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Global Sourcing Distribution Chain Management in Operational Management

Mr. Ashok Bhat
Assistant Professor,
Masters In Business Administration, Presidency University, Bangalore, India,
Email Id: sshokbhat@presidencyuniversity.in

ABSTRACT:

Global sourcing is a procurement method in which a company purchases products and services from foreign marketplaces across geopolitical borders in order to save money by using low-cost raw materials or skilled labour.In today's globally integrated company world, global sourcing and distribution chain management are essential elements of operational management. This research looks at the value of managing the supply chain globally to optimise operational effectiveness, save costs, and manage risks. It examines numerous facets of global sourcing, including as logistics management, inventory control, supplier selection, and the coordination of international supply chains.

KEYWORDS:

Chain Management, Global, Inventory Control, Logistics Management, Operational Management, Supplier Selection.

I. INTRODUCTION

After an item is made, the distribution chain begins. The goal is to provide the product to the user on time and at the lowest possible cost. According to Hau Lee 2004, evidently, the supply chains of WalMart, Dell, and Amazon have provided those firms an advantage over their rivals by becoming more efficient. Three distinct characteristics distinguish acc supply chains. First and foremost, successful supply networks are adaptable.They are quick to respond to rapid changes in the marketplace or supply. Second, they develop with market structures and tactics. Finally, they align the interests of all businesses in the supply network so that enterprises maximise the performance of the chain when they maximise their own. Only flexible, adaptive, and coordinated supply networks offer organisations with a durable competitive edge.Product attributes are critical in the design of a supply chain. These features, according to Fisher 1997, include product life cycle, demand predictability, product diversity, and market norms for lead times and service the proportion of demand satisfied from instock items.

Fisher discovered that if items are classified based on their demand patterns, they fall into one of two categories: they are either mostly functional or primarily inventive. And each group needs a specific kind of supply chain. The primary cause of many supply chain difficulties is a mismatch between the kind of product and the type of supply network. Food and gas, for example, are functional items that meet fundamental necessities. These items have extended product life cycles and have predictable and typically consistent demand patterns. Fashion clothing and personal computers are examples of inventive items. The optimum supplychain approach, according to the author, is to be more efficient for functional items and more responsive for innovative products[1]–[3].Lee 2002 combined product and supply uncertainty and provided a 2D matrix for constructing supply networks (Figure. 1). He has classified supply networks into four types: efficient, responsive, risk hedging, and agile which supply chain model is appropriate for particular combination of product and process features.After establishing

a strategic framework based on product features, the producer must construct the distribution chain to make the product accessible to the end consumer at the appropriate time. Have a look at the supply chain A manufacturer, distributors, wholesalers, and retailer comprise this supply chain s. A partner to the right is referred to as a downstream partner, whereas a partner to the left is referred to as an upstream partner.

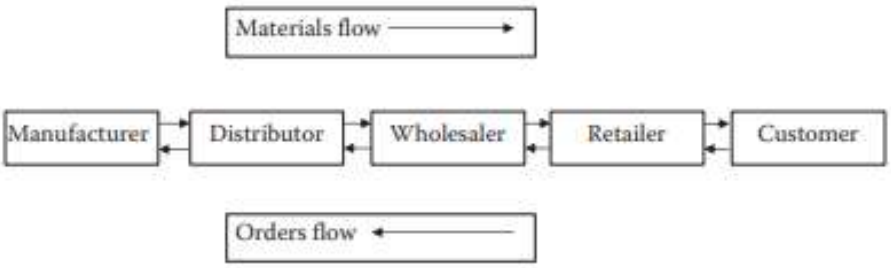

Figure 1: Represent the Supply chain with four levels [Preprints.Org].

Many considerations must be taken in order to build this supply chain.The producer may transport the goods directly to the store or via a network of intermediaries such as wholesalers and distributors. The producer may even choose for an echannel in which clients make orders online and the product is delivered straight to the customers without the need of middlemen. There are several combinations. At this stage, the product determines the design to a great degree. Orders for things like as televisions, computers, furniture, books, and so on may be made online echannel or etailing, and the product is delivered directly to the consumer. Yet, owing to regulatory constraints, a customer may be unable to purchase alcoholic drinks such as wine, beer, and whisky directly from a producer the rules vary from state to state in the United States. With developments in Internet technology, the echannel is becoming more popular. Amazon is a prime example of a successful etailer. This option is covered in further depth in the section on ebusiness.

