Block 4

SUPPLY CHAIN COORDINATION

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BLOCK 4: SUPPLY CHAIN COORDINATION

In supply chain management, techniques like outsourcing and inter-dependence of associated firms and stakeholders brought to light the need for effective coordination among all of them. Various dimensions of supply chain coordination are discussed in this block, spread over three units.

Unit 14: Cooperation and Coordination in a Supply Chain: Vertical integration of firms is no longer adopted as a viable strategy in view of global competition, scarcity of resources, need for core competencies, competitive advantage, on-time delivery, customer satisfaction etc. This in turn encouraged such strategies as outsourcing, offshoring, co-creation of products and services etc. emphasizing the need for seamless coordination and mutually beneficial cooperation.

This unit discusses various dimensions of cooperation and coordination in a supply chain covering such concepts as bullwhip effect, partnering in SCM, obstacles in supply chain coordination, managerial levers to achieve coordination - designing and effective supply chain partnerships and supply chain synergy.

Unit 15: Role of Outsourcing in a Supply Chain: Post-globalization, outsourcing has become a major strategy among various business organizations for such reasons as focus on core competencies, cost competitiveness, better technologies and processes, speed of delivery etc. Outsourcing proved to be an effective strategy as US firms made Chine the workshop of the world. It is in this context that there is a need to study the role of outsourcing in supply chain management.

This unit addresses discusses outsourcing in various angles through such topics as overview of outsourcing; reasons, process and the issues, involvement of suppliers, local, national and international sourcing; areas of outsourcing, advantages and disadvantages of outsourcing; outsourcing practices: vendor managed inventory, third party and fourth party logistics, forms of outsourcing and emerging trends in outsourcing.

Unit 16: Measuring Supply Chain Performance: It is said that which cannot be measured cannot be managed, supply chain management, as the core process in an organization needs measurement of every process right up to delivery to the customer and post sales service. This necessitates effective measurement of supply chain performance.

This unit explains various aspects of supply chain performance addressing such concepts and topics as overview of supply chain performance measurement (SCPM), supply chain reengineering; framework for developing supply chain metrics, realign supply chain processes, align non-financial measures with P&L statements, measures for delivery performance evaluation, measures of levels of customer service and satisfaction; requirements for designing an ideal SCPM system; approaches to SCPM: The balanced scorecard, the supply chain council's model, the logistics scoreboard, activity-based costing, and economic value analysis.

Unit 14

Cooperation and Coordination in a Supply Chain

Structure

"If you want to go fast go alone. If you want to go far go together."

– African Proverb

14.1 Introduction

If organizations want to achieve sustainable growth, they need to cooperate and coordinate with other companies strategically.

In the previous unit, we discussed the order fulfillment process and its role and importance in e-commerce businesses. Then we examined the factors and components involved, in designing responsive order fulfillment processes. The unit concluded with a study of the features of order fulfillment systems that are currently being used in the industry.

The essence of supply chain management is coordination and cooperation. How well a firm coordinates and cooperates with its different partners is the key to its success. From the raw material stage through the intermediate processing stages and on to the final stage, where the product is in the hands of the consumer, every member of the supply chain needs to work and coordinate with other members of the chain. Such coordination is required in the various functional departments within the firm and among its key customers and suppliers across the supply chain. Walmart, Procter & Gamble, and Dell Computers, to name a few, have achieved success through coordination in the supply chain. Close coordination between suppliers and other partners in the

supply chain can give companies many benefits in terms of cost reduction, eliminating excessive inventory, increasing customer satisfaction, etc. Coordination also makes possible the sharing of data, operating plans, and financial information. Lack of coordination and cooperation, on the other hand, leads to distortion of information between members of a supply chain.

This unit on 'cooperation and coordination' starts with a discussion on the "bullwhip" effect caused by the lack of supply chain coordination. It discusses the importance of partnering and coordination in a supply chain, the obstacles to coordination, and the managerial levers for effective coordination.

14.2 Objectives

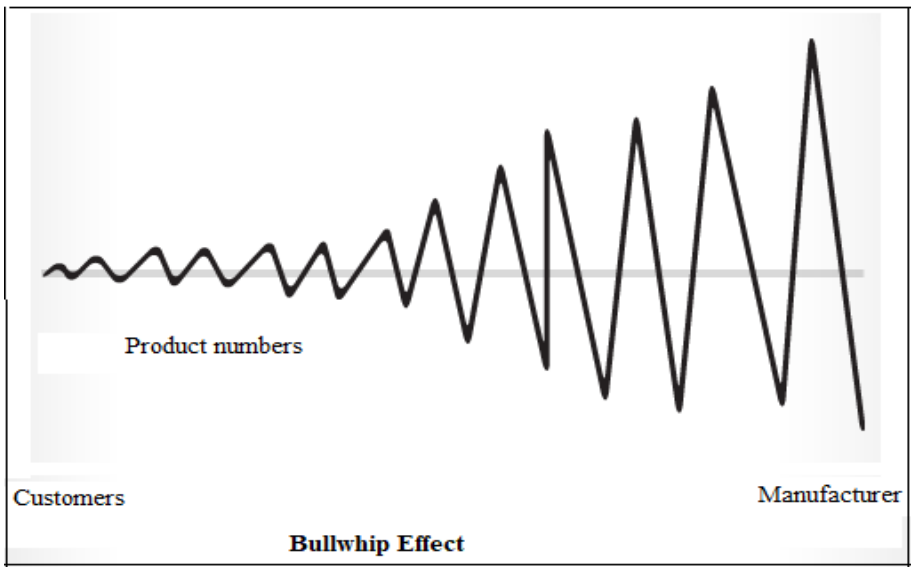
By the end of the unit, you will be able to:

- Define the Bullwhip Effect
- Explain partnering in supply chain management
- Identify the obstacles in supply chain coordination
- Discuss the managerial levers to achieve supply chain coordination

14.3 Bullwhip Effect

Information plays an important role in managing the supply chain. Sometimes, for various reasons, there is a distortion of information. The "bullwhip" effect is the result of distortion in demand information. This effect was first identified at P&G. The bullwhip effect is also called the "whiplash" or the "whipsaw" effect, and refers to the magnification of demand fluctuations, as orders move up the supply chain. Following figure 14.1 pictorially shows the bullwhip effect.

Figure 14.1: Bullwhip Effect



Source: ICFAI Research Center

As identified at P&G, the bullwhip effect is the effect of the increasing distortion in information that occurs along the supply chain as a result of inaccurate demand forecasts, by retailers at the lowest level, growing into further inaccuracies in demand forecasts, by distributors and wholesalers at higher levels. The result is that there are abnormal fluctuations in the aggregated demand forecast, which reaches the company at the point, where production is taking place. The fluctuations occur because of the inaccuracies in demand forecasts, downstream partners in the supply chain, tend to be overcorrected in the next round of ordering, leading to severe swings in the quantities ordered. This can be more clearly seen in terms of P&G's own experience in the case of their popular brand of Pampers Diapers.

Retailers of Pampers Diapers, seeing a rise in consumer demand, would order enough diapers to cover the increased demand plus a margin in case there was an unexpected increase in demand. They felt that some more demand might materialize because of increased advertising by P&G or because of price increases by competing firms. These were factors about which they did not have accurate information but could only hazard a guess. The same logic was applied by wholesalers. They saw a sudden increase in demand by retailers and ordered more diapers from the next member in the supply chain to cover the increase, plus a few extras to be on the safe side, to meet any extra demand. These orders, with elements of uncertainty, became more and more distorted as they progressed up the supply chain.

