

companies succeeded by how from industrial age to information age. During the industrial age, companies succeeded by how well they could capture the benefits from economies of scale and scope. Technology was important, but ultimately success accrued to companies that could embed the new technology into physical assets that offered efficient mass production of standard products. The emergence of the information era, which started in the last decades of the twentieth century, made obsolete many of the fundamental assumptions of industrial age competitive advantage by merely deploying new technology into physical assets rapidly. The information age environment requires new capabilities in organizations for competitive success (Saxena and Sahay, 1998). The ability of a company to mobilize and exploit its intangible assets has become far more decisive than investing and managing physical, tangible assets. Intangible assets enable an organization to develop customer relationships and loyalty, introduce innovative products and services, produce customized high-quality products and services at low-cost and with short lead times, mobilize employee skills and motivation for continuous process improvements, and deploy information technology effectively. As more and more homogeneous products are available across markets that are becoming more homogeneous, the imperative is to reach the market at the right time and place at the lowest total cost in an effort to provide increasing levels of customer satisfaction, the very nature of business is changing in today's technology-driven global market place, customer expectations have ascended to very high standards (Sahay, 1999). Supply chain strategies are undergoing tremendous changes in response to these pressures. New technologies and the ever-increasing intensity of competition are forcing organizations to re-examine how they do business. To meet new customer-driven challenges, companies are re-investing their supply chains in order to succeed.

BUSINESS CHALLENGES IN THE 21ST CENTURY :

Information age competition has initiated some unique challenges which the business have to cope up with (Luftman, 1996, Henriott, 1999). These are described below:

K Managing Uncertainty:

Business environment's uncertainty has become a way of life. Consequently companies are finding it even more difficult to predict changes in their competitive environment. Customers are becoming competitors, competitors are becoming partners, and unconventional competition is emerging businesses, however, must go on despite potentially dramatically new business environments that are at present not well understood.

K Understanding Customers:

It is increasingly becoming important to understand customers' needs and wants deeply and to translate these into a unique value-added business mission. Companies capturing and applying information at each point of customer contact will, therefore, be better off than those that do not. Consequently companies will have to be able to apply and integrate information technology into the entire product process

(including research, design, manufacturing, distribution, marketing and after sales service).

K Understanding globalization of business:

Globalization is defined as a process, which cuts across national boundaries, integrating and connecting communities in new space-time combinations (Hall et al, 1992). As information technology (IT) breaks down the barriers of time and location, distinctions are also breaking down between large and small companies. Small, agile firms are now effectively competing with industry giants because IT can make a consortium of small firms look, feel and get big, reaching for customers once beyond their grasp. This has given rise to intense competition blurring the boundaries between domestic and global markets.

The emergence of the internet as a global communication vehicle already has had profound on the business process. E-commerce is perhaps the most striking example of the change.

Supply Chain: A Paradigm Shift :

The role of supply chain has changed considerably over the last three decades. In the 70s supply chain management primarily focused on the integration of warehousing and transportation within the firm. In the 1980s the focus of supply chain management shifted to the re-engineering of cost structures. At the end of 80s the focus of supply chain management shifted from reducing costs to improving customer service. The benefits of improving the performance of the supply chain included revenue growth and higher profitability through greater market share and price premiums (Gattoma, 1988).

In order to gear for the ensuing challenges posed by the arrival of new millennium there is a need to change the way in which companies have viewed their supply chain traditionally. Traditionally, the focus of companies has been on the flows within the organization or flows over which the organization has direct control. But, successful supply chain management requires the recognition that the firm is simply one player in the long chain that starts with suppliers and includes transporters, distributors and customers. Close relationships between suppliers, manufacturers, transporters, distributors and customers are going to be the key to success in times to come. Organizations must interact co-operatively with their channel partners for the mutual benefit of the channel as well as the gain of each player. In order to adopt this external perspective organization should not only consider the impact of any business decision on its own performance but also on the bottom line of its suppliers, distributors and transporters. Companies are recognizing that supply chain innovations can be not only a driver of cost reduction, but also importantly, a catalyst for revenue growth by achieving greater levels of customer satisfaction. Anderson and Lee (1999) call the new generation of supply chain strategy as Synchronized

Supply Chain. Synchronized Supply Chains structurally changes in how companies will manage supply chain operations.