The number of wholesalers, distributors, and retailers must also be determined by the producer. The network for the movement of commodities must be developed. A choice must be taken on the location of the manufacturing facility or plants.The supply chain partners' locations must be identified. The chapter on location covered numerous strategies for deciding on a site. The relative position of these partners is significant in a supply chain since it forms the distribution network and influences the cost of items carried.The maker must also choose the mode of transportation: trucks, railroads, aircraft, ships, and so on. The decision is influenced by the product and the cost of transportation. Perishable goods, such as fresh food, may have to be carried by air, for example. Another prominent alternative is refrigerated trucking. Should the manufacturer own the trucks needed for transportation or hire a trucking company? This is a significant choice with financial implications.Owning trucks raises fixed expenses, but employing a trucking business raises operational variable costs. The trucking firm must make a profit, which must affect financial choices. Appendix A has a breakeven analysis. If a manufacturing business owns the middlemen, it is regarded more vertically integrated. A firm that owns trucks is more vertically integrated than one that employs a trucking company[4]–[6].

EBusiness

The advancement of Internetenabled technology is altering company operations, procedures, and organisational structures. Gupta et al. 2009 provide a full examination of the ebusiness innovations discussed in this section. The authors' permission was obtained to reprint the content in this section.Product design, eauction and sourcing, vendor development, customer relations management, shipping and distribution, and pricing are all now webbased services. The enabling webbased technology connects numerous business operations and enhances communication among supply chain participants. Ultimately, the Internet has presented many obstacles as well as several possibilities to supply chain managers.EBusiness is a multifaceted discipline that includes the application of

technology, the study of customer attitudes, expectations, and satisfaction, the identification of internal organisational environment, the study of relationships among supply chain partners, the development of collaborative strategies and coordination mechanisms, and the development of analytical models for operational e.g., inventory and pricing decisions. Several academic subjects, including but not limited to behavioural sciences, computer programming, economics, information systems, marketing, operations management, operations research/management science, and technology management, have had an impact on the ebusiness sector. We address the latest innovations in this embryonic but rapidly increasing subject in three sections: ebusiness system design and competition, conflict, cooperation, and coordination C4, and radio frequency identification RFID.

II. DISCUSSION

EBusiness System Design

Ebusiness system design has evolved into a significant organisational undertaking. P/OM may significantly boost the profitability of Internetbased enterprises Starr, 2003. Creating a userfriendly web interface is critical for increasing client satisfaction and ensuring the longterm viability of ebusiness operations. According to studies on ebusiness system design, system flexibility, service quality, product qualities, and perceived ease of use of ebusiness systems are major elements that impact customer satisfaction and loyalty. In the event of heterogeneous clients, the design of a general pattern should also take customer characteristics into consideration. The researchers also discovered that eprocess adoption is made simpler when the internal organisational environment supports the eprocess and the eprocess results in higher organisational performance.

Competition, Conflict, Collaboration, and Coordination C4

Competition and conflict are unavoidable in any business environment, but especially in ecommerce, between partners at various stages of the supply chain and among several partners at a particular step. Suppliers, for example, compete to win the manufacturer's supply orders in the case of eprocurement, and retailers battle to increase their market share at the retailing stage. With the introduction of ecommerce, manufacturers began fighting with their own merchants by developing alternative Internet channels to sell their products—a scenario that is most prominent at the distribution stage[7]–[10].

The Internet created the stage for the growth of mixedchannel supply chains, in which a manufacturer competes for the same consumer market via a direct Internet channel as his/her own conventional brickandmortar shop. This results in a conflict scenario. Some strategies for reducing conflict include: wholesale price revisions, the reseller diverting customers to the direct channel for a commission, and fulfilling demand only through the reseller see Tsay and Agrawal, 2004; the wholesale prices remain unchanged and the retailer sets his/her prices, the wholesale prices are adjusted to maintain the selling prices at the previous level, and the wholesale price is determined to maximise the wholesale.

