>
<td>• The findings indicated that the following attributes are significantly influenced consumer preference: merchandising, accessibility, reputation, in-store service and atmosphere of the stores.</td>
</tr>
<tr>
<td>Verhetsel (2005)</td>
<td>Empirical Study in Europe (Belgium)</td>
<td>Impact of neighborhood characteristics on the relative attractiveness of product categories</td>
<td>• The findings indicated that the impact of neighborhood characteristics is bigger for supermarkets than for hypermarkets.</td>
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<td>• The implication of the findings was that different micro-marketing strategies are required in different types of neighborhoods to make stores profitable.</td>
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### Table 2.4  Some indicative references of studies done on LPS

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<th>Study</th>
<th>Findings/Outcome</th>
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</table>
| Lai (2004) | Empirical Study in Hong Kong | Identification of different types of logistics service providers | - Identified three types of LSPs based on the extent of services offered, namely, Value-added logistics services, Technology-enabled logistics services, and Freight Forwarding Service.  
  - The findings indicated that LSPs are of four types, namely, Traditional freight forwarders, Transformers, Full service providers and Nichers, based on the level of services offered by the Logistics Service Providers. |
  - Usage of 3PL services reveals positive and significant impact on business performance.  
  - Noted that increased outsourcing of all logistics activities has been planned. |
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• The findings indicated that for long-term success of an organization, successful supply management of the supply chain is the key, but business practices should be implemented in a clear and coordinated manner to yield positive results. |
• Identified a set of SCM Tools including SC performance metrics, SC cost accounting system, and Automated Identification systems. |
<p>| Tracey and Tan (2004) | Empirical Study | Development of an explanatory model and measurement instrument for SCM | • Developed an explanatory containing three main groups, namely: Degree of Assimilation (independent variables, SCM Outcomes leading to customer value (Intervening variables) and Measures of Performance (Dependent variables. |</p>
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<th>Findings/Outcome</th>
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<tbody>
<tr>
<td>Min and Mentzer (2004)</td>
<td>Empirical Study</td>
<td>Development of theoretical framework and measurement scale for SCM</td>
<td>• Proposed a theoretical framework and developed a measurement scale consisting of eighteen constructs. The framework contained the constructs of Supply Chain Orientation, Supply Chain Management and Measures of Performance.</td>
</tr>
<tr>
<td>Chen and Paulraj (2004a)</td>
<td>Review</td>
<td>Identification of Critical Dimensions of SCM and to propose a theoretical framework</td>
<td>• Proposed a framework grounded on a paradigm of strategic management theory that emphasizes the development of “collaborative advantage” • Identified the critical dimensions, namely, Customer Focus, Top Management Support, Environmental Uncertainty, Information Technology, Supply Strategy (Strategic Purchasing, Competitive Priorities), Managing Supplier-buyer Relationships (Supply Base Reduction, Selection, Long-Term Relationships, Communication, Cross Functional Teams, and Supplier Involvement), Logistics Integration Supply Network Structure, and Performance (Supplier &amp; Buyer).</td>
</tr>
<tr>
<td>Chen and Paulraj (2004b)</td>
<td>Empirical Study</td>
<td>Validation of critical dimensions of SCM.</td>
<td>• Conducted the study in USA. Validated the constructs of SCM.</td>
</tr>
<tr>
<td>Author(s) and Year</td>
<td>Methodology</td>
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<tr>
<td>Li et al (2005)</td>
<td>Empirical Study</td>
<td>Development of a measurement instrument for studying SCM concepts</td>
<td>• Developed a measurement instrument by identifying six measures of SCM concept, namely, strategic supplier partnership, customer relationship, information sharing, information quality, internal lean practices and postponement, and two supply chain performance measures, namely, delivery dependability and time to market.</td>
</tr>
</tbody>
</table>
| Paulraj and Chen  | Empirical Study   | Identification of driving forces of Strategic Supply Management      | • The driving forces identified were Environmental Uncertainty, customer Focus, Information Technology, Top Management Support, Competitive Priorities, and Supply Network.  
• Suggested researchers to use additional factors namely, Supplier Selection, Supplier Certification and Supplier Integration to expand the domain of Strategic Supply Management.  
• The results indicated that customer focus, competitive priorities, Top Management Support, Information Technology and Supply Network Structure have a significant positive effect on Strategic supply Management. Environmental uncertainty was not a significant deterrent to supply management. |
2.7 FINDINGS FROM THE LITERATURE REVIEW

The following has been observed with respect to research on SCM from the perspective of OEMs.

- Review indicates that there has been a divided functional approach in conceptualizing SCM. For example, some authors (e.g., Tan et al 1998b, Narasimhan and Das 1999, etc.) have adopted the purchasing and supply management perspective, while some on logistics and transportation perspective (e.g., Ellram and Cooper 1990).