- H Companies will collaborate with supply chain partners and synchronized operations
- H Technology will be key enabler of innovative supply chain strategy.
- H Supply Chain organization will be re-structured and re-skilled to achieve these goals.

Supply Chain Strategy :

Supply Chain Strategy will have a major impact on creating value for a company and supply chain partners. Based on collaborative strategy, demand flow strategy and customer service level strategy, an effective supply chain strategy may be formulated to meet the needs of the market and integrate them with technology to generate the highest level of customer satisfaction while delivering the highest value to shareholders

(Figure 1)

Collaborative Strategy :

Opportunities for collaboration among business partners will vary depending upon the organizations perspective role in the supply chain. Collaboration enables partners to

jointly gain a better understanding of future product demand and implement more realistic programme to satisfy that demand. The three major types of collaborative relationships are depicted in Figure 2 and discussed below (Lapide, 1999).

H Manufacturing/Supplier Collaboration:

Close collaboration among supply chain partners can be to align the parties and then enhance the value of the network's combined activities. Collaborating with suppliers, manufacturers will derive benefits in such key activities as new product development, order fulfillment, and capacity planning. Collaborative product development enabled by sharing and modifying design documents will help manufacturers develop products better and faster. Similarly, coordinating all tier-supplier production schedules will help ensure that future material needs are satisfied. This, in turn, results in improved order fulfillment and increased capacity utilization.

H Manufacturer/Customer Collaboration:

The collaborative opportunities between manufacturers and customers (such as wholesale-distributors and retailers) center on demand planning and inventory replenishment. The focus is on jointly developing an understanding of demand at the point of consumption, followed by creation of a mutually agreed upon replenishment plan. This approach helps to ensure that consumer requirements are met efficiently. To collaborate on demand planning successfully, business partners need to share and modify each other's demand plans and forecast electronically. Importantly each partner needs to understand and electronically share its promotional plans. Once demand plans and forecasts are in place, replenishment plans designed to assume adequate product availability would be jointly developed.

• Collaboration with third part and fourth party logistics providers:

Collaboration between companies and third party logistics (3 PL) providers will focus on jointly planning of logistics activities. With regard to transportation services, collaboration will improve equipment utilization by enabling the consolidation of inbound, interfacility, and out-bound shipments among business partners. This can be accomplished through electronic sharing of information on shipment plans and availability of transportation resources. Packaging is another potential area for logistics collaboration. Collaboration with 3 PLs providing distribution centre (DC) services would focus on the productive use of facilities, labour and equipment. This involves electronic sharing of inventory replenishment plan so that receipts do not overload a DC's receiving function or storage capacity. Electronic visibility into the availability of distribution centre resources would support that type of collaboration.

While outsourcing 3 PL is now accepted business practice, fourth party logistic (4 PL) is emerging as a breakthrough solution to modern supply chain challenges. The 4PL organization is one of the intermediate stages along the logistics spectrum that combines the benefits of outsourcing and in sourcing. It is usually established as a joint venture or

long-term contract between at least two parties, consisting of the primary client(s) and at least one other partner, which contributes the start-up capital for the venture and also provide assets and expertise for ongoing operations (Gattoma. 1998).

- **Demand Flow Strategy:**

Traditionally in supply chain management, the key focus and scope has been in managing the flows of materials and goods from suppliers through manufacturing and distribution chain to the customer. The key in demand management is the continuous flow of demand information from customer and end-users through distribution and manufacturing to suppliers. The shared objective of the chain is fulfilling customer demand. The most important controlling inputs are rolling forecasts and plans, point of sales data, daily orders, management decisions and performance feedback. The controlling trigger of the chain is the customer order (or replenishment signal), and the order penetration point is varying dependent on what is the optimum way to provide the required level of service in a most efficient way (Korhonen et. al., 1998).

Customers will never be completely predictable, however, effective demand flow represents a significant and often unexplored opportunity for organizations to simplify their supply chain operations. It has the potential to provide significant benefits to organizations in the form of improved forecast accuracy, increased supply chain visibility, reduced supply chain costs, and minimized supply chain complexity and improved customer service levels (Smith et.al, 1998).

The central issue is to establish a linkage between the customer and source of the products and services that the firm provides to marketplace.

Demand flow is a critical consideration for manufacturers, distributors, retailers, and other business partners. Yet despite the importance of demand planning and sales forecasting, channel design and proper supply chain configuration may lead to separate and disjointed forecast (Marien, 1999, Evans, and Danks, 1998).

