INFORMATION TECHNOLOGY IN SUPPLY CHAIN MANAGEMENT

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Abstract

This paper focuses the role of Information technology (IT) in supply chain management. It also highlights the contribution of IT in helping to restructure the entire distribution set up to achieve higher service levels and lower inventory and lower supply chain costs. The broad strategic directions which need to be supported by the IT strategy are increasing of frequency of receipts/dispatch, holding materials further up the supply chain and crashing the various lead times. Critical IT contributions and implementations are discussed. Fundamental changes have occurred in today's economy. These changes alter the relationship we have with our customers, our suppliers, our business partners and our colleagues. It also describes how IT developments have presented companies with unprecedented opportunities to gain competitive advantage. So IT investment is the pre-requisite thing for each firm in order to sustain in the market.

Key words: Supply Chain Management (SCM), Electronic Data Interchange (EDI)

I. INTRODUCTION

Supply chain management (SCM) is concerned with the flow of products and information between supply chain members' organizations. Recent development in technologies enables the organization to avail information easily in their premises. These technologies are helpful to coordinates the activities to manage the supply chain. The cost of information is decreased due to the increasing rate of technologies. In the integrated supply chain model (Fig.1) bi-directional arrow reflect the accommodation of reverse materials and information feedback flows. Manager needs to understand that information technology is more than just computers. Except computer data recognition equipment, communication technologies, factory automation and other hardware and services are included.

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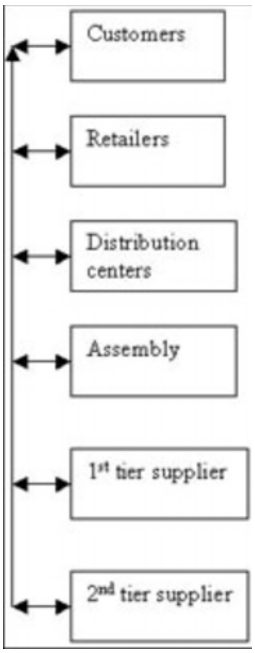

Integrated supply chain model

A. The importance of information in an integrated supply chain management environment:

Prior to 1980s the information flow between functional areas with in an organization and between supply chain members organizations were paper based. The paper based transaction and communication is slow. During this period, information was often over looked as a critical competitive resource because its value to supply chain members was not clearly understood. IT infrastructure capabilities provides a competitive positioning of business initiatives like cycle time reduction, implementation, implementing redesigned cross-functional processes. Several well know firms involved in

supply chain relationship through information technology. Three factors have strongly impacted this change in the importance of information. First, satisfying in fact pleasing customer has become something of a corporate obsession. Serving the customer in the best, most efficient and effective manner has become critical. Second information is a crucial factor in the managers' abilities to reduce inventory and human resource requirement to a competitive level. Information flows plays a crucial role in strategic planning.

II. SUPPLY CHAIN ORGANIZATIONAL DYNAMICS

All enterprises participating in supply chain management initiatives accept a specific role to perform. They also share the joint belief that they and all other supply chain participants will be better off because of this collaborative effort. Power with in the supply chain is a central issue. There has been a general shift of power from manufacturers to retailers over the last two decade. Retailers sit in a very important position in term of information access for the supply chain. Retailers have risen to the position of prominence through technologies.

The Wal-Mart & P&G experiences demonstrate how information sharing can be utilized for mutual advantage. Through sound information technologies Wal-Mart shares point of sale information from its many retail outlet directly with P&G and other major suppliers.

The development of Inter organizational information system for the supply chain has three distinct advantages like cost reduction, productivity, improvement and product/market strategies.

Barrett and Konsynsik have identified five basic levels of participation of individual firms within the inter organizational system.

A. Remote Input/Output mode:

In this case the member participates from a remote location with in the application system supported by one or more higher-level participants.

B. Application processing node:

In this case a member develops and shares a single application such as an inventory query or order processing system.

2.3. Multi participant exchange node:

In this case the member develops and shares a network interlinking itself and any number of lower level participants with whom it has an established business relationship.

