Chapter - 2

REVIEW OF LITRATURE
Practitioners and educators have variously addressed the concept of supply chain management (SCM) as an extension of logistics, the same as logistics, or as an all encompassing approach to business integration. Based on a review of the literature and management practice, it is clear that there is a need for some level of coordination of activities and processes within and between organizations in the supply chain that extends beyond logistics. We believe that this is what should be called Supply Chain Management. (Cooper, et al, 1997)

Historically, the three fundamental stages of the supply chain procurement, production and distribution, have been managed independently buffered by large inventories. Increasing competitive pressures and market globalization are forcing firms to develop supply chains that can quickly respond to customer needs. To remain competitive, these firms must reduce operating costs while continuously improving customer service. With recent advances in communications and information technology, as well as a rapidly growing array of logistics options, firms have an opportunity to reduce operating costs by coordinating the planning of these stages. In this paper, we review the literature addressing coordinated planning between two or more stages of the supply chain, placing particular emphasis on models that would lend themselves to a total supply chain model. Finally, we suggest directions for future research (Douglas J. et al 1999). Over the last several years, a profound change in understanding the dynamics of competitive advantage. Managers now acknowledge that a firm's success is tied, in part, to the strength of its weakest supply chain partner. Only through close collaborative linkages through the entire supply chain, can one fully achieve the benefits of cost reduction and revenue enhancing behaviors. Data are presented that look at a range of supply chain management practices and processes. By examining differences in practices and processes between buyers and sellers, along with the supply chain, attempts to understand better the challenges facing managers who espouse supply chain management. Also proposes a change in mind set for the traditional procurement manager and present insights for him/her to adapt to the requirements of the new competition (Robert E. Spekman, et al 1998).
In 1998, the Council of Logistics Management modified its definition of logistics to indicate that logistics is a subset of supply chain management and that the two terms are not synonymous. Now that this difference has been recognized by the premiere logistics professional organization, the challenge is to determine how to successfully implement supply chain management (Douglas M. et al, 1998).

Successful supply chain management requires cross-functional integration and marketing must play a critical role. The challenge is to determine how to successfully accomplish this integration. We present a framework for supply chain management as well as questions for how it might be implemented and questions for future research. Case studies conducted at several companies and involving multiple members of supply chains are used to illustrate the concepts described. (Douglas M. Lambert, et al 2000). The concepts of a supply chain and supply chain management are receiving increased attention as means of becoming or remaining competitive in a globally challenging environment. What distinguishes supply chain management from other channel relationships? This paper presents a framework for differentiating between traditional systems and supply chain management systems. These characteristics are then related to the process of establishing and managing a supply chain. A particular focus of this paper is on the implications of supply chain management for purchasing and logistics (Martha C. Cooper et al 1993). While supply chain management concepts are receiving increasing attention in literature and practice, the supply chain management philosophy is supported by a limited theoretical base. The industrial organization literature related to the advantages, disadvantages and applications of vertical integration and obligation contracts is explored. The industrial organization literature regarding vertical integration and obligation contracts is related to supply chain management. The advantages and disadvantages which supply chain management shares with vertical integration and obligation contracts are discussed. It is concluded that supply chain management is a way combining many of the advantages of vertical integration and obligation contracts, while overcoming some of their disadvantages. Using the industrial organization literature and findings from two case studies, prerequisites are developed for supply chain management, and three competitive situations are described. Supply chain management holds promise as a competitive form, provided that certain hazards are avoided, and that a competitive advantage results (Lisa M. Ellram, 1991).
Intense global competition has created a highly demanding customer. To serve his needs for high variety, low cost, sound quality and easy availability, organizations are looking beyond their own boundaries to the management of their supply chains. In this they have been inspired by the typical far eastern, and the very best western practice. But supply chain management is still a hope not a reality for many companies. On the one hand there is an array of “panaceas” on offer for our “sick” businesses; new technology, computer integrated manufacturing, the Just-in-Time approach, Total Quality Management, and more besides. On the other hand supply chain management has few specific tools of its own. To the manager busy holding on to his market share it is difficult to see where to start the process of making his operation more competitive. A three-stage approach to help companies see just which actions are likely to get the supply chain into better competitive shape is proposed. Also introduced are two simple graphical tools to help management develop a strategy for enhanced supply chain effectiveness: the pipeline map and the supplier relationship grid (Charles Scott, Roy Westbrook, 1991).