- **Channel Design:**

A number of structures exist through which the organization's products and services reach the end-user consumer. While most organizations sell their products and services through retailers, wholesalers, dealers and distributors, advances in information and communication technology such as the Internet and world-wide web have fostered the development of an increasing number of 'direct' channel whereby organizations sell directly to their end-user customers.

The structure of the channel, or channel design, is determined by the vertical length of the distribution channel the optimum breadth or intensity of the distribution coverage, and the market opportunities. The length of the distribution channel refers to the number of channel intermediaries who participate in the process of moving the product or service to the ultimate user. Decisions about the breadth of the channel or relative intensity of distribution coverage involve the number (intensive, selective and exclusive) and kind of

retail outlets through which the product or service is offered to the customers and the number of intermediaries who will distribute to these outlets. This is a function of the product characteristics, buyer behaviour, degree of manufacturer control, and competitive strategies (Takechui, 1996).

The choice of channel structures is of critical importance since this has a deep impact on both, the level of customer service provided and the associated distribution costs.

- **Demand Planning:**

Determining the level of production and inventory required to meet end-user customer demand is a critical function at most firms. A formal approach to demand planning and management is essential. Whether the organization uses a sophisticated demand planning engine or simply produces forecasts by spreadsheet, forecasting must be a collaborative effort not only among the sales, marketing, logistics and finance department of the organization but also among all the supply chain partners. Distorted information may lead every entity in the supply chain the plant warehouse, a manufacturer's shuttle warehouse, a manufacturer's market warehouse, a distributor's central warehouse, the distributor's regional warehouse, and the retail store's storage space – to stockpile because of the high degree of demand uncertainties and variability. This is because the organization projects the demand pattern on what it observes.

When a downstream operation places an order, the upstream operation processes the information about the future product demand. Based on this signal, the upstream manager readjusts the demand forecasts and, in turn, the demand placed with the supplier of the upstream operation. Thus, the forecasting for future demand forecast is based on the order history of the organization's immediate customers. It has been found that the uncertainties of the upstream site are always greater than those of the downstream site resulting in what is called the 'bullwhip effect' (Lee, 1997). The demand signal processing by each supply chain partner individually is a major contributor to the above phenomenon.

Organizations need to mitigate the variability by using a single, reliable and steady source of demand data all along the supply chain. They need to improve their supply chain performance by co-coordinating information and demand planning along the supply chain. The 'sense and respond' process is critical to meeting end-user customer demand successfully while minimizing costs and assets both within the firm and across the supply chain. (Evans and Danks, 1998).

- **Supply Chain Configuration:**

Determining the optimal number, location and role of each supply chain partners is a critical element of the organization's overall supply strategy. The definition of the distribution network commits financial capital in the form of facilities, equipment and other assets, and establishes certain limit on the overall operating cost effectiveness of the firm and its supply chain partners (Evans and Danks, 1998).

Investigation of the supply chain configuration is thus to be based on efficiency (costs, revenues, and profits). Effectiveness (especially market share), adaptability (fluidity of capital invested, ability to accept new products or adjust to new technologies), and supply chain objectives. Managers need to trade-off objectives in the same way customer' trade-off for customer service to develop a 'realistic' supply chain configuration.

- **Vendor Managed Inventory:**

Vendor managed inventory (VMI) has received much attention in the last few years as a critical means of improving the planning and demand forecasting process. Essentially, VMI addresses the question of how to use shared sales and inventory data among supply chain partners and who is responsible for supply chain sales and inventory levels (Marien, 1999). The vendor and the wholesaler share the rest of process. The main operational problems from the vendor perspective are long lead-time in sourcing from manufacturers and high as a source of competitive advantage. In other cases, partnering might mean working collaboratively to share production, demand, capacity or product information order co-ordinate both partners' activities.

Technology, particularly internet, has provided a low cost, open communication infrastructure on which companies can develop new collaborative capabilities with their partnership companies can now know actual consumer demand more readily and plan their production and distribution operations to reduce excessive inventories, while getting the right product to the right customer. Rapid advances in technology have given us new tools that have reinvented the way supply chains are managed. These new tools allow us to reach beyond our own organizations and synchronize the entire extended supply chain.