Apart from distortions arising due to inaccurate demand forecasts by retailers and others in the supply chain, several other factors contribute to the bullwhip effect. The best solution to the problem is better knowledge transfer. With companies operating globally, such knowledge transfer becomes even more important.

14.3.1 Causes of the Bullwhip Effect

The major causes of the bullwhip effect are:

***Demand forecast updating*:** Forecasts in any organization are often inaccurate and change according to demand patterns. The estimated approximation of demand flows down the supply chain, as orders are placed for supplies. When the gap between the forecast situation and the actual situation is large, it results either in product shortfalls or excess inventory. Although forecasts can be improved by using sales data and customer purchase patterns, the bullwhip effect demonstrates that this data itself is often not suitable for use in forecasting. Consumer promotions, hoarding in shortage situations, and batch ordering, all result in customer stockpiling and distorted customer demand data. Forecasts for future demand and safety stock are often updated, on a continuous basis according to fluctuations in purchase levels, without taking into account

the effect of temporary sales promotions, etc. Exhibit 14.1 gives how Maruti Suzuki plans to combat dependence on demand forecasts.

Exhibit 14.1: Maruti Suzuki's Approach for Demand Forecasting

Demand forecasts are repeatedly failing in the automobile sector even for the country's largest car maker Maruti Suzuki India (MSI). They are pinning hopes on the festive season for a turn-around in the auto industry irrespective of government help forthcoming or not, according to a senior company official. With some of the factors responsible for the slowdown in auto sales such as concern over monsoon and elections behind, the company is hopeful that revival in demand specially from rural markets and peak discounts along with new model launches will play a crucial role converting inquiries into real purchases "We are not going to speculate on whether or not the government will provide some extra relief to the industry ... how much or how little it would be or when, now or later, will it be...What we are trying to do is to be more constructive in our approach," said, Maruti Suzuki India Executive Director, Marketing and Sales Shashank Srivastava. As the automotive industry continues to evolve with complexed digital cockpit and increasing demand for driving assistance and autonomy, choosing the right storage solution to support the variety of use cases within vehicles becomes a challenging task. The auto industry has been asking the government for reduction of GST on automobiles to 18 per cent from 28 per cent as part of a stimulus package.

Srivastava said instead of waiting for government steps, the company is focusing on what it can do to revive demand by bringing new models and also providing attractive offers to consumers. "We have launched the XL6 and we will continue to introduce new models. We will have another model coming up later," he said.

Stating that the company is focusing on retail sales, Srivastava said, "We have focused on consumer offers which are at a peak. This is the best time to buy." Discounts in August will be slightly higher than what MSI had in the first quarter of the fiscal, he added without elaborating. Moreover, he said, "We are advertising with the same vigour as before." With all those actions, he said, "We are hopeful that this festival season it will turn around." Elaborating on why MSI is hopeful of a turn around this festive season, Srivastava said some uncertainty like monsoon and election that were also responsible for sales drop earlier in the year have gone: Also, the government has sought to address to an extent the liquidity issues associated with NBFCs by allowing banks to lend more to these financial institutions in the budget, he added. Moreover, Srivastava said, "We are also confident because of the number of inquiries at showrooms."

Contd….

The key is to convert those inquiries into purchases, he added. When asked if there's light at the end of the tunnel for the auto industry, Srivastava said, "MSI as a company, we are very optimistic that there is this light. How far it is the question. It is better to answer that, a better demand estimate after we see this festive season, end of October." Automobile sales in India witnessed its sharpest decline in nearly 19 years in July (2019), dropping 18.71 per cent, rendering almost 15,000 workers jobless over the past two-three months as the sector reels under a prolonged slump. Passenger vehicle sales slumped by 30.98 per cent to 2,00,790 units as compared with 2,90,931 units in the same month last year. It was the ninth month of consecutive decline.

Source: Suzuki Forecasts Maruti to drop sales by 20% during FY2020, 2020 (accessed on 29/11/22)

Order Batching: Instead of making frequent orders, most companies place orders weekly, monthly or bimonthly. Generally, retailers resort to order batching (i.e. grouping different orders in one batch only), in order to reduce ordering costs, to take advantage of transportation economies such as full-truckload economies, and to benefit from sales incentives. This order batching increases the pressure on suppliers, as it results in strong fluctuations in demand and they have to take care of highly erratic orders. Sometimes the supplying firm may be faced with no orders, while at other times, the orders may be very high. Fluctuations of this sort can be reduced by spreading customer order cycles evenly. This ideal situation rarely exists, but supplier firms can make arrangements with their customers to smoothen out the unevenness of ordering. This may be possible, when the orders of several customers balance each other out, at different points in time.

Price fluctuations: Most transactions between manufacturers and suppliers are made in a forward buying arrangement, because of attractive price offers. Price promotions encourage customers to buy in bigger quantities than needed and stockpile the goods. When the prices are back to normal, orders from customers dwindle. Thus, the buying patterns of customers do not reflect their immediate needs or consumption patterns. All these contribute to inaccurate forecasts.

Rationing and shortage gaming: The bullwhip effect is also seen, when a manufacturer rations out his product to customers, in situations when product demand exceeds supply. When this happens, the manufacturer may divide the number of items available among all the customers, as he is unable to meet their full demand. In such situations, customers place inflated orders, in the hope of obtaining more of the product. Suppliers will then have no accurate idea about the true demand for the product. For example, during a product shortage, a manufacturer may provide only 50% of the stock ordered by the retailer. The retailer may therefore place an order for double the actual quantity required so that he can meet the full demand requirement of his customers.

To overcome the bullwhip effect, it is important to first understand its causes. Then, managers should find suitable strategies to reduce the effect. The various methods, through which the bullwhip effect can be countered, are discussed below.

14.3.2 Overcoming the Bullwhip Effect

Usually, every member of the supply chain makes forecasts regarding the demand or requirement of raw materials and finished products. The manufacturing department makes a forecast as required, for production planning, while forecasts are also made by the wholesalers, the logistic planning department, the marketing department, etc. Thus each department has its own analysis of the requirements. This sometimes leads to double-counting in demand. One way to avoid this is to centralize demand information. Though centralization may not totally eliminate the bullwhip effect caused by erratic ordering, shipping policies, etc., it is likely to reduce it.

Another way to overcome the bullwhip effect is to make the demand data, at a downstream firm, available to an upstream firm. In this way, both the firms in the supply chain can update their forecast, with the same raw data. Electronic Data Interchange (EDI) can also be used effectively for sharing data. EDI helps tremendously in information sharing and transfer of information between various members of the supply chain. Another approach used by Dell Computers is to sell the products directly to consumers. Long replenishment lead times can also aggravate the bullwhip effect. Hence, there is a need for improvement in operational efficiency to reduce the effect.

To summarize, the bullwhip effect can be reduced by:

- **Working w**ith vendors to create smaller order increments and reduce order batching. Order batching exacerbates demand fluctuations. By using EDI, companies can reduce the cost of the paperwork, in generating an order. EDI also helps in implementing paperless, computer-assisted ordering.
- Encouraging customers to place orders more frequently. Some companies/ suppliers try to induce their distributors to order assortments of different products so that a truckload may contain different products, from the same manufacturer instead of a full load of the same product. Here, the advantage is that for each product the order frequency is high, whereas the frequency of deliveries is unchanged and transportation efficiency is maintained. Using third party logistics can also help companies make their batch replenishments economical (the concept of third-party logistics is discussed in Unit 15).
- Maintaining stable prices for products. Price fluctuations encourage customers to over-purchase, when prices are low and cut back on orders,

when prices are high, leading to large demand fluctuations. Forward buying can be reduced both at the wholesale and retail levels, by establishing a uniform wholesale pricing policy.

