

Book Review: Exploring the Supply Chain: Theory and Practice

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Abstract - This book looks at the basic concepts of Supply Chain Management and provides a comprehensive coverage of the methodology and key strategies drivers in the different processes involved in operating and designing a Supply Chain. It describes the behavioral differences and explains the different tools that have been designed for effective supply chain management. This book is not an academic treatise, though it provides the most comprehensive coverage of the different facets of supply chain management. The authors have made sure that all chapters begin with a small case study that illustrates the specific concepts that are illustrated within the chapter. The book explains the evolution of Supply Chain Management, its concept and philosophy. It also looks at the different elements that go into the design of the Supply Chain and the purchasing functions from the supply chain perspective. The book not only deals with the planning function of SCM, it also covers the fundamentals concepts of forecasting and demand management, planning and control, including the aggregate plan, the different types of inventory models and their classification, work-in-progress and finished goods inventory and quality as a new and major component of Supply Chain Management.

Keywords: Supply Chain Management (SCM), Materials Management, Information, Inventory Management, Traditional Procurement

1. Introduction

The supply chain is based on two core concepts: Firstly, practically every product that reaches an end user represents the cumulative effort of multiple organizations. These organizations are referred to collectively as the supply chain; secondly, organizations have to manage the entire chain of activities that ultimately delivers products to the final customer in order that each stage of the supply chain and all its constituents can maximize profits.

Supply Chain Management (SCM) maximizes profit by integrating three key flows across the boundaries of the companies that form the supply chain: flow of value (product/materials), information, and funds. Successful integration or coordination of these three flows produces

improved efficiency and effectiveness for business organizations. The supply chain takes a systems approach and views the channel as a single entity rather than a set of fragmented parts, each performing its own function. All flows of information, product, or funds generate costs within that single entity, which need to be optimized.

A supply chain is a partnership of firms who are involved in providing a product or service. There are a number of stages involved in the supply chain. Generally, more than one player is involved at each stage. A typical supply chain may involve a variety of stages. These supply chain stages include: (a) Customers, (b) Retailers, (c) Wholesalers/Distributors, (d) Manufacturers, and (e) Component/Raw material suppliers.

The definition of a basic supply chain is: *A set of three or more companies directly linked by one or more of the upstream or downstream flow of products, services, finances and information from a source to a customer.*

Information plays a critical part in properly designed supply chains. Therefore, a whole chapter is dedicated to discuss the functionality of information in supply chains. It describes the principles behind generating 'Supply Chain Information' as well as the different architectures of supply chain information apart from covering the fundamentals of e-Business. Different aspects and modes of transportation in India, containerization, impact of globalization on logistics, warehouse designs, materials handling systems and warehousing strategies are the other important topics that have been discussed in the book.

2. Review of the Book

Chapter I of this book discusses the "Forrester Effect" which implies that the information gets distorted as it moves along a distribution network and results in excess inventory at times and inventory shortage at other times. With each stage having very different estimates of what demand looks like, it results in the lead-lag effect and a change in the amplitude in the inventory. The author explains that as a result, the Forrester effect increases manufacturing cost, increases inventory cost, increases replenishment lead times, increases transportation cost, increases labor costs associated with shipping and receiving, hurts the level of product availability and results in more stock outs, and lower profitability.

Chapter II further explains the concept of Supply Chain Management. SCM is involved with integrating three key flows, between the different stages, across the boundaries of the companies: (a) Flow of information, (b) Product/materials, and (c) Funds. While the product/service flows outwards from the manufacturer to the customer, both information and funds flow from the customer to the manufacturer.

The author extends the thought by explaining that Supply chain management is also a philosophical approach that incorporates a body of tools and techniques to improve the flow of materials from and between more than two participants. This chapter is concluded with the explanation that there are two different ways to view the processes performed in a supply chain, the cycle view (a) and (b) the push-pull view. According to the cycle view, the processes in a supply chain are divided into a series of cycles, each performed at the interface between two successive stages of a supply chain. A cycle view of the supply chain clearly defines the processes involved and the owners of each process.

Chapter III informs the readers about that there are three types of buyer-seller relationships. These are: a) Transactional, b) Collaborative, and c) Alliance. A transactional relationship is a relationship that is formal. It is characterized by an absence of concern by both the buyer and the seller about the other party's well-being. They see the relationship as a zero sum game, i.e. what one party wins, other loses.

A collaborative relationship is when organizations perform a series of value-adding activities working together by recognizing the interdependency and need of cooperation, to provide benefits to both parties. These include cost reduction, improved quality, reduced time to market, and the leveraging of supplier technology. Supplier alliances go one step further. These relationships are based when there is institutional trust between the buyer and the seller. A high level of recognized interdependence and commitment is present in such relationships. There is a visible atmosphere of cooperation. The buyer and the seller address potential conflicts and resolve them openly.