Technology offers enormous competitive appeal but requires us to have the vision and the leadership to make its appearance a working reality. Technology is only the enabler in the transformation to a synchronized supply chain. To fully grasp the benefits of synchronization requires significant changes to company structure and to supply chain themselves. Variability of incoming order volume from wholesalers and big retailers. For the wholesaler the key issues are high stocks and periodically poor service levels for the vendor's product. The long lead-time and poor accuracy of deliveries is partly due to demand distortion on the retail chain level. Figure 3 illustrates the problems for a high-ranking stock-keeping unit in the supply chain. The supply chain is not synchronized to consumer demand. To secure high service levels, both the wholesaler and retail chain feel the need to buffer against supply disruption. This, in turn, distorts the need to buffer against supply disruption. This, in turn, distorts the demand that is communicated to the supply factories. The objective of VMI is to find an effective way for the vendor to take responsibility of the wholesaler's inventory. This way the need for double buffering against supply disruptions could be eliminated and the basis for planning supply requests from manufacturers could be improved (Holmstrom, 1998).

- **Customer Service Strategy:**

Customer satisfaction level is directly proportional to the service provided by the company. The customer service can be seen a continuum between dissatisfied and delighted customer (Christopher, 1998). The convergence being created by the information networks, has commoditised the product offering of the company as a result of which customers are increasingly inclined to demand higher standards of performance. They want organizations to add value to their time and trouble. Formulating a customer segmentation cost-to-serve and revenue management (Evans and Danks, 1998).

- **Customer Segmentation :**

One size does not fit all. There is no such thing as a truly homogenous market, in which all customers view the organization's offerings in exactly the same way. The first step calls for researching what customers want from the buying process and then using their preferences to group customers into market segments.

Customer services usually fall into five categories by lot size, market decentralization, waiting time, product variety, and service back up (Stern, 1987). Once customers have traded off one service category with the other, managers can group these preferences into market segments and look for links between these segments suggested by surveyors, focus-groups, demographic analysis and analysis of large-scale customer information database. A host of techniques like conjoint analysis, hybrid modeling, and constant-cum sales are used to frame customer needs and expectations for each relevant customer product and geographic segment.

- **Cost-to-Serve:**

Without restrictions of any kind, who wouldn't ask for the moon? Needless to say, an overarching consideration for the desired customer service level is the price. An analysis of the firm's current customer service delivering cost structure is developed and the costs of meeting the newly identified service levels by customer segment determined.

To find out about cost-to-serve, it is important to obtain an impartial assessment of whether the things that the customers want are feasible for the company. Next it is necessary to determine the kind of support needed from suppliers or other up-channel supply chain partners to service the target customer segments. Finally, it is required to project the cost of support system and its feasibility of execution. Those firms that have implemented activity based costing (ABC) accounting system will typically find this a relatively straightforward task. Without ABC capability, this analysis must be conducted on a project basis.

- **Revenue Management:**

Finally, the determination of the appropriate response to the identified needs and expectations of each customer segment must be completed. Few firms carryout this analysis, resulting in a situation where customer service needs and expectations are

known, but the response which maximizes the firm's profitability and growth is undetermined.

Consider the impact of failing to understand fully this dimension of the customer service strategy. Suppose a firm accurately determines the service needs and expectations of each relevant customer segment. Furthermore, assume that all of the costs required to achieve this level of service level are fully known. Finally, assume that the firm acts to achieve the desired level of customer service. A fundamental question nevertheless remains: how will customer respond to the new level of service? This behavior outcome is frequently unknown. Will customers reward the firm with greater market share, higher price premium vis-à-vis competitor or both and to what degree? At a very simple level, consider the dramatic difference of two alternative behavioural responses, one that focuses on market share and one that focuses on price premium. Should the former occur, the firm would need to provide additional production capacity to meet the higher demand. In the second case, no additional capacity is required, but product price should be adjusted immediately. Revenue management is the process of determining the market share and price premium impact of the behavioral responses of customer to alternative levels of customer service. These behavioural responses include purchase, repurchase typically referred to as loyalty and recommendations (which influence the behaviour of other customers). Analytical techniques include factor analysis, regression analysis, dynamic conjoint analysis and other multivariate statistical techniques.

- **Information Technology Strategy:**

Developments in IT have enabled the integration of business information system, both horizontally and vertically. A number of IT-based supply chain information management tools, are now available to provide intelligent decision support and execution management. They can be transaction processing systems focused on day-to-day operations; operational planning systems, or strategic planning tools used to redesign the supply chain infrastructure (Richmond et al., 1998). Many companies feel that their current information management systems do not provide adequate support for their supply chain initiatives. Consequently there is an ever increasing need for fully integrated supply chain information management solutions which incorporate all the functionality of network strategy/supply chain configuration, demand planning, transportation management and warehouse management.