- Rationing products based on past sales. When there is a shortage of goods, allocation of goods to customers should be based on the past orders and not present orders.

Since information distortion leads to the bullwhip effect, a greater degree of coordination and cooperation is required, between all the members of the supply chain, in order to avoid it. Partnering plays an important role, in improving coordination in a supply chain.

Example: Kids2 has Huge Unsold Inventory accumulated Due to Bullwhip Affect

Kids2 (Atlanta based baby toy company) was an Atlanta based baby toy company, very famous for its Baby Einstein and other brands catering to kids. The company sourced its products from factories in China because of the cost advantage. But, the company ordered more from the factories well in advance of the festival season due to the distances involved. The company did not want stock-out situations. During the pandemic also, the company placed orders for huge inventories in the absence of accurate forecasts. But due to the pandemic, the customers stayed away from buying and that led to glut in inventory which was adding to costs and eating into margins. But retailers like Kids2 expected the market to improve and ordered more from distant factories in China. This triggered more production at the factories. They also produced more than the orders. This inflated the production. This was what Bullwhip affect does.

Source: U.S. Toymaker Looks Beyond Port Logjams to the Risk of Gluts (usnews.com) November 1, 2021, Accessed on 03/09/2022.

14.4 Partnering in Supply Chain Management

Partnering between firms gives them a strong competitive advantage. An effective partnership evolves over a period and requires mutual commitment, trust, and common goals[1]. Apart from these, there is also a need for timely communication and cooperation, between the partners. A supply chain works effectively if all the members are in effective partnership with each other. A partnership is developed between two independent organizations, which have a vertical relationship with each other in the supply chain. For partnerships to succeed, the firms involved must work in close coordination.

[1] Mentzer, John T., Min, Soonhong, Zacharia, Zach G., "The Nature of Interfirm Partnering in Supply Chain Management", Journal of Retailing, Winter 2000, Vol. 76, Issue 4, p 549

Partnering in the supply chain can be either strategic or operational. Strategic partnerships are built to achieve the long-term objectives of the organization or to improve its competitive position. Firms coordinate strategically, for acquiring new technology, launching new products, and entering new markets.

14.4.1 Strategic Partnering

In strategic partnering, the firm should maintain a long-term relationship with its partners. A cooperative partner is a basic requirement, for such a relationship. Strategic partnering enables the production of unique products, which build up the competitive advantage of a firm. A strategic partnership can survive, only if the firm considers its partner as an important part of its business, and gives as much importance to its partner's strategy, as to its own long-term strategy. This implies that the firm should be willing to align its competitive strategy, to safeguard the interests of its partners. Hence, a strategic partnership can survive, if the firm and its partner take into account short-term and long-term operational advantages for both the firms. Such a partnership should be perceived by the parties as a unique relationship, which cannot be imitated by their competitors.

14.4.2 Operational Partnering

Operational partnering is based on the operational issues of efficiency and effectiveness. Efficiency minimizes the use of resources, while effectiveness enables products of acceptable quality, to be delivered to end-users at the right time. While efficiency is measured in terms of the delivery time, product quality, number of orders, and inventory levels, effectiveness is measured in terms of the service needs met and the service quality provided by the firm.

Compared to strategic decisions, operational decisions have smaller time spans and are easier to implement. Strategic partnering can be distinguished from operational partnering, based on the degree of involvement of the firms, in buyer-seller relationships. Strategic partnerships are long-term in nature and the partner is viewed as the extension of the firm, whereas, in operational partnering, cooperation is achieved at the level of their transactional links.

14.4.3 Environmental Pressures Inducing Partnering

Regardless of whether the partnership is operational or strategic, there are certain environmental pressures (influences from the external business environment) that have propelled firms to consider partnering. These pressures derive from markets that are very dynamic and customer-driven, where customers demand more variety, better quality, and greater service. The main environmental pressures that encourage the formation of partnerships are discussed below.

Environmental uncertainty: Competition in business has increased dramatically because of globalization. Globalization has brought more

competitors into the market, and to compete, companies require access to a greater amount of resources. Resources can be more effectively used through partnering. Partnering also enables firms to understand the strategies of foreign companies, to gain insights into customers and markets in different parts of the world. The environmental uncertainty that firms face can be reduced to some extent by forging partnerships.

Increased competition: With product life cycles getting shorter and with the expansion of product portfolios, firms are competing based on the quality and product availability, together with quicker delivery of goods to the customer. Companies, therefore, need to speed up their production processes with minimization of both defective units produced and inventory held. Among the management techniques applied to facilitate faster production processes are: just in time, quick response, and vendor managed inventory. All these techniques require firms to use partnering, to respond to customers quickly and flexibly.

14.4.4 Prerequisites for Effective Partnering

For strategic alliances to be successful, there is a need for commitment, trust, group cohesiveness, and motivation, between the partners. Apart from these, factors like top management's vision, mechanisms for conflict resolution, organizational compatibility, prior history of the business relationship, and the rate of technological change act as the key predictors of the effectiveness of an alliance.

Interdependence: The greater the interdependence of the partners, the more each partner will cooperate with the other, in achieving the strategic goals of the partnership. Specific terms like relative dependence, total interdependence, and symmetric interdependence are used to explain the level of interdependence between the partners. Relative interdependence is the difference, between the firm's dependence on its partner and the partner's dependence on the firm. Total interdependence is the sum of both the firms' dependence on each other. Symmetric relative interdependence exists when both partners are equally dependent on each other.

Supply chain relationships that are asymmetric in relative interdependence are more dysfunctional, less stable and less trusting than symmetric relationships. Regardless of whether the firm is in a position of relative power or relative dependence, increasing asymmetry in relative dependence and decreasing total interdependence, generates conflict and lowers trust and commitment. Congruence of interests is strongest in symmetric relationships. If total interdependence increases in symmetric relationships, performance gets enhanced. The greater the interdependence, the stronger is the motivation to form a long-term strategic relationship.

Conflict resolution: Conflicts in partnerships impede, block or upset the pursuit of goals by partners. Inter-firm conflicts result in tension at the workplace and impede the progress of work. Such conflicts can be reduced by forming inter-firm interface teams and establishing regular reporting and communication between the firms. Transactions that come in the way of the profit goals of suppliers should be avoided.

Trust: Trust is essential to strategic partnering. Information is readily shared between partners if the relationship is based on trust. A trustful relationship involves partners perceiving each other as dependable, in terms of character, motives, role, competence, and judgment. Trust is a critical success factor and a precondition for strategic collaborative initiatives. When partnerships are not based on trust, both the benefits of the relationship and the confidence in the process of collaboration are affected. Hence, before entering into a strategic partnership, the principles that govern the collaborative processes should be agreed upon by both parties overtly, and both parties should act in a manner that engenders trust.

Commitment: Commitment is a positive predictor of the level of coordination. Commitment implies that each partner puts in his best work. This increases trust between the members and they work towards fulfilling their own, as well as their partner's goals.

Top management's vision: The vision and goals of the top management play an important role in communicating the significance and importance of coordination in supply chain management to employees at all levels. Hence, the vision of the top management is positively related to the orientation of the firm to the strategic partnership.

Example: DHL Supply Chain partners with ReverseLogix for enhancing its Logistics Portfolio

DHL Supply Chain enters into strategic partnership with ReverseLogix for enhancing its logistics portfolio with much needed "Returns Management". DHL Supply Chain was a subsidiary of Deutsche Post DHL Group. It was a big player in logistics market supporting e-commerce companies with end-to-end services. The e-commerce business it was handling for its customers grew many fold. That meant increase in the returns by customers. It was handling returns internally till now. But with increased returns and increasing expectations by the customers, the company entered a strategic partnership with ReverseLogix, who was a major provider of end-to-end returns management systems (RMS) solutions. This partnership allowed DHL customers to benefit from DHL's operational scale and expertise along with ReverseLogix's systemic capabilities.