The term supply chain management is used to represent a variety of different meanings, some related to management processes, others to structural organization of business. This paper identifies and discusses various definitions of supply chain management, summarizes the associated bodies of knowledge and connects them using a systems approach. Systems levels of supply chain management are identified as the internal supply chain, the dyadic relationship, the external supply chain and the inter-business network.

Empirical research on behavioral aspects of relationships, chains and networks in the European automotive aftermarket is discussed, identifying gaps in perceptions of requirement and performance held by customer and supplies in the areas of quality, delivery, service, range and price. A combination of qualitative and quantitative analysis demonstrates substantial differences between approaches to supply chain management, through performance in relationships, chains and networks in the territories examined does not differ significantly. Customer dissatisfaction in relationships is shown to increase upstream in the supply chains examined, extending the applicability of the industrial dynamics ‘Forrester effect’ to softer, behavioral aspects of performance. Conclusions are drawn supporting the suggestions of operations strategists that position in the supply chain is an important strategic variable which, to date; have not been
comprehensively proven empirically (C.M. Harland, 1996). The Internet has grown rapidly over the last 5 years. It is predicated that more than 100 million households will be connected to the World Wide Web by 2002. But what about the use of the Internet in business-to-business supply chain applications? Here, the greatest potential of the Internet is being realized by speeding up communication between customers and their suppliers, improving service levels, and reducing logistics costs. In this article, the authors discuss for the first time how the Internet is being used in managing the major components of supply chains including transportation, purchasing, inventory management, customer service, production scheduling, warehousing, and vendor relations. The study breaks down each area and describes to what extent and how the Internet is being applied. The study also looks at the development of Intranets and Extranets in supply chains. (Richard A. Lancioni et al 2000). Over the past decade, the traditional purchasing and logistics functions have evolved into a broader strategic approach to materials and distribution management known as supply chain management. This research reviews the literature base and development of supply chain management from two separate paths that eventually merged into the modern era of a holistic and strategic approach to operations, materials and logistics management. In addition, this article attempts to clearly describe supply chain management since the literature is replete with buzzwords that address elements or stages of this new management philosophy. This article also discusses various supply chain management strategies and the conditions conducive to supply chain management. (Keah Choon Tan, 2000). Interest in supply chain management has steadily increased since the 1980s when firms saw the benefits of collaborative relationships within and beyond their own organization. Firms are finding that they can no longer compete effectively in isolation of their suppliers or other entities in the supply chain. A number of definitions of supply chain management have been proposed in the literature and in practice. This paper defines the concept of supply chain management and discusses its historical evolution. The term does not replace supplier partnerships, nor is it a description of the logistics function. The competitive importance of linking a firm's supply chain strategy to its overall business strategy and some practical guidelines are offered for successful supply chain management. (Rhonda R et al, 1999).

Bowerson and David (1995), logistic management has inferred that firms with world class logistical competency gain competitive advantage by providing customers with superior service.
While perfect orders are difficult to achieve, logistically sophisticated firms seek such lofty performance and are committed to continuous improvement. Army likewise, has a must achieve logistic task of strategic positioning of goods, achieving competencies for long term logistic survival and commitment to optimize performance logistics cycle. With Army's Philosophy of user friendly delivery system the concepts of shorter supply chain, min holding of reserves, direct delivery system, push models, inventory management automation and inventory reduction have to be given due importance. All these aspect without any ambiguity call for shorter logistic chain, increase in mobility and reduction in time spent for execution. One of the easiest ways to achieve the above is dynamism in warehousing infrastructure and would involve a de-novo look at the material handling equipments (MHEs) being used.

Edward F. (2002) discussed few strategies developing supply chain. Three major sections address the investigation, innovation, and implementation of logistics solutions to supply chain problem. In so doing, the paper presents simultaneously a mythology for planning and managing logistics activities while illustrating world class practices and systems in use by logistics organizations around the globe. In addition, each chapter stands alone in addressing the major issues in logistics data mining, logistics performance measurement, customer response, inventory planning and management, supply management, transportation, warehousing, logistics information system and logistics organization design and development.