While there is no single supply chain management solution, there are plenty of supply chain management products to choose from ranging from ERP systems to sophisticated supply chain planning tools and PC-based forecasting packages. In order to make a best choice of tools, companies must understand the capability of these tools, their inter-relationships and the degree of integration between them (Figure 4).

- **Enterprise Resource Planning (ERP) Tools:**

Traditionally ERP tools were not considered under the umbrella of supply chain management tools. However, many companies now view ERP systems (e.g. Baan, SAP,

Peoplesoft, etc.) as the core of their IT infrastructure on which to build their supply chain management solutions. ERP tools have evolved out of a variety of products such as single plant materials requirements planning (MRP) systems and financial systems. By adding information systems to cover other functional areas, such as order entry and plant maintenance, ERP systems have become 'enterprise-wide transaction processing' tools which capture data and reduce the manual activities and tasks associated with processing financial, inventory and customer order information.

One of the fundamental keys to improving core business processes for most businesses is fast and accurate integration, capture and retrieval of information. ERP systems achieve a high level of integration by utilizing a single data model, developing a common understanding of what the shared data represents and establishing a set of rules for accessing data. Within a single company, ERP systems utilize a common database as the basis of communication within the organization, with individual information systems accessing data via any type of standard computer networking protocols.

Although the concept of single data model across a supply chain is an elegant solution to the problem of sharing data, it has been found difficult to implement, even in the large organizations. Unlike today's ERP systems, supply chain solutions must be able to cope with the complexity of integrating information systems spanning the entire supply chain. This issue has been partially addressed previously by electronic data interchange (EDI) and more recently by using the Internet (with or without EDI). However, communications have been limited to standard transaction processing information, and not proactive decision support information.

- **Internet-based Supply Chain:**

In the last four years or so, the Internet, World Wide Web and electronic commerce have become common business jargons. Much of the Internet's success can be attributed to its open standards, rapid adoption, relatively low cost and standard graphical user interface. However, conventional supply chain management approaches have difficulty matching the cost-effective, dynamic and customer-driven nature of Internet-enabled approaches. Recognizing this, companies such as Federal Express, Amazon Com, Compaq and Cisco have leveraged the Internet to streamline their supply chains and to benefit channel partners and customers. Thus, for companies to exploit the Internet

successfully, they must have a long-term vision, strong planning skills and technical insight.

The use of the Internet ranges along a continuum, from simple information dissemination to dynamic retrieval of more complex information, to full-scale transaction processing services. At each stage the type of information, the nature of the interaction with the customer and the primary business objective differ. Companies should consider these choices as guide in developing their Internet-based supply chain strategies.

Use of Internet has enabled companies to realize several supply chain related benefits (Copper and Duffy, 1998). These are:

- ⊖ More collaborative, timely product development through enhanced communication between functional departments, suppliers, customers and even regulatory agencies.
- ⊖ Reduction of channel inventory and product obsolescence owing to closer linkage across the supply chain and better insights into demand signals to drive product schedules and ultimately achieve build-to-order capability.
- ⊖ Reduction in communication costs and customer support costs with more interactive, tailored support capability inherent with Internet technologies.
- ⊖ New channel capabilities to reach different customer segments and further exploit current markets.
- ⊖ Ability to enhance traditional products and customer relationships through customization driven by Internet connectivity and interactivity.

• **Internet and Supply Chain Transaction Processing:**

Conventionally the business community has used EDI to conduct exchange of information between its customers and/or suppliers. Unfortunately traditional EDI is expensive to implement and only the larger organizations have the economies of scale to benefit from EDI. The use of Internet-based transaction processing promises to overcome these drawbacks and radically increase the effectiveness and efficiency of information exchange. Transaction processing may take the form of either a monetary exchange for a product or service or information exchanged between two organizations for decision-making or planning purposes.

Internet-enabled supply chains are a significant use of Internet technologies for interaction with both vendors and customers of an organization. Traditional batch EDI transactions can be transported via the Internet, with the advantage of being able to connect to far more trading partners. In addition to traditional EDI applications, a wide array of new applications can be developed that will allow real-time use of the Internet. Using a Web-based front-end application, authorized partners can connect directly to

ERP systems and data warehouse. These partners can then find their own secured or password-protected areas in which to gain access to key business information and transaction processing applications.