Source: DHL Supply Chain rolls out strategic partnership with ReverseLogix - Logistics Management (logisticsmgmt.com), March 02, 2022, Accessed on 03/09/2022

Activity 14.1

The "bullwhip" effect is the result of a distortion in demand information. The bullwhip effect refers to the magnification of demand fluctuations, as orders move up the supply chain. It is the effect of the increasing distortion in information that occurs along the supply chain, as a result of inaccurate demand forecasts. The result is that there are abnormal fluctuations in the aggregated demand forecast, which reaches the company at the point, where production is taking place.

You are required to:

- Identify the levels at which the bullwhip effect originates.
- Suggest ways to reduce the bullwhip effect.

Answer:

Check Your Progress - 1

1. Bullwhip Effect relates to fluctuations in _____.
    a. Stock Exchanges
    b. Product demand forecasts
    c. Profitability
    d. Operational schedules
    e. Business environment
2. What, according to you, is not a major cause for the Bullwhip Effect?
    a. Demand Forecast Updating
    b. Order Batching
    c. Price Fluctuations
    d. Rationing and Shortage gaming
    e. Interest rate fluctuations
3. Which of the following is the best option to reduce the Bullwhip Effect?
    a. Centralizing demand information
    b. Information sharing
    c. Increased operational efficiency
    d. Partnering with stakeholders
    e. Rationing products and services

4. Which of the following is the most essential requirement, while partnering in supply chain management?
   a. Mutual Trust
   b. Effective Communication
   c. Mutual Commitment
   d. Cooperation
   e. Close Coordination
5. Which of the following is not an environmental pressure involving partnerships?
   a. Competition
   b. Globalization
   c. Access to Resources
   d. Deployment of technology
   e. Technological obsolescence

14.5 Obstacles in Supply Chain Coordination

Any factor that leads to information distortion or hampers the progress of work is considered an obstacle to supply chain coordination. These obstacles are classified into five categories, as listed below:

- Incentive obstacles
- Information processing obstacles
- Operational obstacles
- Pricing obstacles
- Behavioral obstacles

14.5.1 Incentive Obstacles

Incentives that are not linked to the overall goals of the supply chain, but only to the performance of a particular department, can induce a narrow outlook in employees. Employees will tend to concentrate on the performance of their departments or units and ignore their responsibilities towards the overall supply chain. For example, if a manager in the transportation department is given incentives for reducing transportation costs, he would try to consolidate order lots into full truckloads to decrease dispatch costs. This may lead to an increase in the delivery time and a decrease in the overall effectiveness and profitability of the supply chain. Hence, there is a clear need for cooperation and coordination, to align the objectives of the various functions and firms, across the supply chain.

Incentives for the sales force may also prove problematic. Most companies offer sales force incentives, based on the number of items sold to the next downstream member of the supply chain. At the level of the manufacturer, the sales figure considered is the quantity sold to distributors or retailers and not the quantity sold to the final customers. The manufacturer's sales force may encourage distributors or retailers or both, to overstock irrespective of the level of actual customer demand. This results in inefficiency in terms of inventory held and order variability when the supply chain is considered as a whole.

14.5.2 Information Processing Obstacles

When demand information is distorted between different stages of the supply chain, information processing obstacles arise. This usually occurs at the stage of forecasting when there is a distortion of communication in the placing of orders. As explained earlier, the bullwhip effect is seen, when each stage looks at the orders it has received and produces a forecast, based on this information. The lack of information sharing, between the various stages of the supply chain, magnifies the bullwhip effect.

14.5.3 Operational Obstacles

Operational obstacles to supply chain coordination result from faulty order filing practices. Many firms place orders, which are much larger than their sales for a variety of reasons like quantity discounts, reduced transportation costs, mitigating long replenishment lead times and rationing of supplies by manufacturers. This variability of the orders is magnified up the supply chain. When the demand for the product does not materialize, the products get piled up, adding to inventory costs. Products that have short life cycles get outdated and the firm has to bear losses on this account.

Another obstacle, to supply chain coordination in operations, is related to shortage gaming. When there is a high demand for a product, which is in short supply, the supplying companies tend to allocate the products, based on their availability. For example, the supplier may meet 75 percent of the total orders received. In such situations, retailers may order more than they require, to ensure that the manufacturer allots enough to meet customer demand. This would mislead the manufacturer, when he in turn places orders with his suppliers and thus the error, in orders placed, increases up the supply chain.

14.5.4 Pricing Obstacles

Pricing and promotional policies of a manufacturer also have an impact on the volume of orders placed by the retailer and the timing of the orders. Retailers resort to forward buying, to take advantage of price discounts. The retailer stocks the products in advance, to cover the demand in future periods. This results in a substantial decrease in the retailers' orders, in the next season, giving rise to demand fluctuations, across the supply chain.

14.5.5 Behavioral Obstacles

Behavioral obstacles occur because of a lack of communication, between different members of the supply chain. Each stage views its function as important and ignores its relationship with other functions. This happens mainly because of the lack of trust between members, who tend to blame each other for demand fluctuations and other variations in the supply chain. Lack of trust leads to less information sharing, which weakens the coordination required, for effective partnering.

Example: Lidl Faces Serious Supply Chain Obstacles Due to Bird Flu and Ukraine War

Lidl (the supermarket chain in UK and US) faces serious supply chain obstacles due to Bird Flu and Ukraine war and is forced to ration supplies to its customers. Lidl was a major supermarket chain operating a large number of stores in UK and USA. It was known for supplying quality products at reasonable prices to its loyal customers. The bird flu in France led to shortage of ducks during Christmas, 2022. The company resorted to rationing of supplies. The shortage of sunflower oil was due to the Ukraine-Russia conflict. So, the store only got a limited supply. Shortage of essentials led to panic in people, which caused them to overstock and/or hoard items.

Source: Lidl introduces new regulations after getting hit with severe inflation (ohmymag.co.uk) May 11, 2022, Accessed on 03/09/2022.

14.6 Managerial Levers to Achieve Coordination

Once a manager has a clear idea about the obstacles in the supply chain, he needs to find ways to achieve coordination between various stages of the supply chain, to increase overall profits and moderate the bullwhip effect. Different levers, a manager can apply, are outlined below.

Aligning individual goals with organizational goals: Organizational goals and individual goals should be aligned throughout the organization in a way that the goals of every member of the organization are aligned with the overall organizational goals. All decisions should be aligned, based on their profitability, rather than on their costs. This way, the contribution of each unit will increase.

In terms of pricing, coordination can be achieved by using lot size-based quantity discounts for commodity products, if both the manufacturer and the retailer have large fixed costs associated with each lot. Incentives to sales personnel should be based on sales to the end-customer. This would stop the salesmen from overstocking the retailers or encouraging them, to forward ordering.

Increasing information accuracy: Information accuracy in the supply chain can be increased, by sharing data among all the members of the supply chain. A primary cause of the bullwhip effect is information distortion. This can be reduced, by using appropriate information systems that facilitate the sharing of data. Companies should, most importantly, share the Point Of Sale (POS) information. This information helps reduce the bullwhip effect, as all the stages can respond to the same change in customer demand. Many well-known companies like Dell, Walmart, and P&G share POS data with their suppliers to improve coordination.