Radio Frequency Identification

RFID is a technology that enables realtime data collecting and has the ability to assist and encourage ebusiness operations. RFID employs wireless noncontact radiofrequency electromagnetic fields for data transmission, allowing tags connected to items to be automatically identified and tracked http://en.wikipedia.org/wiki/Radiofrequency_ identification. RFID monitors the movement and flow of things in a supply chain and offers management with insight into the location and condition of the monitored objects. Realtime data is crucial because it allows you to maximise asset usage while lowering inventory and shipping expenses. RFID also reduces information transmission delays, resulting in better information exchange among supply chain participants. RFID system design is crucia because RFID technology infrastructure installation requires a major initial investment and huge potential hazards in technology adoption. In this part, we will look at the commercial value that an RFID system delivers, as well as the challenges associated with RFID adoption and deployment.

Business Value of RFID

RFID's commercial value stems mostly from the visibility it offers managers about the goods monitored. RFID also improves visibility across supply chain partners and has an influence on minimizing information asymmetries.The growth of RFID business value is divided into three stages: technological deployment and integration, integration with business processes, and creation of new business architectures for people, policies, and organizational structures. They suggest three components for an RFID value proposition: RFID technology, quantifying RFID economic value, and providing incentives for RFID adoption and deployment. RFID provides company value via labour cost reductions, shrinkage reduction, and inventory visibility. According to Lee and Ozer 2007, estimations of the value of RFID based on labour cost reductions are more trustworthy than other claims since they are based on extensive timeandmotion studies.

Estimates of the value of RFID coming from inventory savings, shrinkage reduction, outofstock reduction, and/or sales growth, on the other hand, lack academic rigour since they are generally reliant on the untrustworthy predictions of technology consultants and suppliers. Investigate the commercial value of RFID in two distinct industrial situations. RFID was utilised by Amini et al. 2007 to monitor trauma victims in a hospital and the data obtained was used in a simulation model. RFID increased patient time tracking from 25% to 80% at a trauma hospital where patients spent 1012 hours receiving care. The capacity of RFID technology to gather data passively avoids interfering with medical operations. RFIDbased simulation models aid in the more extensive analysis of healthcare operations based on data obtained for process cycle time, patient throughput rate, and equipment and people use. Analyse the flow of RFIDtagged cases between distribution facilities and retail outlets to determine the commercial value of RFID for a retailer. The research reveals information about the distribution of lead times across items and various combinations of distribution facilities and retail outlets. RFIDgenerated data also aids in monitoring recalls, delivering items to retailers on time, and researching the backroom procedure that entails transporting products to the sales floor. RFID data use, in addition to giving instant insight, leads to advantages owing to minor process adjustments initially, and eventually to large changes in the logistics system.

Adoption and Implementation of RFID

The return on investment, business value, and partner selection are all essential strategic factors in RFID investment projects The authors describe a case study of the design, development, and deployment of an RFIDbased traceability system to improve inventory visibility throughout the maintenance cycle and reduce delays and item misplacements in an aviation engineering company's maintenance department. RFID implementation success characteristics include:

1. Strong organisational motivation.
2. Implementation process efficiency.
3. Effective cost managemen.
4. RFID skills and knowledge transfer.

Several deployment issues obstruct RFID implementation, including:

1. A lack of inhouse RFID expertise
2. Insufficient technology support from local RFID vendors.
3. The existence of multiple sets of industry standards.
4. Unreliable hardware performance.
5. Underdeveloped RFID middleware.

According to the study, the RFIDbased traceability system has resulted in improved lead times, competitive differentiation, savings from reusing RFID tags, breakthrough productivity through automation, reduction of human errors in handling repairable parts, improved inventory management, reduced manpower, and manual data recording, realtime monitoring and access to specific data, reduction of repairable parts loss, and improved customer relationships.