Internet-based transaction processing is significantly improving production and logistics efficiencies. Vendors can access demand-projection pages (on the Web) to obtain their rolling forecast update for the period and integrate that information into their own matter production schedule. Vendors can obtain purchase orders via the Internet to initiate their own production process and also confirm receipt and acceptance of the purchase order. Advance shipping notices can be submitted via the Internet on completion of an order for immediate integration into the receiving organisations warehouse management system. Online freight rate tables and global shipment 'track and trace' capabilities are also being developed to automate the shipping process.

In order management and distribution, Internet-based transaction processing promises to improve customer satisfaction and efficiency. An order-entry system module can be directly routed to an available-to-promise module to calculate lead times and shipment dates. Order confirmation can be sent to the trading partners via electronic mail (e-mail) or EDI over the Internet. Business partners can be perform real-time inquiries about order status through Web pages lined to materials management, manufacturing and sales and distribution modules. Finally, payment via secure bank transfers can also be authorized.

In comparison to conventional approaches, Internet-based transaction processing offers significant advantages to businesses in managing their supply chains. Duplicated paper-based information systems are minimized or eliminated as all vendors and customers can be brought on-line, implementation cost per connected trading partner is reduced as the number of connected trading partners increased. Total supply chain visibility is improved as more elements of the supply chain including subcontractors and small vendors, achieve information links and provide latest information. Small vendors are offered a level playing field with larger vendors, potentially improving the creativity and speed -to -market of new concepts. Small customers are offered the same access to critical information as large customers, eliminating potential restraint-of-trade issues. All customers will be more satisfied with the breadth and immediate availability of information regarding their orders.

- **People, Process, and Technology:**

To this point efforts have been made to put demand flow, collaboration and customer service in supply chain framework where technology is considered as a powerful enabler. Although many other supply chain initiatives are linked, supply chain synchronization requires broad application of people, process and technology.

The impact of developing an appropriate supply chain synchronization can be significant. To create a synchronized organization, roles and responsibilities must be aligned. Traditional silos need to be removed. It must be used strategically. Although advance-

planning systems play a vital role in execution, they should be applied only after demand pattern have been determined and a strategy to exploit them established. Throwing more advanced applications at the problem without first creating the strategy will result in a far less than optimum solution.

Companies that want to thrive – not just survive in the 21st century must collaborate with customers and business partners, continually monitor their demand and supply situation, and measure the results. The Internet is emerging as one of the most powerful tools available to manage the complexities of this business environment. It levels the playing field in terms of IT sophistication. And despite the media hype about consumer purchase over the Internet, the vast majority transactions on the Internet will be business to business. It should, therefore, be considered strategically, not only for consumer direct sales, but also as a powerful tool that will remove the current uncertainty created by infrequent, disjointed communication between the company and its supply chain partners.

CONCLUSION :

World is shrinking day-by-day with advancement of technology. Customer expectations are rising, companies are prone to more and more uncertain environment. Under this uncertain volatile environment, companies will find that their conventional supply chain integration will have to be expanded beyond the boundaries of their own organization. The collaborative efforts now emerging among supply chain partners will evolve in sophistication and scope so that entire supply chains will synchronize their planning and operational activities. The strategic and technological innovations in supply chain will impact on how organizations buy and sell in future. If this is what the future holds, then the real questions for companies are that what they should be doing to ensure that your organization would lead the future in 21st century. However, clear vision strong planning and technical insight into the Internet's capabilities would be necessary to ensure that companies maximize Internet's potential for better supply chain management and, ultimately, improved competitiveness. They must establish fluid, seamlessly integrated customer-centric supply chain. In the 21st century companies will have to start using Information Technology (IT) for their strategy development in contrast to earlier situation when IT was aligned with existing business strategies to gain competitive advantage. New developments such as the proliferation of Internet technology, World Wide Web, electronic commerce etc. will change the way a company is required to do business. These companies also realize they must harness the power of technology to collaborate with their business partners as never before. That means using a new breed of supply-chain management applications-and the Internet and other networking links- to look at past performance and historical trends to determine how much product should be made, as well as the best and most cost-effective methods for warehousing it or shipping it to retailers.