Another important step in improving information accuracy is Collaborative Operations Planning (COP). One of the key benefits of collaboration is that members share a common infrastructure that allows them to implement a collaborative operations planning process. A COP process provides members with the ability to examine the entire supply chain holistically and respond to demand change optimally, taking into consideration overall business objectives. The COP process recognizes the strategic value of inventory, not just the cost. It is based on an understanding of the time and service value of the warehouse, in managing the flow of the product to meet market demand. Another important point is the need for a single-stage control of replenishment decisions, for the entire supply chain. In such a system, a single-stage controls the replenishment decisions for the entire chain. As a result, the problem of multiple forecasts is eliminated and coordination within the supply chain improves.

Improving operational performance: Improved operational performance can help in reducing replenishment lead time, and helps avoid overstocking of products. Effects of poor coordination on operational performance can be reduced, by cutting down the fixed costs associated with ordering, transporting, and receiving each lot. Information technology can be used to reduce the lead time by cutting the time for order placement and information transfer. Orders also can be taken through computers. Computer-assisted ordering increases efficiency. The time taken by the retail clerk in preparing orders can also be reduced. Similarly, information systems can be used for financial transactions, and to eliminate the costs, associated with individual purchase orders. Transportation costs can be reduced by having shipments for several retailers run on a single truck. The manufacturer can also encourage retailers to distribute the orders evenly, to avoid bunching of orders. Instead of getting all the orders at the beginning or the end of the month, retail orders can be distributed all over the month.

Designing pricing strategies to stabilize orders: Pricing can be stabilized by eliminating promotion and charging an Everyday Low Price (EDLP). This helps reduce forward buying by retailers and they can then match their orders with customer demand. Orders can also be stabilized, by moving to volume-based

quantity discounts rather than lot size-based quantity discounts. A disadvantage with lot size-based quantity discounts is that the retailer takes advantage, whenever there is a discount. Volume-based discounts consider the purchases made during a specified period and, hence, there is no need to increase the lot size. This reduces the demand variability, across the supply chain.

Building strategic partnerships and trust: Coordination in the supply chain can be improved by building trust and partnerships, within the supply chain. Sharing of information and effective communication measures help in increasing trust. All the stages of the supply chain should align their goals. This will enhance the level of trust in their relationships.

The next section discusses the steps for designing a relationship, based on cooperation and trust.

14.6.1 Designing Effective Supply Chain Partnerships that Help Build Cooperation and Trust

The key steps, in designing effective supply chain partnerships that help build cooperation and trust, are:

- Assessing the benefits of the relationship for each party
- Analyzing the operational roles and tasks of each party
- Effective contracts
- Techniques for conflict resolution

Assessing the benefits of the relationship for each party: The value attached to a relationship depends upon the benefits each party gets. A relationship can be built, only when all the parties involved derive some benefits from the relationship. For example, to reduce the lead time of a product, managers, at all the stages of the supply chain, should work in coordination. If only the inventory department is interested in reducing the lead time and other departments are not tuned to the same goal, then the effort of one department may be futile. What is important here is the contribution of each department to the profitability of the supply chain and the benefits that each department can garner, as a result of the relationship. The firm should use different techniques, to monitor its relationship with other firms or departments in the firm and determine how profits can be shared, between the contributing departments or supply chain members.

Analyzing the operational roles and tasks of each party: Traditionally, in the supply chain, activities were being arranged sequentially, with a task being completed at one stage, before being passed on to the other stage. This was termed as 'sequential interdependence'. But in the kind of supply chain one sees today, all the parties involved in the supply chain come together and exchange

information and other necessary inputs. This method is termed as 'reciprocal interdependence'. These teams come together to share information and decide on the best moves for every stage from forecasting to replenishment. Reciprocal interdependence, if used well, is very beneficial for firms as the decisions are a result of consultation and mutual consent of all the parties in the supply chain. However, if it is not implemented properly, transaction costs increase.

Effective contracts: Contracts help to promote trust between partners in the supply chain. Contracts cover future contingencies and establish the ground rules. However, contracts may not be suitable for all kinds of business environments. Unexpected situations may arise that are not mentioned in the contract. The two parties will then have to work together based on the trust they have developed, to meet the unexpected requirements. Effective contracts may be considered as the starting point, for developing a smooth working relationship between the parties.

Techniques for conflict resolution: In any relationship, conflicts are bound to arise and it is necessary that certain mechanisms are in place to solve these conflicts. If conflict resolution mechanisms are followed properly, they can help strengthen relationships, within the supply chain. If such mechanisms are not in place or are not followed, the problem often gets aggravated. Trust can be built through specific rules and guidelines that are agreed upon, by all the members and to which they are committed. Communication between supply chain partners also helps in the promotion of trust. Hence, meetings that encourage interaction should be held at appropriate intervals. The main aim of the meetings should be, to promote the confidence of members in each other, and not just to voice differences.

The management of relationships within the supply chain is as important as the design of the set-up and procedures. Supply chain partnerships can be managed successfully, by keeping the following points in mind:

- There is a need for flexibility, trust, and commitment, from all the parties involved. The managers of all the partners should commit themselves to develop the relationship and should communicate all their expectations with others.
- Communications and conflict resolution are the cornerstones for the development of trust and cooperation in a relationship. Without these, supply chain partnerships break down.
- The mechanisms for conflict resolution and the outcomes of conflict resolution should be transparent. This is to ensure that the process is unbiased and does not allow one party to take advantage of another.
- It is important that the stronger partner treats the weaker fairly. This helps in strengthening the relationship.

Fairness, in the context of the supply chain, refers to the way benefits and costs are shared, between two or more parties. A partnership, based on power, tends to divert the resources and benefits to the more powerful partner. Such relationships do not last long. Rules that reflect a sense of fairness and which are acceptable to all the parties should be drawn up.

14.6.2 Supply Chain Synergy

In general, synergy is the combined working together of two or more parts of a system so that the combined effect is greater than the sum of the efforts of the parts. In business and technology, it describes a hoped-for or real effect, resulting from different individuals, departments, or companies working together and stimulating new ideas that result in greater productivity. As supply chain management is perhaps the most complex life-cycle process, many stakeholders come into play. Suppliers will be countless in industries like automobiles. Partners, collaborators, mergers, and acquisitions are the current trends, in making the supply chains more efficient. This calls for effective supply chain synergy.

Importance of supply chain perspective of synergy: Studies conducted, on issues related to supply chain, show that the efficiency, with which the supply chain matters are handled, directly impacts the success of Operations Management. Supply chain perspective of synergy is particularly important for merging companies because the newly formed company intends to- i. Perform well by exploring new markets, ii. Consolidate excess capacity, and iii. Rationalize channels of distribution.

Therefore, supply chain perspective of synergy forms an important ingredient, in the process of Mergers & Acquisitions (M&A). Failure of M&A can be attributed to the fact that business strategies adopted by these companies failed to address the true aspects of supply chain, effectively. Hence, the success of mergers and acquisitions depends on how competently the supply chain perspective of synergy is tapped. Supply chain constitutes one of the main sources of synergies, making up approximately 30% to 50% of all synergies, as most of the resources are deployed in supply chains. In addition to costs, supply chain perspective of synergy affects the following areas:

Expenses related to operations: The effectiveness, with which a company purchases services and goods and how diligently the supply chain is routed in the entire process, impact operating margins and net income.

Revenue: A sound supply chain renders protection to revenues, at times of transition. It ensures that orders placed by the customers are not disrupted. It enables the organization to maintain a top-line growth, pertaining to new markets, new products, and topography.

Capital expenditure: Effectiveness of strategic sourcing pertaining to operations in supply chain affects the outflow of cash in a company. The reason being, supply chain takes into account physical assets like fleets of trucks, and assets of telecom network and warehouses.