2.4. Network control node:

In this case the member develops and shares a network with diverse application that may be used by many different types of lower level participants.

2.5. Integrating network node:

In this case the member literally becomes a data communications/data processing utility that integrates any number of lower level participants and applications in real times.

Four fundamental mistakes made when determining information requirements are as follows:

- Viewing system as functional instead of cross-functional.
- Interviewing managers individually instead of jointly.
- Not allowing for trial and error in detail design process.
- Asking the wrong question during the interview

III. INFORMATION AND TECHNOLOGY: APPLICATION OF SCM

In the development and maintenance of Supply chain's information systems both software and hardware must be addressed. Hardware includes computer's input/output devices and storage media. Software includes the entire system and application programme used for processing transactions management control, decision-making and strategic planning. Recent development in Supply chain management software is:

1. Base Rate, Carrier select & match pay (version 2.0) developed by Distribution Sciences Inc. which is useful for computing freight costs, compares transportation mode rates, analyze cost and service effectiveness of carrier.
2. A new software programme developed by Ross systems Inc. called Supply Chain planning which is used for demand forecasting, replenishment & manufacturing tools for accurate planning and scheduling of activities.
3. P&G distributing company and Saber decision Technologies resulted in a software system called Transportation Network optimization for streamlining the bidding and award process.
4. Logitility planning solution was recently introduced to provide a programme capable managing the entire supply chain.

A. Electronic Commerce:

It is the term used to describe the wide range of tools and techniques utilized to conduct business in a paperless environment. Electronic commerce therefore includes electronic data interchange, e-mail, electronic fund transfers, electronic publishing, image processing, electronic bulletin boards, shared databases and magnetic/optical data capture. Companies are able to automate the process of moving documents electronically between suppliers and customers.

B. Electronic Data Interchange:

Electronic Data Interchange (EDI) refers to computer-to-computer exchange of business documents in a standard format. EDI describe both the capability and practice of communicating information between two organizations electronically instead of traditional form of mail, courier, & fax. The benefits of EDI are:

1. Quick process to information.
2. Better customer service.
3. Reduced paper work.
4. Increased productivity.
5. Improved tracing and expediting.
6. Cost efficiency.
7. Competitive advantage.
8. Improved billing.

Though the use of EDI supply chain partners can overcome the distortions and exaggeration in supply and demand information by improving technologies to facilitate real time sharing of actual demand and supply information.

C. Bar coding and Scanner:

Bar code scanners are most visible in the check out counter of super market. This code specifies name of product and its manufacturer. Other applications are tracking the moving items such as components in PC assembly operations, automobiles in assembly plants.

D. Data warehouse:

Data warehouse is a consolidated database maintained separately from an organization's production system database. Many organizations have multiple databases. A data warehouse is organized around informational subjects rather than specific business processes. Data held in data warehouses are time dependent, historical data may also be aggregated.

E. Enterprise Resource planning (ERP) tools:

Many companies now view ERP system (e.g. Baan, SAP, People soft, etc.) as the core of their IT infrastructure. ERP system have become enterprise wide transaction processing tools which capture the data and reduce the manual activities and task associated with processing financial, inventory and customer order information. ERP system 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.

IV. CONCLUSION

World is shrinking day by day with advancement of technology. Customers' expectations are also increasing and companies are prone to more and more uncertain environment. Companies will find that their conventional supply chain integration will have to be expanded beyond their peripheries. The strategic and technological innovations in supply chain will impact on how organizations buy and sell in the future. However clear vision, strong planning and technical insight into the Internet's capabilities would be necessary to ensure that companies maximize the Internet's potential for better supply chain management and ultimately improved competitiveness. Internet technology, World Wide Web, electronic commerce etc. will change the way a company is required to do business. These companies must realize that they must harness the power of technology to collaborate with their business partners. That means using a new breed of SCM application, the Internet and other networking links to observe past performance and historical trends to determine how much product should be made as well as the best and cost effective method for warehousing it or shipping it to retailer.

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