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E-BUSINESS IN SUPPLY CHAIN MANAGEMENT

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ABSTRACT

Out of different strategies followed by manufacturers, the supply –chain management is a very vital strategy. Nearly two-third of the cost of manufactured goods are in the form of purchased materials and so development of supply-chain system has assumed an important role in today's business environment. Supply-chain system has to be seen as a total system aided and supported by techniques like forecasting, aggregate planning, inventory planning a*nd scheduling.*

Keywords: Supply chain, Manufacturing strategies, System approach, Information technology, e-business

Supply Chain Management System

The term supply-chain can be understood from a graphical representation of how organizations are linked together in supply of materials and services. If we begin with purchase department as a starting point and work down the supply side, we may find number of suppliers, each of which in turn, has its own set of suppliers, and so on. The result is a supply network or series of chains. This is illustrated in figure No.1 below for one purchase department and three of its suppliers. These networks can quickly grow into very complex network depending on the number of suppliers and their interdependence.

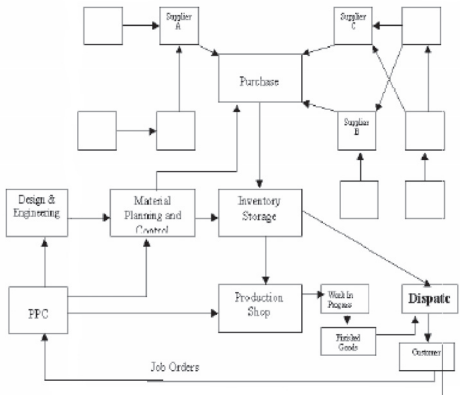

Figure 1: Supply-chain management system

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With the total system approach materials and services from raw materials suppliers through factories and warehouses to the end customer, becomes nothing but the supply chain management system (fig.1). The goals of

Supply chain management is to reduce uncertainty and risks in the supply chain and thereby positively affects:

- Inventory levels
- Cycle time
- Processes, and
- End- customer service levels

This leads to focus only on those core activities that a business must operate each day to meet demand and an overall system optimization.

Supply chain management has in itself mode of system integration. As one works down the supply side, the integration of different suppliers in to the system becomes obvious for the supply-chain to work as uninterrupted chain of command. For this to work satisfactorily, there must be an unified system of flow of information between the production, planning and control of the manufacturing firm; its production units; its material planning and inventory control department; and suppliers. This has to have a further support of transportation system for supply of material and services quickly, efficiently and in-time and so on so forth. Since it would be very unusual if any one organization were superior to competition in all aspects of manufacturing or services, by

Establishing supply-chain management the manufacturing firm ropes in the competitive advantages of suppliers in their respective field of activities and can concentrate better on its own mission. This gives the manufacturing firm synergetic advantages as well as symbiotic gains.

Different tools can assist in optimizing the activities in the supply chain. These tools are forecasting, aggregate planning, inventory management and scheduling systems. These tools and supply-chain management database are to be linked for efficient supply chain system.

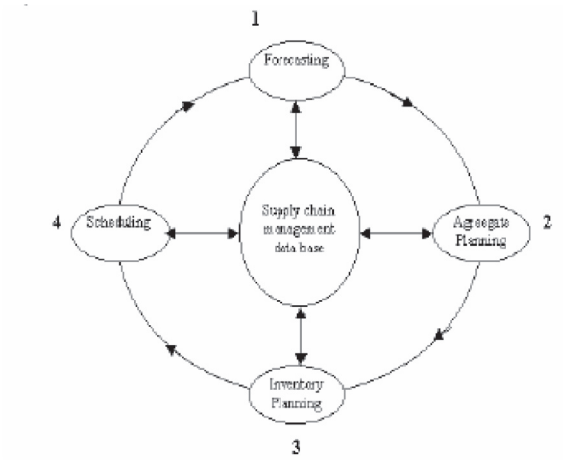

Figure 2: Supply-Chain Tools Integration

A supply chain consists of all stages involved, directly or indirectly, in fulfilling a customer request. The supply chain not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves. Within each organization, such as manufacturer, the supply chain includes all functions involved in filling a customer request. These functions include, but are not limited to, new product, development, marketing, operations, distribution, finance, and customer service.

A supply chain is dynamic and involves the constant flow of information, product and fund between different stages. Each stage of the supply chain performs different processes and interacts with other stages of the supply chain. Customer is an integral part of supply chain. The primary purpose for the existence of any supply chain is to satisfy customer needs, in the process generating profits for itself. Supply chain activities begin with a customer order and end with a satisfied customer has paid for his or her purchase.

A typical supply may involve a variety of stages. These supply chain stages include the following:

1. Customers
2. Retailers
3. Wholesalers/distributors
4. Manufacturers
5. Component/raw material suppliers

The Importance of Information in a Supply Chain

Information is the key to the success of a supply chain because it enables management to make decisions over broad scope that crosses both functions and companies. Taking the entire chain into account maximizes the profit of the total supply chain, which then leads to higher profits for each individual company within the supply chain. To obtain a global scope of the supply chain, a manager needs accurate and timely information on all company functions and organizations in the supply chain. The company also needed to know the downstream demand and even the upstream supplier lead times and variability. With this broader scope, the company was able to set inventory levels that maximized profitability.

The information necessary to achieve a global scope may be divided into the following basic components, which correspond to different stages of the supply chain:

1. Supplier information i.e what products can be purchased, at what price, with what lead-time, and where they can be delivered?
2. Manufacturing information i.e. what products can be made, how many, by which facilities, with what lead time, with what trade offs, at what cost, and in what batch size.
3. Distributing and retailing information i.e. what is to be transported where, in what quantity, by what mode, at what price, how much is stored at each site, and with what lead time
4. Demand information i.e. who is buying what, at what price, where and in what quantity. Demand information includes forecasting and demand distribution information.