For material handling equipments the research by the Japanese changed the ethos and culture of work in Japan. Prior to 1960, Japan trailed the United States in industrial productivity and in the application of modern production methods, especially in the use of state-of-the-art material handling technology. All that has changed. In the late 1950s the Japanese Productivity Centre sent a team to the US to study what was being done in material handling and to recommend measures for implementation in Japan. The result of the research was the licensing of U.S material handling technology for production and use in Japan. Today, we see spin-offs and derivations of that early technology, which has improved vastly in several areas. Post research, Japan is not only using its own material handling technology and equipment domestically, but Japanese suppliers are selling them on a worldwide basis, including in the Unites States. Japan is now a leader in several equipment/technology categories. Though adequate literature and
researches covering the logistics and material management systems exist in the field, the focus is exclusively on developed economies and their Armies. Exclusive research in Indian context is hence to be given. The present research would hence be a one of the first efforts in which logistics in Indian Army would be given the desired impetus.

Supply Chain Management is a network of facilities that produce raw materials, transform them into intermediate goods and then final products, and deliver the products to customers through a distribution system. It spans procurement, manufacturing and distribution (Lee & Belington 1992) the basic objective of supply chain management is to “optimize performance of the chain to add as much value as possible for the least cost possible”. In other words, it aims to link all the supply chain agents to jointly cooperate within the firm as a way to maximize productivity in the supply chain and deliver the most benefits to all related parties. Adoption of Supply chain management practices in industries has steadily increased since the 1980s. A number of definitions are proposed and the concept is discussed from many perspectives. However Cousins et al. (2006); Sachan and Datta (2005); Storey et al. (2006) provided excellent review on supply chain management. These papers define the concept, principals, nature, and development of SCM and indicate that there is an intense research being conducted around the world in this field they critically assessed developments in the theory and practice of supply management. Gunasekaran and McGaughey (2003) extended the scope of SCM beyond material management, partnership, information technology to the Total Quality Management areas like management commitment, organizational structure, training and behavioural issues. As firms' survival lies on aligning the integration process as a key aspect in SCM Mouritsen et al. (2003) discussed that basic hypothesis “the more integration (wider the scope) – the better the management of the chain” is not always true and proved that it depends very much on the “environment” of the supply chain and the power relations between the participants in the supply chain. Authors proposed a set of management techniques and tools to analyze successful SCM strategies.

