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Supply chain costs and its mitigation

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ABSTRACT

Nowadays, as consumption and production are growing at a rapid pace, cutting costs to stay in the market competition has become all the more important. In companies, supply chain expenses play a colossal role in determining the total cost of the product. This paper focuses mainly on describing the costs involved in the supply chain and various means for their reduction.

Keywords— *Supply chain, Costs, Mitigation, Management*

1. INTRODUCTION

There is ample evidence in literature and business practices that the competitive business world is changing rapidly. With new players coming into the market and more focus being on providing value to the end customer, more emphasis is being made on identifying the various costs involved in supply chain and finding ways to minimize them. With the advent of ever-changing technology tools, deep embedded culture and dynamic nature of the market, companies are in more need than ever to transition from following a rigid way of doing business to being more adaptable. There are various stages in a business that envelope a totality of costs that are often overlooked. Due to the reoccurrence of such costs, every time the same practice is conducted within a business, they mount up, in the long run, to significantly affect the profit a company makes. Such costs incurred during the flow of goods from its source to the end customer areknown as supply chain costs. Total supply chain costs can be calculated as the sum of costs incurred while planning, sourcing, delivering and returning. Four key cost decisions namely Procurement costs, Transportation prices, Inventory Costs, and Quality prices are emphasized upon in the paper to try and understand their effect on the total cost of the product.

Study shows that in India, supply chain costs can mount up to 15% of the total product cost, making the need to find ways to minimize them all the more eminent. In order to minimize the supply chain costs, it is first important to understand what amount is being spent where. The paper takes various aspects such as Warehousing, Transportation, Order Processing, etc. into account while understanding the effect each of them has on the total cost while pointing out probable ways to minimize them. Examples of companies that have been successful in optimizing their flow of goods while maintaining low supply chain costs are also important in getting clarity of the magnitude of effect unnecessary and recurring supply chain costs have on the product life cycle. The example of Amazon and its strategies for minimizing supply chain costs have been discussed to emphasize the importance such costs play in a business.

2. COST DRIVERS IN SUPPLY CHAIN MANAGEMENT

Most supply chain managers spend a whole lot of their time searching out approaches to reduce expenses. But one of the massive challenges with supply chains is that things are frequently interconnected, so creating an alternate in one area to decrease prices can purpose an exchange someplace else that honestly will increase the fee. The need to recognize how the system works will help to make sure that companies aren't getting into new troubles inside the procedure. There are 4 decisions areas that incur the maximum of the fees in any supply chain. Thinking approximately these kinds of items together will let us discover genuine opportunities for savings.

2.1 Procurement costs

One of the most obvious fees for any delivery chain is the amount that it pays for the products bought. Some commonplace methods to lessen procurement costs are to negotiate higher prices from providers, agree to buy larger quantities over an extended duration or transfer to a provider that consents to accept decrease charges. Also, every provider a company has business with leads to a charge for the company, due to the fact a person has to locate the supplier, make all of the contracts, hold information of the provider's performance, and make certain the supplier is paid. So, the price for procurement also consists of the salaries and overhead to the procurement group and the facts structures that they use.

2.2 Transportation prices

Transferring a product from one region to other charges cash, and different modes of transportation have distinctive fees. These modes have one of a kind speeds, which may be simply as critical as transportation price. For example, a faster and pricier transportation mode would possibly really prevent a loss by decreasing the quantity of inventory which a company has in transit. It is likewise not unusual to apply a couple of mode of transportation to transport a single product thru a supply chain. Changing from one mode to any other the usage of multi-modal transportation can optimize transportation prices. Another easy way to lessen transportation expenses is too percent extra merchandise into each load, thereby improving the load capacity utilization. The critical thing to bear in mind is that selecting a transportation mode that is slower and much less reliable might also lessen transportation prices, however it'll increase the stock and put more pressure on the working capital.

2.3 Inventory charges

The maintenance of the sock in the warehouse is one of the biggest cost drivers for any company. If the company is borrowing cash from any financial institution to pay for that stock (that is often the case), the stock expenses include the interest charge that the company is paying to the bank. Other fees consist of warehouse cost and paying people to move the stock round in the warehouse. A company can additionally run the danger that merchandise could be misplaced, damaged, or stolen. This trouble often referred to as shrinkage, also incurs a cost to the corporation. Finally, merchandise can expire or become obsolete in the event that they are not moved in time and sit in a warehouse for too long.