The next chapter, Chapter IV explains that the value chain is a tool used in the design of the supply chain. The value chain is a systematic approach to examining the development of competitive advantage. First, it shows the major role of the supply chain in value adding mechanism, raising the subject to a strategic level. Secondly, it focuses on the important position of the customer in the value chain. Finally, the value chain emphasizes the close relationship between the functional strategies of the supply chain and that of the other functions, within a company. Furthermore, the strategies that determine the Supply Chain Strategy are the three competitive strategies; cost Leadership, Differentiation and Focus and Niche strategies. In addition, the customer service strategy and IT strategy are critical in the design of the supply chain.

In Chapter V, we understand the contemporary concept of purchasing which sees three primary functions: a) Strategic procurement, b) Supplier-base management, and c) Developing a lean supply organization, as the objectives of purchasing. In order to accomplish this, companies have to bring in five major concepts: Horizontal Integrated Perspective; Total cost of Ownership (TCO); improved skills; Use of Innovative Tools, and Information and Insight.

In Chapter VI, the concept of outsourcing is described in full detail. The author explains that the decision of buying from an outside supplier involves both qualitative and quantitative factors. Qualitative considerations include product quality, supplier's reliability, and the necessity for long-run business relationships with subcontractors. It also provides assessment of the supplier's skills, availability of equipment, the access to raw materials, and process controls which reflect the ability of the supplier to meet the manufacturer's product standards.

Chapter VII is devoted to the understanding of some of the methods to manage demand include: differential pricing schemes designed to shift demand from peak to off-peak or stimulate off-peak demand to obtain better utilization of capacity; develop complimentary services that addresses imbalances between capacity and demand; use of reservation systems to slot demand in accordance with available capacity; variable-hours strategy; coordination with other organizations.

There are two types of demand. The first is when demand is generated from many customers, each of whom purchasing only a small fraction of the total volume. This type of demand is said to be independent. The second type of demand comes into play when the demand is derived from a production schedule. This type of demand is said to be dependent. Independent demand uses statistical forecasting techniques. These models are based on independence and randomness of demand. In contrast, the demand is known in the case of dependent demand.

The next chapter, Chapter VIII further explains the demand function. We need to understand that an item has independent demand when we cannot control it or tie it directly to another item's demand. An item has dependent demand when the demand for an item is controlled directly, or tied to the production of something else. Forecasting demand is a critical component of supply and demand management. Product lifecycle data, promotion plans, sales data, competitor promotion plans, custom buying plans, batch manufacturing plan, supply chain capacity, and-to some extent-inputs from across the sales, marketing, manufacturing, finance and distribution departments are all used to generate a reliable forecast.

Chapter IX is dedicated to the concept of inventory management and its role in supply chain. The heart of inventory decisions lies in the identification of inventory costs and optimizing the costs relative to the operation of the organization: when items should be ordered, how large the order should be, and "when" and "how many to

deliver.” The author further stresses upon the fact that inventory is by far the single greatest cost that needs to be examined. The most common factors on which the levels of inventory depend are the a) Production rate, b) Lead-time, c) Rework/Scrap Rate, d) Excess inventory, and e) Obsolete inventory.

Chapter X extends the role and importance of inventory is a supply chain process. Inventory breaks down into three components: raw materials, work-in-process, and finished goods and constitutes from 35 percent to nearly 50 percent of the capital utilized in a typical firm. Work-in-progress and finished goods must be managed effectively to minimize costs to the company. Effective management of the inventory requires the company to reduce cycle times, reduce inventory levels, and meet the expectations of the customers consistently with optimal distribution through intelligent planning. This also means that an efficient supply chain should have the speed and flexibility to accomplish the activities related to the order cycle time in the shortest period of time in a manner that will ensure customer satisfaction.

In the next chapter, which is Chapter XI, the authors are emphasizing the importance of quality in the supply chain process and the relationship of quality vis-a-vis value enhancement. As we all know, quality is a state in which value entitlement is realized for the customer and provider in every aspect of the business relationship. ‘Value’ represents economic worth, practical utility and availability for both the customer and the company that creates the product or service. A quality management system is a network of processes. A process is made up of people, work, activities, tasks, records, documents, forms, resources, rules, regulations, reports, materials, supplies, tools, equipment, and so on; all the things that are needed to transform inputs into outputs.

Importance of information is duly described in chapter XII. It is important for us to understand that timely information is very important for resource utilization. Timely and accurate information is also critical for three reasons: (a) Information on order status, product availability, delivery schedule, and invoices is perceived by customers as a necessary element of total customer service, (b) It can reduce inventory by minimizing demand uncertainty, and (c) Increase flexibility with regards to how, where, and when resources may be utilized for strategic advantage.