The purpose of supply chain management is described by Kaufman (1997,) as to being to “. . . remove communication barriers and eliminate redundancies” through coordinating, monitoring and controlling processes. The integration of supply chains has been described by Clancy as: “. . . attempting to elevate the linkages within each component of the chain, (to facilitate) better
decision making [and] to get all the pieces of the chain to interact in a more efficient way [and thus] create supply chain visibility [and] identify bottlenecks (Clancy, cited in Putzger, 1998). The main drivers of integration are listed by Hand Field and Nichols (1999) as: the information revolution; increased levels of global competition creating a more demanding customer and demand driven markets; and the emergence of new types of inter-organizational relationships. They describe the three principal elements of an integrated supply chain model as being information systems (management of information and financial flows), inventory management (management of product and material flows), and supply chain relationships (management of relationships between trading partners). The basis of integration can therefore be characterized by cooperation, collaboration, information sharing, trust, partnerships, shared technology, and a fundamental shift away from managing individual functional processes, to managing integrated chains of processes (Akkermans et al., 1999). The extent of integration can begin with product design, and incorporate all steps leading to the ultimate sale of the item (Transportation and Distribution, 1998; Modern Materials Handling, 1998; Ballou et al., 2000). Some authors also include all activities throughout the useful life of the product including service, reverse logistics and recycling (Carter and Ellram, 1998; Coleman and Austrian, 2000; Thomas and Griffin, 1996). The potential for integration of the supply chain to improve both profit potential and competitive position is highlighted by Wood (1997) when he states that: since the supply chain represents 60% to 80% of a typical company's cost structure, just a 10% reduction can yield a 40% to 50% improvement in pretax profits (Wood, 1997). Cottrill (1997) states that the evolution of the concept of integration has moved over time to one in which the supply chain operates as a corporate entity, spans a virtual enterprise without reference to traditional company boundaries, and can be driven directly by customer demand via access to electronic storefronts. He states that this trend will create major changes in many companies, eventually leading to greater use of outsourced services. He also believes that the key to implementation lies in focusing initially on introducing changes within the company, and then extending the process to include suppliers and customers. The primary benefits resulting could include cost and cycle time reductions. Wood (1997) focuses on the importance of aligning goals across functions through cooperation and collaboration, and cites the traditionally poor alignment of goals between manufacturing and sales/distribution functions as an example of opportunities for better alignment as a precondition for improvement in supply chain
management practices. This cooperative theme is further supported by other writers (Fernie, 1995; Lawrence, 1997; Morton, 1997), and is in essence captured by Parnell (1998) when he states that supply chain integration really occurs when: customers and suppliers establish tight partnerships with the objectives and probable outcomes of reduced inventory, shorter lead times and better service to the customer. Conventional forecasting, planning and analysis methods are not equipped to deal with dynamic complexity (Senge, 1990). The “bullwhip effect” is an example of a typical supply chain management outcome resulting from circumstances that are dynamically complex, and was first highlighted by Forrester (1958, 1961). Chen et al. (2000) have defined this effect thus: This phenomenon states that the demand process seen by a given stage of a supply chain becomes more variable as we move up the supply chain (i.e. as one move away from customer demand). In other words, the orders seen by the upstream stages of a supply chain are more variable than the orders seen by the downstream stages. Symptomatic of this effect are excessive inventories, low customer service levels, inaccurate and untimely capacity planning, lost income, increased transportation costs and ineffective production scheduling (Lee et al., 1997). Lee et al. (1997) also state that access to, and management of, information is critical to minimizing this type of variation: Innovative companies in different industries have found that they can control the bullwhip effect and improve their supply chain performance by coordinating information and planning along the supply chain. Attributions of causes for the bullwhip effect have varied since it was first observed. Forrester would say that the behaviour in the system is a function of the interaction of structure (“effective organization structure and information sources”), delays (time between cause and effect/decision and implementation, etc.), and amplification (the inherent effects of policies) (Forrester, 1961). Sterman (1989) sees the primary influences as being irrational Supply chain management integration and implementation Damien Power Supply Chain Management. Human behaviour driven by a misunderstanding of real demand. Lee et al. (1997) believe that the problem lies in the infrastructure of the supply chain itself, identifying practices such as demand forecast updating, order batching, price fluctuation and rationing and shortage gaming as the key drivers. Where there is convergence is in the importance of reliable and timely information, although Forrester (1961) makes the point that timely information is not necessarily the solution on its own: Carried to its extreme, the result of more timely information can be harmful. The effect can be to cause the manager to put more and more stress on short-range decisions, the system improvements did not result so much from

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changing the type of information available or its quality nearly so much as from changing the
sources of information used and the nature of the decision based on the information. This view is
supported by Churchman (cited in Malhotra, 2000) when he states that knowledge resides in the
user and not in the collection of information, it is how the user reacts to a collection of information
that matters. Hill (2000) states that one of the practices exacerbating this uncertainty of demand is
the practice of “forward buying” or purchasing larger than needed quantities to take advantage of
lower unit prices. He estimates that this practice can account for as much as 50 per cent of
distribution inventories. Levary (2000) puts the ultimate result of the bullwhip effect simply as
being either an increase in cost to the end user, or a decrease in profit for the various members of
the chain. Up in et al. (2000) express this in terms of increased uncertainty of cash flow and earnings
for both buyers and suppliers. Hand Field and Nichols (1999) summarize the potential for
information technology applications for supply chain integration thus: With the emergence of the
personal computer, optical fiber networks, the explosion of the Internet and the World Wide Web,
the cost and availability of information resources allows easy linkages and eliminates information
related time delays in any supply chain network. Bowersox and Calantone (1998) state that the
notion of an integrated supply chain is not a new one, but that it has only recently become feasible
as companies have access to information that are accurate, timely and affordable. They also make
the point that information is the only element within the supply chain that has become less expensive
over time. An example of this trend is the increasing use of e-mail for communication both within
companies and between trading partners. Some recent Australian figures indicate that e-mail is
being used by over 40 per cent of small businesses and over 80 per cent of medium sized companies
to do business with customers and suppliers (Yellow Pages Survey, 1999, cited in Lawrence, 1997).
At a minimal cost email is being used to transfer word processor files, design documentation and
CAD files, spreadsheets and trading documents such as orders and invoices between trading
partners (Braue, 1999). The breadth of applications and uses that e-mail is being put to in the
streamlining of supply chain communications is often under-estimated. Baum cites the example of
Premenos Technologies, an electronic commerce vendor in the USA, developing a program (aimed
at small businesses) for transmission of electronic data interchange (EDI) type documents via e-
mail using the Secure Sockets Layer (SSL) protocol (Baum, 1997). Carter points out that the use of
e-mail is an important facilitator of better communications and relationships between trading
partners in an international context (Carter,
The Delphi Group highlight the “asynchronous” nature of e-mail type messaging, providing that the ability to communicate serially, without interaction and interruption, thereby bridging the constraints of time and distance” (Australian Industry Group, 1999). Many authors point to the fact that e-mail provides cheap and easy to use means of staying in contact with trading partners 24 hours-a-day and seven days a week (Marshak, 1999; Lancioni et al., 2000; Kaufman, 1997).