2.4 Quality prices

A customer buys a product in the hope that it will meet a positive stage of their exceptional. Ina few cases, the business could want to have formal inspection and quality assurance processes in location to make sure that the goods it acquires from providers, and the products that it sends to the customers, meet these necessities. Any product that doesn't meet those requirements increases the costs and the more the company looks for problems the more it costs them. Other than these four factors there are more indirect costs like deliver chain IT expenses, finance and making plans prices and order control expenses. Supply Chain IT Costs involved with purchasing, installing, and retaining statistics generation required in supply chain activities.

Software like ERP/MRP/CRM structures is used by companies today to efficiently manage their supply chain. In the Finance and Planning Costs an array of different costs including paying invoices, installing, performing inventory accounting, and collecting money. Order Management Costs Order management prices consist of the following key areas:

- Create purchaser order fees- Includes costs for creating and pricing configurations to order and preparing order files.
- Order Entry and Maintenance Costs- Includes fees for retaining the purchaser database, credit score take a look at, accepting new orders and including them to the order machine as well as later order changes.
- Installation Planning Costs - Includes fees for verifying web page coaching, installing, certifying, and authorizing billing.
- Order Fulfilment Costs - Includes fees for processing the order, allocating stock, ordering from the internal or external supplier, scheduling the cargo, reporting order popularity and initiating shipment.
- Distribution Costs - Includes costs for warehouse area and control, completed goods receiving and stocking, processing shipments, picking and consolidating, deciding on service, and staging products/systems.
- Installation Costs - Includes prices for verifying website online education, putting in, certifying, and authorizing billing.
- Customer Invoicing/Accounting Costs - Includes costs for invoicing, processing customer payments, and verifying client pleasure.

3. MITIGATION OF SUPPLY CHAIN COSTS

Supply chain involves the flow of goods and information from the supplier to the customer effectively and efficiently. It is imperative for companies to manage their supply chain costs constitutes one of the highest components of the total cost. Most companies in India incur a supply chain cost that is equivalent to 15% of their total costs.

Cost management is imperative for businesses to earn higher profits; remain competitive in the market and contribute to the bottom-line in organizations. A cost analysis can be carried out to understand the opportunities for organizations. For reduction of supply chain costs a company can focus on different areas of the entire process such as inventory management or vendor management. To understand such areas, it is necessary to recognize what amount is being spent and therefore how to save it.

3.1 Order Processing

Order processing is a cost that is often overlooked. They can be incurred by organizations that have an inefficient management system. That is any cost involved when the requisition order is placed on two different software's or more than one individual fill the order requisition forms. A central system of information used by the company as a whole or a particular department can help overcome this problem. Sales order automation software ensures the elimination of costly processing errors by exclusion of manual efforts thus reducing overall costs.

3.2 Transportation

As part of transport cost reduction, companies need to assess the various modes of transportation such as air, ship, railroad, or by road. The decision of mode of transport is dependent mainly on the speed of delivery, lot size, freight cost, losses and damages associated with a mode of transportation. Water, for instance, is the least expensive model with air being the most expensive model with respect to freight charges. Empirical data shows that the highest damages are for and least for water. Losses and damages of products can be converted into supply chain costs in a straightforward manner.

Transportation strategy also involves analyzing the distribution network, where and at what intervals docks need to be present. Companies can opt for direct shipping to retailers from the manufacturing units. Other strategies include shipping using milk run and shipping using central distribution center. The milking strategy involves highest transportation cost followed by distribution center strategy. Although the direct method is associated with the lowest transportation cost, it has a high inventory carrying cost. The appropriate strategy is dependent on the nature of the products and their time-sensitive nature along with requirements and capabilities of the company.

3.3 Inventory Management

Inventory management involves managing stock level, minimum stock level, and safety stock to ensure efficiency. Optimum inventory should be managed to reduce handling cost and improve cost efficiency. The stock level can manage based on arithmetic calculations of such levels, including the historical demand of product in the markets.