- Some of the studies have adopted integration of major linkages (e.g., Narasimhan and Jayaram 1998, Das et al 2006, etc.), while others have specified SCM practices in terms of management of flow, quality, and design of materials and products (e.g., Salvador et al 2001).

- Some of the studies have concentrated on the modeling approach and have studied the impact of SCM practices on performance (e.g., Salvador et al 2001) and others have adopted a process view of SCM (e.g., Lambert and Cooper 2000), while some have worked on managing reverse logistics (e.g., Bernon and Cullen 2007).

- Some of the studies have modified the constructs of other domains and have attempted to conceptualize SCM (e.g., Kuei et al 2001), and some on quality management practices across organizations (e.g., Lo et al 2007).
Some of the studies have concentrated on SCM tools and techniques (Cigolini et al 2004), and some studies have dealt with service quality in supply chains (e.g., Seth et al 2006).

Some studies have taken a broader view and have identified critical dimensions and proposed conceptual frameworks (e.g., Tracey et al 2004, Min and Mentzer 2004, Chen and Paulraj 2004b).

The following has been observed with respect to research on SCM from the perspective of Logistics Service Providers.

Mentzer et al (2001a) has dealt with logistics service quality, and others (e.g., Gunasekaran and Ngai 2004) have concentrated on critical success factors of logistics management, while Lynch et al (2000) and Zhao et al (2001) have dealt with logistics capabilities and performance.

The following has been observed with respect to research on SCM from the perspective of Retailers.

Magi and Julander (1996) assessed relationship between service quality and profitability, while authors (e.g., Grewal et al 2003, Thang and Tan 2003) studied effect of retail issues on consumer behaviour.

With respect to research on SCM in India, the following has been observed.

- Authors (e.g., Chandra and Sastry 1998, Sahay 1999, Sahay et al 2003) have attempted to highlight the status of SCM implementation in India, while, for example Ravi and Shankar (2005) have concentrated on reverse logistics.

- Seth et al (2006) have concentrated on service quality in supply chains, and Jharkharia and Shankar (2006) explored the dissimilarities in supply chain practices among different sectors in Indian manufacturing industry, while Avittathur and Swamidas (2006) highlighted the lack of studies on SCM in India.

With respect to research on process measures the following has been observed.


### 2.8 MOTIVATION FOR THE PRESENT STUDY

From the review of literature it is noted that numerous researchers have attempted to explore the terrain of SCM and conduct conceptual studies. The initial contributions appear to be of divided functional approach with research work having concentrated on only some aspects of SCM such as distribution, logistics, purchasing, dyadic relationships, etc. If SCM is to mature as a discipline there needs to be further progress in clarifying it’s
domain, it’s central problems, it’s core components, it’s theories, and its theoretical map (Croom et al 2000, Storey et al 2006). Croom et al (2000) pointed out that the multidisciplinary origin and evolution is reflected in the lack of robust conceptual frameworks for the development of theory on SCM. In the manufacturing sector conceptual studies seem to have concentrated on the perspective of the original equipment manufacturer. From the literature, there appears a need to study SCM with a wider domain considering on the aspects associated with movement of materials and information, in the forward and reverse directions. Even though, as per the definition of SCM, the purpose of SCM is for improving the long-term performance of the individual companies and the supply chain as a whole, there appears to be very few conceptual studies oriented towards SCM for the purpose of identification of critical dimensions and development of scales, from the perspective of some of the other entities of the supply chain, namely, Supplier, Logistics Service Provider and Retailer.

In the Indian context, it is reported that goods worth billions of dollars are being locked in inventory in supply chains and that services is contributing more than 50% to Indian GDP, out of which 15% is through transport sector. Further, the increase in global trade will have a huge impact on the transport and logistics. Sahay et al (2003) pointed out that many firms, having evolved their supply chain strategies, are in their phase of implementation. Sahay et al (2006) pointed out that managing supply chain in such a vast country is most challenging for any organisation because of business practices, government regulations, technology capability, transportation infrastructure, etc. Avittathur and Swamidass (2006) found from their review a lack of investigations on supply chain in developing countries such as China and India.
It is realized that there is a need to identify the critical dimensions that cover the aspects of SCM, in the Indian context, particularly in the manufacturing sector, where the conditions are very specific to India and pose great challenges. The need to identify relevant measures of performance is also noted. The necessity for scales covering the various aspects of SCM from the perspective of the entities (section 1.5) listed earlier is greatly felt by both practitioners and researchers. It has also been noted that with respect to every entity, the presence of some of the identified dimensions(s) could enhance the relationship between the critical dimensions of SCM and the measures of performance and thereby improve the performance of the entity as well as the supply chain. Moreover, there is a need to stress upon the aspects of inter-organizational cooperation, which would lead to better SCM, particularly in the Indian context. These issues have been the motivation for the present study.