The real ability of information technology to enable true integration is best captured by Christopher (2000) when he says: The use of information technology to share data between buyers and suppliers is, in effect, creating a virtual supply chain. Virtual supply chains are information-based rather than inventory-based physical logistics. The importance of the management of physical inventory is being amplified by the following factors; decreasing product life-cycles; decreasing levels of standardization of products and demands for customization; customers demanding shorter delivery lead times; increased levels of competition due to globalization and lowering of tariff barriers; and increasing levels of dynamism (rate of change), complexity (number of changes) and uncertainty (what will change?) in global markets (Stalk and Hout, 1990; Pine, 1993; Handfield and Nichols, 1999). Levels of inventory in supply chains are directly linked to cycle times, and cycle times in physical logistics are largely a function of distance, uncertainty and complexity (Bowersox and Calantone, 1998). From the point of view of the movement of physical goods, an integrated supply chain offers the opportunity for firms to compete on the basis of speed and flexibility, while at the same time holding minimum levels of inventory in the chain. Rather than goods being held at various points within the chain, they will be moving between these points. Research has shown that companies that have been able to achieve significant reductions in cycle times have been able to translate this into tangible business benefits (Handfield and Pannesi, 1992; Belyea, 2000; Arntzen et al., 1995; Aron, 1998; Brennan, 1998). Despite this potential for providing a source of competitive advantage, it has also recently been shown that the infrastructure necessary to support streamlined product flows lags behind the rapid developments in information technology. Kilgore et al., as a result of interviewing 40 logistics managers found that “... global trading today depends on an awkward flow of paper and misinformation” (Kilgore, 2000, p. 6).
As a result, they predict that global shipping infrastructures will come under severe pressure in the next three to five years as growth in global e-commerce picks up. The major problem areas they identify include: Fragmented regulatory rules. The example of Japan is cited where up to 17,000 different trade laws can apply to imports, while in China certain products can only be sold through government agencies in adequate intermediaries. Global shipments are estimated to require on average the involvement of 27 separate parties to complete. These include brokers for buying cargo space, carriers for inland transport, compliance intermediaries at both country and regional levels and government agents covering tax and other compliance issues. Complications in costs, unpredictable variations in duties and taxes between countries can make sourcing decisions to playing roulette (Kilgore, 2000, p. 6). In terms of Forrester's model of industrial dynamics based on information feedback systems, these structural problems are potential sources of delays in the system, the effect of which could subsequently be amplified depending on the policy responses of individual trading partners (Forrester, 1958, 1961). As such, the application of improved information technology will provide a potential source of improvement, but cannot be expected to solve entirely issues resulting from such complex sets of interrelationships. The physical distribution of goods is also affected by distribution centre and facility location decisions. Arntzen et al. (1995) state that the main decision criteria for the logical design of a global outgoing logistics network are: number of distribution centres; where they need to be located; methods of distribution and capacity each should have; customers that each centre will service by product and order type (Arntzen et al., 1995). For incoming logistics they see the major issues as being: if they are rationalizing the supplier base, which suppliers to drop and which to keep; which suppliers should supply each plant by class of parts (Arntzen et al., 1995). Other general issues that need to be considered include the relative merits of tax havens as against extra freight and duty costs; the location of customers and suppliers; length of the material pipeline in time and space; transit time and cost of different transportation options; and design of products for optimal shipping configuration (Arntzen et al., 1995).