Information must have the following characteristics to be useful when making supply chain decisions:

1. Information must be accurate
2. Information must be accessible in a timely manner

3. Information must be of the right kind

Enterprise Resource Planning Systems

ERP systems are operation IT systems that gather information from across all of a company's function, resulting in the entire enterprise having a broader scope. ERP systems monitor material, orders, schedules, finished goods inventory, and other information throughout the entire organization. ERP systems main advantage is the clearly superior scope they provide to make better supply chain decisions.

ERP systems are good at monitoring transactions but generally lack the analytical capability to determine what transactions ought to happen. Therefore they reside more in the operational area of the IT map then in the planning or strategic areas. The breadth of scope is one of the features that make ERP systems as popular as they are. Their scope allows ERP systems to track orders through the entire company from procurement to delivery. There are several key modules, each covering different functions within a company, each of which can be installed on its own or with combinations of other modules as discussed under:

1. Finance: This module tracks financial information such as revenue and cost data through various areas within the company.
2. Logistics: This module is often broken into several sub modules covering different logistics functions such as transportation, inventory management and warehouse management.

   3.Manufacturing: This module tracks flow of products through the manufacturing process, coordinating what is done to what part at what time.

1. Order Fulfillment: This module monitors the entire order fulfillment cycle, keeping track of the progress the company has made in satisfying demand.
2. Human Resources: This module handles all sorts of human resources tasks, such as the scheduling of the workers.
3. Supplier Management: This module monitors supplier performance and tracks the delivery of supplier's products.

Analytical Applications

An analytical application's advantage lies in the fact that it can be used for both planning and strategic decisions. Analytical systems are not focused at an operating level but rather on planning and strategic decisions.

Analytical applications rely on sophisticated algorithms including linear programming, mixed integer programming, genetic algorithms, theory of constraints, and many types of heuristics .Due to the level of sophistication, this technology is relatively hard to develop if a firm has not had much experience in this area.

On the IT map analytical applications exists higher up on the vertical axis. There are many different types of analytical applications that focus on various stages and vertical niches in the supply chain.

Placing Analytical Applications on the Information Technology Map

On our IT map, analytical applications generally reside within various stages of the supply chain at the planning level. Some planning applications have operational counterparts. SCM stretches across many supply chain stages.

The IT map helps us see the major advantages of analytical applications, which are as

follows:

1. Analytical applications have very sophisticated analytical capabilities and generate solutions that are far superior to what could be arrived at without them.
2. Analytical applications generally can respond in real time to problems and emergencies.

The biggest problem with analytical applications is that they do not have the broad scope of an ERP system

The Role of E-Business in a Supply Chain

E-Business is the execution of business transactions over the Internet. Supply chain transactions that involve e-business include the flow of information, products and funds.

Companies conducting e-business can perform some or all of the following supply chain transactions over the Internet.

1. Providing information across the supply chain
2. Negotiating prices and contracts with customers and suppliers
3. Allowing customers to place orders
4. Allowing customers to track orders
5. Filling and delivering orders to customers
6. Receiving payment from the customers

Some companies have used electronic means of communication such as electronic data interchange. The Internet, however, is the first channel that makes it possible for information located at a central source to be available to anybody. Using a catalog, a company only provides information to the people who receive the catalog. Similarly, EDI information is only available to those that customers that have a dedicated EDI link to the seller. The Internet does not require a dedicated connection between a company and its customer; it simply requires that both be linked to the Internet, which is a public channel.

Companies with an e-business allow customers to place over the Internet. A business to consumer (B2C) e-business involves transactions between a company and a consumer. A business-to-business (B2B) e-business involves transactions between two companies. Examples include Dell, as well as W. W. Grainger and McMaster-carr selling maintenance, repair, and operations supplies to other companies over Internet. Other companies involved in B2B e-business include software maker like i2, Ariba, commerce One, and freemarkets.com; these companies set up internet exchanges auction sites for manufacturing dealing with suppliers.

The initial growth of e-business was in B2C supply chains. The most famous examples include Amazon.com, which started by selling books over the internet and has now expanded to include music, toys, electronics, soft wares, and home improvement materials.

e-business is expected to provide significant payoff in most B2B supply chains. Speculation abounds that e-business will lead to reduced prices, higher productivity, and lower labor costs.

Setting Up E-Business in Practice

A firm can be successful with e-business only if it can integrate the Internet with existing channels of distribution in a way that uses the strengths of each appropriately.

The Internet capability to provide access to many customers must be coupled with a suitable supply chain network to fulfill these orders. Managers should consider the following

ideas when setting up an e-business in practice:

1. Integrate the Internet with the existing physical network.
2. Devise shipment-pricing strategies that reflect costs.
3. Optimize e-business logistics to handle packages, not pallets.
4. Design the e-business supply chain to handle returns efficiently.
5. Keep customers informed throughout the order fulfillment cycle.

Conclusion

Since a major portion of manufactured goods are in the form of purchased materials, supply-chain management is viewed as a critical manufacturing strategy. The supply chain to work effectively has to be looked upon as a total system governing the flow of information, material and services from raw material suppliers through production shops and warehouses to the end-customer. Supply chain system delivers the synergetic advantages and leads to virtual manufacturing. Supply-chain system for its efficient working has to have fewer suppliers and a sort of strategic partnership relation has to grow between the buyer and supplier firm.

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