Working capital: The efficiency with which raw materials are converted into goods by the supply chain and made available to the consumers, and the payment made by the consumers for the same goods plays an important role in the working capital position of the company. In any organization, the automation of information generation, processing, and transfer is as important as automation of physical activities. The activities may pertain to logistics, warehousing, services, transportation, and the movement of goods and services in the value chain. To achieve efficient automation in supply chain, automation of material handling and information should go hand in hand. This directly influences the bottom line of the company, in addition to providing better customer service. The automation can help the company in improving cycle time, reducing damages, providing higher availability of information and thus improving customer satisfaction.

Example: Walmart is Seeking Strategic Partnerships with Canadian Retailers to Grow in the US Marketplace

Walmart had of lot of expertise in the Canadian e-commerce business. Now it was seeking partnership with Canadian e-commerce companies to sell their products on its US marketplace. The Canadian companies expanded their business to US customers without huge investments. They leveraged the vast experience of Walmart in retail - both online and offline. Also, various technology platforms created by Walmart like Walmart Fulfilment Services, Walmart Connect Media Platform facilitated advertisement / marketing campaigns for the Canadian partners.

Source Walmart Invites Canadian E-commerce Companies To Expand on Its U.S. Online Marketplace (newswire.ca), August 30, 2022, Accessed on 03/09/2022

Activity 14.2

With increasing inter-dependencies among supply chain partners, effective coordination assumed significance to ensure efficient operations.

You are required to:

- Identify the obstacles in supply chain coordination.
- Discuss the managerial levels to achieve effective coordination.

Check Your Progress - 2

6. Which of the following is a major obstacle in Supply Chain Coordination in Indian Industries?
   a. Incentives
   b. Behavior of individuals and collectives
   c. Information
   d. Operations
   e. Pricing
7. Which of the following is an effective management lever to achieve better coordination?
   a. Aligning individual roles with organizational goals
   b. Intensifying operations
   c. Faster channels of information
   d. Designing pricing strategies
   e. Building strategic partnerships
8. Which of the following is not a key step in designing Supply Chain Partnerships?
   a. Assessing the benefit of a partnership with each party
   b. Analyzing operational roles and tasks of each party
   c. Effective contracts
   d. Techniques for conflict resolution
   e. Use of social media
9. In which, of the following situations, is Supply Chain Synergy effective?
   a. Mergers & Acquisitions
   b. Product Diversification
   c. Establishing new units
   d. Export initiatives
   e. Closure of operations
10. Which should be the most important area to focus, to start with, while planning to achieve Supply Chain Synergy?
    a. Operations Management
    b. Information Management
    c. Customer Relationship Management
    d. Materials Management
    e. HR Management

14.7 Summary

- Cooperation is essential for the successful implementation of supply chain management and it is hampered when there is ineffective communication.
- The bullwhip effect occurs, because of information distortion. This can be reduced, by sharing information and knowledge with suppliers and customers, to estimate demand more accurately.
- It is important to work with supply chain partners, to eliminate the bullwhip effect.
- Technology can be utilized to speed up communication and to improve response times.
- Partnering has become very important for firms, because of the increasing complexity and turbulence in the market.
- For partnering to be successful, there is a need for trust, commitment and mutual support between the partners.
- Further, the negative aspects of partnering like conflicts should be overcome by devising effective conflict resolution techniques.
- Hence it is very important for managers to understand the factors that affect coordination and identify the levers they can use, to nurture effective coordination.
- Coordination can be improved by aligning individual goals with organizational goals, improving operational performance, improving pricing strategies, and building cooperation and trust.
- Before building partnerships, a manager should analyze the benefits and costs of the partnerships for all the parties involved, and the roles and tasks of each of the parties.

14.8 Glossary

Behavioral Obstacles: Behavioral obstacles occur because of a lack of communication, between different members of the supply chain

Collaborative Operational Planning (COP): COP is an important step in improving information accuracy.

Incentive Obstacles: Incentives that are not linked to the overall goals of the supply chain, but only to the performance of a particular department, can induce a narrow outlook in employees

M&A- Mergers & Acquisitions. M&A are methods of organizational restructuring through acquiring or merging with operating firms.

Operational Obstacles: Operational obstacles to supply chain coordination result from faulty order filing practices

Strategic Partnering- Long term partnerships to achieve operational excellence.

Supply Chain Synergy- Forging relationships with different partners to enhance supply chain efficiency.

The Bullwhip Effect- Also called the "whiplash" or the "whipsaw" effect, it refers to the magnification of demand fluctuations, as orders move up the supply chain.

14.9 Self-Assessment Test

1. Explain in detail the Bullwhip Effect.
2. What are the ways to overcome the Bullwhip Effect? Elaborate.
3. Discuss, in detail, various dimensions of partnering, in Supply Chain Management.
4. What are the major obstacles to supply chain coordination and what are the managerial levers to address them?
5. What is Supply Chain Synergy? Suggest potential areas for achieving it.

14.10 Suggested Reading / Reference Material

1. Ashley McDonough, Operations and Supply Chain Management Essentials You Always Wanted to Know: 15 (Self Learning Management Series) Paperback – 1 January 2020.
2. Russel and Taylor, Operations and Supply Chain Management, 10 ed, ISV Paperback – October 2019.
3. Chopra and Kalra, Supply Chain Management 6/e Paperback – 17 June 2016.

14.11 Answers to Check Your Progress Questions

1. (b) Product Demand Forecasts

Product Demand Forecasts. Fluctuations in product demand are related to the Bullwhip Effect.

2. (e) **Interest rate fluctuations**

Interest rate fluctuations. They are not a major cause for the Bullwhip Effect.

3. (d) Partnering with stakeholders

Partnering with stakeholders. It is the best option to reduce the Bullwhip Effect.

4. (d) Cooperation

Mutual Trust. It is the most essential requirement, while partnering in supply chain management.

5. (d) Deployment of technology

Deployment of Technology. It is not an environmental pressure involving partnerships.

6. (b) Behavior of individuals and collectives

Behavior of individuals and collectives. It is a major obstacle in supply chain coordination in Indian industries.

7. (e) Building strategic partnerships

Building Strategic Partnerships. It is an effective management lever to achieve better coordination.

8. (e) Use of social media

Use of social media. It is not a key step in designing supply chain partnerships.

9. (a) Mergers & Acquisitions

Mergers & Acquisitions. Supply chain synergy is effective in mergers and acquisitions.

10. (b) Information Management

Information Management. It is the most important area to focus while planning to achieve supply chain synergy.

Unit 15

Role of Outsourcing in a Supply Chain

Structures

"Master your strengths, outsource your weaknesses."

– Ryan Khan, Founder of The Hired Group

15.1 Introduction

For sustainable growth, organizations need to concentrate on their core strengths and choose outsourcing for non-core activities.

In the previous unit, we discussed the topic, cooperation and coordination in a supply chain. The concepts covered include the Bullwhip Effect, partnering in supply chain management, obstacles in supply chain coordination, and managerial levers to achieve coordination.

The increasingly competitive business environment has created increasing pressure on margins and forced companies to cut costs. This is, often, being done by outsourcing non-core supply chain processes. In their effort to provide customers with quality goods and services at competitive prices, many companies have started outsourcing their logistics and warehousing processes

to professionals. In some cases, even a key supply chain process like production has been entrusted to contract manufacturers to improve responsiveness and to minimize overall supply chain costs. For example, a large company like Cisco systems is considered to be a marketing company. It has outsourced most of its production requirements to contract manufacturers. Thus, as competition increases, companies are hard-pressed to identify their core competencies and entrust the other activities to outside parties, who can perform them more cost-effectively. But a company has to consider various parameters, in addition to costs, before outsourcing any of its supply chain activities. For outsourcing, the companies have to first train and develop their supplier to form a supply chain partnership. Companies have to plan and decide, whether they are capable of carrying out all their business processes in-house or whether they require the services of outsourcing firms to meet the customer demand. Starting with a list of reasons as to why firms outsource, this unit discusses the need for outsourcing and its growing importance in supply chain management.