Wheatley (1996) notes that there has been a shift away from applying technological solutions to physical distribution systems such as racking systems, trucks and automated warehousing. He sees the focus moving to information technology as a result of diminishing marginal returns in physical handling technologies, although he does note that these technologies are being
embedded in many material-handling systems such as forklift trucks and automated materials handling systems (Murphy, A. cited in Wheatley, 1996). This does not, however, mean that the physical side of the distribution issue is no longer significant, or is indeed diminished in terms of its ability to provide a source of competitive advantage. Wood reports that survey research conducted in the USA by A.T. Kearney found that only 9 per cent of those surveyed indicated that they had a core competence in transport or logistics (Wood, 1997). This survey also reported that 90 percent of respondents were planning supply chain initiatives, but that only 18 per cent of respondents felt that their IT implementations adequately supported their supply chain initiatives. Given this low level of basic expertise in traditional logistics functions, it is easy to see that these companies run the risk of seeing IT implementation as a silver bullet that will solve problems more fundamentally rooted in organizational competencies. The A.T. Kearney report therefore concludes: Companies have failed to pay sufficient attention to areas such as transport and logistics, distribution, and purchasing. The most serious problems companies face are the continuing internal functional focus, a failure to align their IT systems and organizations with supply chain needs, and the traditional nature of their relations with external suppliers and customers (A.T. Kearney report, cited in Wood, 1997). Hand Field and Nichols (1999) emphasize the importance of relationships for the effective management of supply chains. They state that the technological and physical transfer elements are understood, and that the issue of relationships is more difficult, less well understood and therefore more fundamentally important: without a foundation of effective supply chain organizational relationships, any efforts to manage the flow of information or materials across the supply chain are likely to be unsuccessful (Hand Field and Nichols, 1999). Tait (1998) states that: Companies that make supplier relationships a priority are rewarded with better financial performance and greater customer satisfaction. In spite of this, a report by A.T. Kearney (A.T. Kearney report, cited in Tait, 1998) found that only a small number of companies really leverage their supplier relationships, with less than 20 per cent of North American and Canadian companies actively involving their suppliers in key business processes. The major reason identified is the need to recognize and include key strategic suppliers as early as possible in order to set joint objectives and align business goals. Traditional supplier relationships include what Dyer et al. (1998) describe as the “arm's length” model, characterized by multiple suppliers, avoidance of long term (or in some cases any) commitments and regular price reviews. The justification for this strategy has been to counteract the bargaining power of
suppliers (Porter, 1980; Porter and Millar, 1985). The cooperative model, by way of contrast, focuses on the sharing of information (and in some cases assets) between organizations, recognizing areas of common interest and mutual competitive advantage. In the context of a complex rapidly changing supply chain management environment, the cooperative model has become a critical element for effective implementation. The requirement for open communication, trust and recognition of the interdependence of “individual” elements of the supply chain as technology implementations bridge company boundaries has thrown further emphasis on the importance of such cooperative strategies (Stuart, 1997; Dyer et al., 1998; Landry, 1998a, b; Tait, 1998; Barratt, 1999; Bensaou, 1999; Lumsden, 1999; Rishel et al., 1999; Ghobadian et al., 2000; Kaufman et al., 2000; Kulwiec, 2000; Schonsleben, 2000; Vokurka, 2000). The key driver for this need to recognize the “common interest” has been a fundamental shift in power toward the customer (Hand Field and Nichols, 1999). As the customer begins to dictate terms in the marketplace, issues of interdependency between members of a supply chain become more critical. Winning the custom and loyalty of end users becomes more difficult as the competitive environment becomes more volatile. In this type of environment inefficient and ineffective supply chains characterized by traditional “arms-length” relationships, and “silo” type structures can threaten the survival of the entire chain (Barratt, 1999; Ghobadian et al., 2000; Landry, 1998a, b; Tolhurst, 2001).