The Chapter XIII is very important as it focuses on the role of Regulatory frameworks in supply chain. Regulatory frameworks have played an enabling role in globalization. Links between nations would not be possible in the absence of various facilitating rules, procedures, norms and institutions. For example, global communications rely heavily on technical standardization. Global finance depends in good measure on a working world monetary regime. Global production and trade are greatly promoted by the removal of barriers such as tariffs, capital controls and other state-imposed restrictions on the movement of resources between countries.

The important processes that make global strategies effective are: Strategic Fit, risk Management, Knowledge and Technology Management, Development of Organizational Capability, Channel Management/ Outsourcing Decisions, and Information Management. In addition, logistics systems have to manage complexity, size, and decrease lead times and inventory levels.

With the modern times, technology plays a crucial role in supply chains. This is the theme of the Chapter XIV and the author describes it in detail. Technology based improvements, especially information technology, makes it possible to respond to growing customer demands in terms of product and shipment profiles. With advanced information technology, warehouse operators can quickly react to changes in market conditions.

Both Chapter XV and XVI while concluding the book, emphasize the role of supply chain and the impact of its performance on the whole organization. Supply chain performance improves if all stages of the chain take actions that together increase total supply chain profits. A lack of coordination can impact the performance. This occurs either because different stages of the supply chain have objectives that conflict or because information moving between stages gets delayed and distorted. Supply chain coordination requires each stage of the supply chain to take into account the impact its actions have on other stages.

In today’s world, the most adaptable companies that are equipped with the best technology will thrive. Companies are being increasingly forced to transform their domestic and international supply chains, driven by suppliers and customers, both expecting that companies will provide standards acceptable in this globalized world.

3. Discussion

Information plays a critical part in properly designed supply chains. Therefore, a whole chapter is dedicated to discuss the functionality of information in supply chains. It describes the principles behind generating ‘Supply Chain Information’ as well as the different architectures of supply chain information apart from covering the fundamentals of e-Business. Different aspects and modes of transportation in India, containerization, impact of globalization on logistics, warehouse designs, materials handling systems and warehousing strategies are the other important topics that have been discussed in the book.

Traditional Procurement, Physical Distribution Management and Materials Management in the 1970s, evolved into Logistics Management in the 1980s. Logistics Management consolidated the traffic and transportation activities of the firm. Logistics then evolved into Supply Chain Management in the 1990s. Supply Chain Management combined the activities of Materials Management and Logistics.

Supply chain management, therefore, has evolved along two parallel paths: the materials and supply management

emphasis from industrial buyers, and the transportation and logistics emphasis from wholesalers and retailers. For the manufacturing firm, the supply chain management focus is on the impact of high level of inventories on manufacturing and storage costs. For the wholesaling and retailing industries, the supply chain management focus is on location and logistics issues more often than on manufacturing.

This book tries to explore the changes in the traditional concept of supply chain. It looks at the basic concepts of Supply Chain Management and provides a comprehensive coverage of the methodology and key strategies drivers in the different processes involved in operating and designing a Supply Chain. It describes the behavioral differences and explains the different tools that have been designed for effective supply chain management. The book not only begins with the bull-whip effect, it also ends with it. The last chapter discusses supply chain coordination problems and solutions to these problems.

4. Conclusion

In this book, 'Supply chain Management' can be defined as the active management of supply chain activities to maximize customer value and achieve a sustainable competitive advantage. It represents a conscious effort by the supply chain firms to develop and run supply chains in the most effective and efficient ways possible.

Supply chain can be internal or external. The internal supply chain is that portion of a given supply chain that occurs within an individual organization. The external portion of the supply chain connects key suppliers and customers.

Supply chain management is a revolutionary way of looking at the process involved in buying. It is fast replacing the conventional materials management and logistics management practices. Though the functions involved in the discipline remain unchanged, the processes involved have undergone radical changes.

At one end, supply chain management creates a new model of stakeholder behaviors to minimize systemic risks, and reduce costs and thereby maximize profits. At the other end, it introduces a new set of tools to make this behavioral model work effectively – be it in the collaborative forecasting, supplier selection and supplier base, evaluation and rating systems, information exchange, or the concept of what constitutes cost.

This translates into the following characteristics:

- Systems approach to viewing the channel as a whole, and to managing the total flow of goods inventory from the supplier to the ultimate customer.
- Strategic orientation toward cooperative efforts to synchronize and converge intra-firm and inter-firm operational and strategic capabilities into a unified whole, and

- Customers focus to create unique and individualized sources of customer value, leading to customer satisfaction.

Benchmarking has become one of the most popular tools of business management and there are frequent corporate attempts to gain and maintain competitive advantage. The central essence of benchmarking is about learning how to improve business activity, processes and management. Benchmarking involves looking outside a particular business, organization, industry, region or country to examine how others achieve their performance levels and to understand the processes they use.

An extended supply chain includes suppliers of the immediate supplier and customers of the immediate customer, all linked in one or more of the upstream or downstream flows of products, services, finances, and information.

Reference

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