In this unit, we will discuss the role of outsourcing in a supply chain. The concepts covered include: overview of outsourcing, reasons for outsourcing, outsourcing process, issues in outsourcing, areas of outsourcing, advantages and disadvantages of outsourcing, outsourcing practices, forms of outsourcing and emerging trends in outsourcing

15.2 Objectives

By the end of the unit, you will be able to:

- Explain Outsourcing and the reasons thereof
- Discuss the Outsourcing Process and Issues in Outsourcing
- Identify Areas of Outsourcing
- Explain the Advantages and Disadvantages of Outsourcing
- Discuss Outsourcing Practices
- Examine Emerging Trends in Outsourcing

15.3 Overview of Outsourcing

Outsourcing involves the contracting of one or more of a company's business processes to an outside service provider, to help increase shareholder value, by primarily reducing operating cost and focusing on core competencies. Outsourcing can be defined as the "strategic use of outside resources to perform activities, traditionally handled by internal staff and resources. Outsourcing is a management strategy, by which an organization outsources major, non-core functions, to specialized, efficient service providers" (Quinn, James Brian, Hilmer, Frederick G. *"Strategic Outsourcing." Sloan Management Review).* Over the past two decades, outsourcing has been a major trend in supply chain management,

mostly to contain costs of products and services. This has caused many job losses in developed countries and gains in emerging nations. It was a key election issue during the 2016 US Presidential elections.

Example: Canoo Outsources its Electric Vehicle Manufacturing to Meet the Delivery Deadlines for Walmart

Canoo is an American Electric Vehicle Company. It has designed and is in a position to manufacture electric Lifestyle Delivery Vehicle optimized for sustainable last mile delivery use cases. The company wanted to start manufacturing at its own plant to be built by the end of the year. But Walmart placed a huge order of around 4500 electric vans with Canoo. Being the first and a major order, the company wanted to make sure the delivery was as per contract. Internal assessment suggested that it cannot meet Walmart deadlines based on its own factory being ready. So, the company outsourced the manufacturing to a company which had readily available capacity and quality systems to manufacture and deliver Walmart deliveries.

Source: https://www.reddit.com/r/canoo/comments/wjq9ss/canoo_to_outsource_production_of_its_first/ August 10, 2022, Accessed on 05/09/2022

15.4 Reasons for Outsourcing

Customer satisfaction is the primary aim of any organization. To satisfy and provide customers with the required service and quality, a smooth flow of products through the supply chain is necessary. Companies have to plan and decide, whether they can manufacture their products in-house or employ the services of outsourcing firms to make the products reach the customers at the right time and right place. Increasing competition and shorter product cycles have forced companies to concentrate on their core competencies. Non-core business activities are being outsourced to outside vendors. Outsourcing is thus gaining importance in supply chain activities.

Outsourcing can help a firm to improve its operations and financial performance. Supply chain activities can be improved by controlling operating costs and improving a company's focus on its internal resources. For example, Microsoft Corporation, the world's best-known maker of software for the desktop environment, does not maintain its own desktop systems. It outsources the job, knowing fully well that its core competence is in making those products, not in maintaining them. There are a number of reasons, why companies outsource their non-core activities. These reasons can be strategic, tactical, or transformational in nature.

15.4.1 Strategic Reasons for Outsourcing

Companies outsource supply chain activities to improve their business processes, apart from gaining access to world-class capabilities. The main

strategic reasons for outsourcing supply chain activities are discussed below: Exhibit 15.1 explains Nike's Outsourcing Strategy.

Exhibit 15.1: Nike's Outsourcing Strategy

Nike outsources most of its activities. It focuses its resources, on its core competencies and strategically outsources the rest (many of which are traditionally considered in-house activities). The company, which is one of the largest producers of athletic shoes, outsources 100 percent of its shoe production and manufactures, only key technical components of its "Nike Air System." This strategy gives it the flexibility it needs, to manufacture a product, which is both technology-intensive and fashion-intensive. The firm concentrates its resources on its core competencies– pre-production and post-production activities like research and development, marketing, sales and distribution -to create maximum value for its customers. It outsources the advertising component of its marketing, as it is not its core competency. Because of this outsourcing (to Wieden & Kennedy), the firm has been able to attain product recognition, worldwide.

Nike has adopted strategic outsourcing. It has outsourced activities, for which the firm has neither a critical strategic need nor special capabilities. To coordinate with suppliers, it frequently discusses its future capabilities and products with them. The firm has a three-tier partner strategy. Partners, in the first tier, produce Nike's latest and most expensive products. They are developed producers. These companies produce low volumes, invest in Nike's new technologies, and develop products along with Nike. Another type of producers, in the first tier, are the volume producers. They develop footwear on a large scale (about 70,000 to 85,000 units per day). These producers are not involved in developmental work, as they produce specific types of footwear that are commonly used. Also, these producers may produce for seven to eight buyers.

In the second tier, the firm has a network of suppliers (for materials, components, and subassemblies). The third tier consists of supplier companies, over which Nike has total control. These companies produce Nike's patented products.

Source: ICFAI Research Center

Concentration on core competencies: By outsourcing operational activities that a company is not good at or that are non-core, the management can concentrate on its core business. Many supply chain activities, which are routine and operational in nature, consume a great amount of management time and resources. Hence, outsourcing these activities will be of great advantage for the organization. For example, by outsourcing the transportation of vehicles, a

logistics company can concentrate on its core business, i.e. planning the economic ways of moving goods between destinations. As can be seen from Exhibit 15.1, Nike outsources 100 percent of its shoe production. This helps the firm concentrate on its core competencies like R&D.

Access to world-class capabilities: In a world of rapid technological change, it is not possible for a firm to gain access to all, or even the best, technologies. However, by outsourcing its activities, it can tap world-class resources in developing its products, thereby gaining a competitive advantage in its industry. These outsourcers are often, experts in the technologies they are using, and can also focus solely on the activities outsourced. The outsourcer selected to world-class standards will always be an advantage to the firm.

Shared risk: While new technologies provide new benefits, they also bring risks to any organization. If the investments in new technology fail, then it is a major loss for the organization. Outsourcing helps companies to avoid this risk and helps them become more flexible, more dynamic, and change as per changing opportunities.

Accelerate reengineering benefits: Reengineering helps a firm improve itself in critical measures of performance such as cost, quality, service, and speed. But by concentrating on non-core business activities, companies tend to have less time, to devote to their core activities. Hence, the best solution is to outsource non-core activities to a competent service provider. For example, Philips Morris is good at manufacturing and marketing of cigarettes. Hence, it does not outsource these activities, as they are its core competencies. But it outsources tobacco production to farmers, and paper production to paper mills.

15.4.2 Tactical Reasons for Outsourcing

The main tactical reasons for outsourcing supply chain activities are as follows:

One-time application: Some applications in organizations are one time in nature and they have high manpower requirements. Most organizations do not prefer to invest in manpower, for a one-time. Hence most organizations give such applications to outsourcers, who have the required manpower to accomplish the tasks.

Controlling operating costs: When an outsource provider can provide a service at a cost lower than the firm’s cost, then the firm may outsource its operations to that provider. By outsourcing such operational activities, most companies save on costs.

Making resources available for core business activities: Generally, organizations have to operate within limited budgets. Outsourcing allows an organization to allocate people and funds released from non-core activities (outsourced activities) to those activities that create greater value to the

customer. Further, outsourcing can also improve certain financial measures by eliminating the need to show return on equity from capital investments, in non-core areas.