Contingency Planning for Supply Chain Capacity Crises

The producer may search for a new supplier, or one who can cover the shortage. A prospective backup, even if it is more expensive because of the emergency situation, should have been identified on a recurring basis. Were there any warning signs before the provider failed to deliver? Did the provider disclose all pertinent information concerning the looming issue? Could the supplier and manufacturer have collaborated to minimise or mitigate the problem's severity? It is too late to act after the incident.To minimise catastrophic harm, supply chain capacity emergencies must be planned for. At the same time, the other providers will be on the lookout for new clients. Their contingency planning should have taken into consideration the reality that this crisis has occurred for each of them through no fault of their own. As these suppliers discover new clients, their capacity to provide the manufacturer may be limited. The distributor may begin stocking a competitive brand, which might have major longterm implications for the producer's market share. This is an excellent illustration of how a wide systems approach is required to integrate all of the essential functions involved in the supply chain. Shops may discover that the new competitor brand is wellliked by their clients. The loss of loyal clients is a major blow caused by the supply issue. A single supplier's failure may destabilise a whole system, resulting in loss of profit and competitive power that will be difficult to recoup.

A Supply Chain System

If the game is welldesigned, players should improve their realworld performance. When information regarding real demand for a brand is delayed throughout the supply chain links, retailers, distributors, and manufacturers manufacturers may order too much beer or too little beer. Ordering too much or too little as a consequence of information delays might be expensive. It is critical to comprehend the consequent demandcapacity mismatch. The game demonstrates how the performance of a connected system is related to the accuracy of future demand estimates.There are steps that may be made to increase communication and cut down on information delays. There are various approaches for improving predictions collaborative forecasting. For example, it may be impossible to increase national demand estimates unless they are seen as the sum of regional requests.

Reduced expenses may be achieved once improvements in information timeliness and forecasting have been implemented. The manufacturer could not resist and increased capacity. The last event in this scenario is that the source of the increased retail demand was only transitory. It was a common cause, such as one caused by a fantastic TV show. programme or a newspaper piece on the product. In actuality, the beauty and attraction faded with time, and the exceptional selling effects vanished.The manufacturer now has more potential than it will likely utilise for a long time, if ever. The manufacturer lowers the price in order to sell all that its expanded capacity allows it to create. The distributor purchases more to capitalise on the likely rise in demand that follows a price decrease. The store is likewise aiming to reduce margins and wants to promote competing items.The product in the simulation game might be beer or soft beverages, cosmetics, or food. OEMs' supply networks may be expanded to include industrial items. The core concept of linked supply and demand is true as long as the appropriate supply chain is recognised.

Bullwhip Effect

The bullwhip effect is defined as increased demand fluctuation in a supply chain. In many businesses, even though the fluctuation in demand consumer orders is modest at the retailer level, there is significant unpredictability in orders made by upstream supply chain partners to replace their stocks. In other words, a retailer's orders to its wholesaler to refill stock are likely to vary more than the retailer's demand. This phenomena may be seen all the way up the scale. Proctor and Gamble were the first to notice the bullwhip phenomena P&G. Not long ago, logistics executives at Procter & Gamble P&G analysed the order patterns for one of their bestselling items, Pampers, write Its retail sales fluctuated, although the fluctuations were not extreme. Yet, when the executives analysed the distributors' orders, they were astonished by the degree of variation. When they examined P&G's material orders to its suppliers, such as 3M, they noticed that the fluctuations were much more pronounced. The variations

did not make sense at first look. Although the customers, in this example, the newborns, used diapers at a consistent pace, the supply chain's demand order variations were exacerbated as they travelled up the supply chain. The 'bullwhip' effect was named after P&G. In certain sectors, this is referred to as the 'whiplash' or 'whipsaw' effect[11]–[13].

III. CONCLUSION

In the global corporate environment, managing the distribution chain and global sourcing are essential components of operational management. Organisations may improve operational efficiency, cost reduction, and risk mitigation by properly managing supplier selection, logistics, inventory, and worldwide distribution networks. Successful global sourcing and distribution chain management depends on a focus on supplier relationship management, supply chain visibility, demand forecasting, and compliance with foreign legislation. Organisations must adopt solid strategy and use technologyenabled solutions in order to succeed in international marketplaces.The supply chain system is shown using the famous beer game. depicts the supply chain. In this game, the supply chain partners make forecasting and inventory choices. The game replicates the circumstance so that the participants may identify the relevant components.

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