Current literature about supply chain management describes several meanings of supply chain management (SCM). It becomes clear that there is not an explicit or unified description. Especially the level of detail between the descriptions differs. For example, Mabert and Venkataramanan (1998) describe supply chain management as a series of units that transform raw materials into finished products and deliver the product to the customers. This is a typical ‘push’ approach, pushing the raw materials into the next processes of the chain, towards the end market. A more holistic approach is given in the definition of Harland (1996) who describes supply chain management as managing business activities and relationships within an organization, with immediate suppliers, with first and second tier suppliers and customers along the supply chain. However, the descriptions of supply chain management remain vague since it is not clear what is meant by 'business activities'. Cohen & Lee (1988) succeeded in defining a clear description of supply chain management. They clarify that supply chain management consists of both intra- and
inter related business activities of a (focal) company. The intra-related part refers to the raw material or component procurement by independent suppliers, through manufacturing and distribution (inter-), and concluding with successful delivery of the product to the retailer or a customer (Cohen & Lee, 1988). It becomes clear how supply chain management evolved from traditional purchasing and logistics function into a broader strategic approach to materials and distribution management known as supply chain management (Tan, 2001).

The strategic, operational and tactical levels are the hierarchies in function, wherein policies and trade-offs can be distinguished and suitable control exerted (Ballou, 1992). According to Rushton and Oxley (1989), such a hierarchy is based on the time horizon for activities and the pertinence of decisions to and influence of different levels of management. The strategic level measures influence the top level management decisions, very often reflecting investigation of broad based policies, corporate financial plans, competitiveness and level of adherence to organizational goals. The tactical level deals with resource allocation and measuring performance against targets to be met in order to achieve results specified at the strategic level. Measurement of performance at this level provides valuable feedback on mid-level management decisions. Operational level measurements and metrics require accurate data and assess the results of decisions of low level managers. Supervisors and workers are to set operational objectives that, if met, will lead to the achievement of tactical objectives. Many firms look to continuous improvement as a tool to enhance their core competitiveness using SCM. Many companies have not succeeded in maximizing their supply chain's potential because they have often failed to develop the performance measures and metrics needed to fully integrate their supply chain to maximize effectiveness and efficiency. Lee and Billington (1992) observed that the discrete sites in a supply chain do not maximize efficiency if each pursues goals independently. They point to incomplete performance measures existing among industries for assessment of the entire supply chain. Measurements should be understandable by all supply chain members and should offer minimum opportunity for manipulation (Schroeder et al., 1986). Performance studies and models should be created so that organizational goals and achievement of those goals can be measured, thus allowing the effectiveness of the strategy or techniques employed to be accessed. Most companies realize the importance of financial and non-financial performance measures, however they have failed to represent them in a balanced framework. According to Kaplan and Norton
(1992), while some companies and researchers have concentrated on financial performance measures, others have concentrated on operational measures. Such an inequality does not lead to metrics that can present a clear picture of organizational performance. For a balanced approach, Maskell (1991) suggests that companies should understand that, while financial performance measurements are important for strategic decisions and external reporting, day to day control of manufacturing and distribution operations is often handled better with non-financial measures. Another area where inequality persists is deciding upon the number of metrics to be used. Quite often companies have a large number of performance measures to which they continue to add based on suggestions from employees and consultants. They fail to realize that performance assessment can be better addressed using a trivial few—they are not really trivial, but instead are those few areas most critical to success. The metrics that are used in performance measurement and improvement should be those that truly capture the essence of organizational performance. A measurement system should facilitate the assignment of metrics to where they would be most appropriate. For effective performance measurement and improvement, measurement goals must represent organizational goals and metrics selected should reflect a balance between financial and non-financial measures that can be related to strategic, tactical and operational levels of decision making and control.

Effective guidance on national security and defence policy objectives is fundamental to defence planning. According to General VP Malik (2006), defence planning has been neglected for a long time in India and this has led to ad-holism in decision making. More so it is adversely affecting the modernization plans of the defence forces. Armies around the world take good as well as bad lesson from the wars that they fight and so was Indian Army trying post Kargil war in 1999. However, the much awaited Revolution in Military Affairs (RMA) is still to see the prominence it deserves. It was military logistics which pioneered a number of techniques that have since become widely installed in the commercial world. Operation Research got its significance out of World War II military logistics efforts. Likewise, military logistics has also borrowed methods first introduced in the commercial world.