Inventory held by companies should be maintained as low as possible since it requires large capital to maintain. The EOQ model is used to determine the order size which gives maximum economy in purchasing inventory and contributing towards maintaining inventory at an optimal level. It is also necessary to keep in mind seasonality of products while estimating reorder quantity. It is necessary for the companies to continuously review the market and the forecast the demand based on changing levels of demand. This will safeguard against excess carrying cost, wastage, and spoilage of inventory.

3.4 Transaction Costs

Transaction costs are associated with the costs involved with the sale or purchase of products, delivery charges, responding to customer queries, reducing transmission, legal fee, communication charges, and so on. They follow a flow from the purchase of products to the invoicing and detailing of such purchases. A high cost can be associated with an inefficient system, improper flow of information or invoices. These costs can be reduced by improving efficiency of transactions, effectively manage information systems in the organization. Transaction costs include the decision cost associated with deciding between different suppliers; a cost which can be reduced by the use of internet.

3.5 Warehousing

Warehousing has a significant effect on the overall supply chain cost of a company. Warehousing cost can be managed by adopting technological advancements such as RFID technology. Utilization of this technology enables inventory tracking in warehouses, shipment tracking and inventory management and control. It is essential for companies to stay updated about technological advancements and software developments in the industry. Automation of warehousing increases not only time efficiency but also cost and space utilization. Companies can also outsource the warehousing function to focus their expertise on improving competitive advantage. Outsourcing enables the company to access increased space, technologies and other resources. The companies can also avail specialized services from the service providers regarding the market trends. Vendor Managed Inventory services can be availed by the companies to responsibly manage the inventory level and restocking.

3.6 Technological advancements

- Technological advancements are fundamental to improved efficiency in supply chain systems. It is therefore imperative for companies to keep a lookout for any new developments in the IT sector.
- Continuous innovations are at the heart of the growth of large-scale companies. Among some of the innovations is adoption of MIS that classifies, organizes, collates and interprets data of companies. Software such as DBMS, ERP can be used to create, manipulate database and to manage information between suppliers and company.
- Although theoretically there are many strategies that can be applied to reducing costs in the supply chain, there are multiple factors that need to be considered while analyzing cost decisions. Not every strategy can be implemented by companies. For instance, implementation of a strategy that reduces transport (such as direct transport of inventory to retailer) may lead to an increase in another cost – inventory cost. The company might achieve a false sense of accomplishment about the reduction of supply chain costs.

4. AMAZON'S SUPPLY CHAIN STRATEGIES

Amazon has adopted supply chain strategies that have altered the global retail sector. Its strategies have ensured its superiority amongst its competitors. Amazon is the fastest company to have reached $137 billion, just 8 years after its inception. One of its strategies involves outsourcing inventory management. The company depends on third party logistics to warehouse and transport its products to the customers. It especially outsources those products for which there tend to be minimum purchase orders. About 80% of Amazon's sales deliveries are carried out by 3PL. This ensures that the company can outsource the warehousing and transportation of most of the products ordered. They then focus their attention towards delivery of 1-day products (for which own vehicles and transportation is used). Hence, they ensure cost reduction with effective logistics and time utilization. Additionally, they also have different warehousing options for different classes of products such as 1- day delivery, prime delivery, and free delivery.

Warehousing of Amazon is strategically placed in such a manner so as to be close to the metropolitan and urban cities and other transportation sources. Automation is used in almost all warehouses of Amazon. The company has not only utilized the RFID technology for efficient inventory control but has also introduced robots that pack and store all inventory without requiring nay human interference. Amazon has ensured that they keep up with the trends in technology and adopted these robots to improve effective warehousing and management of inventory for spacing, packing, tracking and so on. Furthermore, the company has introduced a drone-based delivery system known as Amazon Prime Air; where products that weighed less than 5 pounds would be delivered to customers within the span of an hour.

Amazon due to its size and global reach and presence has been able to achieve economies of scale in its operations. The company has been able to achieve efficient warehousing and transportation at a subsidized rate which many of its competitors have been unable to achieve.

Amazon has achieved great success by way of innovations and technological advancements. The company is making it difficult for other smaller e-commerce companies to achieve efficiency by forcing competitors to invest heavily in supply chain management. With implementation of technologically advanced and innovative strategies the company has been able to reduce supply chain costs and achieve competitive advantage.

5. SUCCESFUL COST REDUCTION STRATEGIES

This includes a list of companies that have efficaciously achieved a reduction in their supply chain costs.

5.1 Deere and Company

The company manufactures machinery used for agricultural purposes, construction, diesel engines, and so on. The company encountered challenges in its supply chain due to the seasonal nature of products – they would supply products to retailers on a weekly basis while utilizing the direct shipment system. This led to increased supply chain costs for the company. The company redesigned its supply chain strategies to include central docking; consolidation of shipment of inventory and utilization of 3 PL for logistics, warehousing and transportation facilities.

5.2 Intel

Intel is one of the largest chip manufacturing companies. The difficulty faced by them was regarding the supply chain costs of the chips, with inventory as the only leverage. They, therefore, had to reduce their cycle time of 9 weeks. Intel tried an innovative strategy for their industry of just in time. They also utilized the vendor managed inventory system in all possible scenarios. Through these supply chain strategies their cycle time came down from 9 to 2 weeks; thereby achieving a cost reduction of up to $4 per unit product.

5.3 Starbucks

The supply chain costs rose due to the mismanagement in supply chain activities in their 16700 outlets of the company. The outlets didn't receive products on time, mainly due to complexities in supply chain and unorganized 3 PL. To counter the increasing costs, the company opened up a greater number of production facilities in US to meet the increasing demand. Additionally, they managed to achieve 3PL efficiency by eliminating unnecessary parties and retaining effective partnerships.

5.4 AGCO

The company manufactures and supplies agricultural machinery. The company faced difficulties because of the 5 separate brands under its umbrella. Each of these had an independent supply chain team and was managed at varying levels of maturity. The inefficiency and inability of the company to achieve synergy led to increased costs. To tackle this issue, technological advancements and innovations such as the Transport Management System were introduced to ensure transparency. Additionally, 3 PL partnerships were also introduced. As a result, they have decreased freight costs by 18% and inbound logistics costs by 28%. Making supply chain changes is not the only factor for reduction in cost; it is essential to understand that it requires continuous efforts on part of both the management and the employees. It requires companies to drastically alter their current operations. Such as in the case of Deere who had to redesign their network system. Companies, therefore, need to take leaps in terms of their supply chain strategies to be able to mitigate costs.

6. CONCLUSION

Supply chain costs, their identification, and reduction play a key role in a business in today's world. Some countries have progressed further in identifying the need to cut down the supply chain costs (America-5%) while some countries are still lagging behind (India-15%). Key decisions starting from deciding on the appropriate vendor to managing quality of the products have a huge impact on the costs incurred. Carefully analyzing each option at each stage is necessary to arrive at the best decision. Decisions pertaining to one area of the supply chain (for example selecting the vendor) to another (for example deciding the transportation prices) might not always work in synergy. For example, selecting the vendor that supplies the material at the lowest price might not necessarily reduce the price incurred in transportation of the material from the vendor to the manufacturing unit. The vendor here, despite supplying goods at a lower cost might be geographically more distant than the other vendors. Therefore, it is important to ensure that the decision taken at each stage works in synergy with the other decisions in the supply chain.

A detailed Cost Analysis on different areas of the supply chain can be carried out to understand the extent of costs being incurred on each stage. It will also help in ascertaining various ways to minimize costs. Some areas of the business such as warehousing might be incurring more costs as compared to other aspects such as order processing. Identifying such areas incurring high costs in a supply chain provides room for taking corrective measures in that regard. For example, a high Order Processing cost can be overcome through factors such as a central system of information or ensuring the use of new, advanced technology. In the same way, a company needs to ascertain and identify the costs being incurred at different stages and then work on finding solutions to minimize them. This is important for companies in India that still do not take the appropriate measures to identify and minimize their supply chain costs. Companies such as Amazon have become world leaders in a short span of time due to their constant knowledge of the market demands. They have found out a cost-effective way of ensuring a constant flow of goods to their customers throughout the world, spiraling their worth to $137 million in just eight years. Their growth and existence are a testament to the importance of ensuring the constant flow of goods to the customer at the lowest cost possible. Some of its strategies to reduce supply chain costs such as locating its warehouses close to the urban cities have proved to be extremely profitable for them in the long run.

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