Injecting additional cash into the business: A firm can inject additional cash into its business, by outsourcing, which involves the transfer of assets from the customer (firm) to the service provider. Equipment, facilities, vehicles, and licenses used in current operations, all have an operational value and are, in effect, sold to the provider as part of the transaction, by which there is a cash infusion.

Securing resources not available internally: Another major reason for outsourcing is when companies do not have access to the required resources, within the organization. If a company plans to expand to new geographic areas, then outsourcing can be considered as a viable alternative, for building the needed capability.

15.4.3 Transformational Reasons for Outsourcing

Transformational reasons are the major reasons for outsourcing in many supply chains. The major reasons for outsourcing are:

Bringing faster and newer solutions to customers: The changing business landscape is compelling organizations to manufacture products, according to the expectations and preferences of their customers. Companies can outsource some activities of the supply chain to the best vendors, who are specialized in carrying out these activities.

Responding to shorter product lifecycles: With product life cycles becoming shorter, it has become difficult for firms to concentrate on various activities of the supply chain, encouraging them to outsource some of the non-core activities.

Redefining relationships with suppliers and business partners: The firm's relationships with suppliers and business partners have changed in many different ways. When a company outsources to suppliers, there is bound to emerge a relationship, whereby new integrated providers can shorten the chain and provide additional services that transform markets or transform the customer experience.

Tackling competitors: Companies can move ahead of their competitors if they devise new strategies of outsourcing with various suppliers. The best example of this is Amazon.com. The company partnered with providers, who could manage call centers, process and fulfill orders, and warehouse books - something which had never been attempted before by any other firm.

Reducing risk when entering new markets: As mentioned previously, outsourcing helps firms to reduce risk, when entering new areas. Firms need to move quickly into new markets in response to new competition or opportunities,

sometimes into areas, where they have little prior experience. Especially in the area of e-commerce, companies depend on outsourcing providers for e-business solutions.

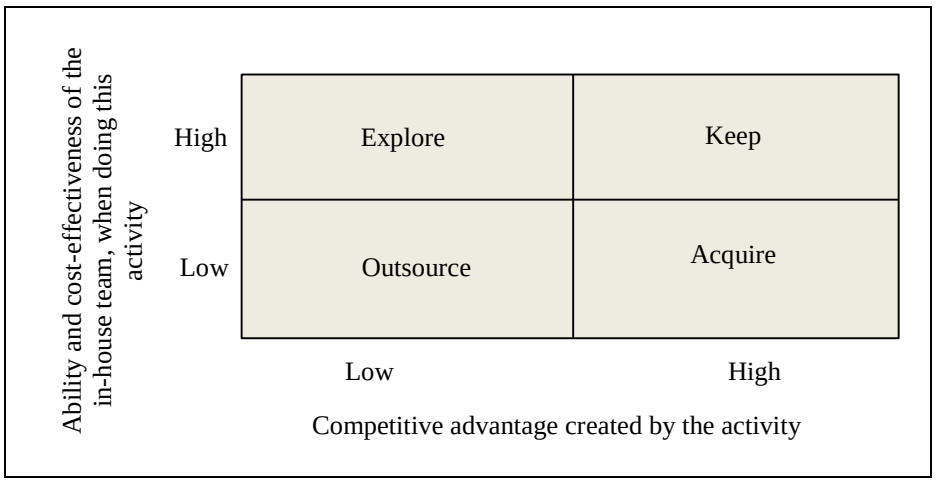
15.4.4 Deciding what to Outsource

It is important for firms to identify the activities in the supply chain, to be outsourced. Organizations should analyze their internal business processes and identify the areas, where it can outsource. A competitive analysis will help a firm to identify its strategic position, in relation to the market, industry and competitors. The next step that the firm has to take is to identify its core competencies. Then a firm can have a clear idea, as to where it has to concentrate its energies and what activities, in the supply chain, can be outsourced. One of the pre-requisites to successfully implement outsourcing initiatives is the support of the top management.

After an organization identifies its core competencies, it gathers facts and figures related to the activities that have to be outsourced. These give an idea about the costs involved for each activity, and also enable the firm to analyze non-financial questions like the importance of these functions to the organization, and the extent to which the success of the organization is dependent on these activities (i.e., whether the activities are core or non-core in nature). Apart from these long-term cost and investment implications, work morale and support from the employees should also be considered.

The matrix shown in Figure 15.1 will give the firm some indications as to what to outsource. The x-axis represents the competitive advantage created by the activity. The y-axis shows the ability and cost-effectiveness of the in-house team in carrying out the activity. The matrix helps a business to identify the activities that have to be carried out in-house and those activities that may be outsourced.

Figure 15.1: Deciding what to Outsource



Source: ICFAI Research Center

The matrix shows that when an activity results in greater competitive advantage and the in-house team is capable of carrying out that activity effectively, then that activity should be kept in-house. These are the core activities, on which the business can focus.

If the competitive advantage created by an activity is low and the cost-effectiveness of the team is high, then it is necessary for the firm to explore the possibility of selling the in-house expertise to other businesses. The firm can save time and money by outsourcing such activities to outside experts.

Another alternative is to acquire the capabilities that provide greater competitive advantage to the firm but not being done effectively and efficiently in-house. Organizations in such situations can acquire these skills by recruitment or by forging a strategic alliance with an organization specializing in the activity.

Example: Winbro Group Technologies has a "Strategic Outsourcing" Contract

Winbro Group Technologies has a "Strategic Outsourcing" Contract with Pp Control & Automation for the Manufacture of World's most Productive EDM Drilling Machine. Winbro Group is a UK based world leader in the design and manufacture of advanced machines and technologies. The company wanted to come up with the most productive EDM (Electro Discharge Machining) drilling machine. The new machine will enable drilling the maximum number of right first-time parts within a square metre. Wimbro technologies outsourced this to its "strategic outsourcing" partner PP Control & Automation. The strategic outsourcing partnership is celebrating 10 years. It is a mutually beneficial partnership under which ten models were developed in 10 years The decision to outsource was to provide flexible production, reduced assembly time and improved supply chain management for Wimbro Group.

Source: https://www.ppcanda.com/pp-ca-marks-ten-year-outsourcing-anniversary-with-new-winbro-group-technologies-deal/ 17th May, 2022, Accessed on 7th September, 2022

15.5 Outsourcing Process

The outsourcing process involves assessing the technology and understanding demand trends, identifying the core competencies, conducting cost analysis, and considering non-cost factors that influence outsourcing decisions. Different steps in the outsourcing process are discussed below:

15.5.1 Assessing Technology and Demand Trends

The first step in the outsourcing process is assessing the technology and demand trends. Adequate care should be taken while assessing the technology requirements, as implementing any decision in this area involves high levels of investments in equipment and worker training. As technology decisions have

an impact on all the functions of an organization, these decisions must be considered from a variety of angles like finance, operations, design, engineering, technology, etc. These decisions are usually made by cross-functional teams. There are various factors that trigger outsourcing decisions, concerned with technology and demand trends such as:

New product development: Technology comes into focus during the design of a new product. The firm should first collect all information regarding the new product, before deciding whether to outsource or insource. If the product under consideration requires unfamiliar new technology or complicated processes, then an outsourcing decision can be taken. When deciding to outsource, the duration of the product life cycle and the availability of reliable sources of supply should also be considered.

Strategy development: The strategy of a firm is another factor that influences technology and demand trends in terms of insourcing/ outsourcing. Depending on its strategy, a firm should identify its competitive advantage. This will facilitate the firm's decision on divesting non-core businesses and concentrating on core businesses.

Poor internal or external performance: When the suppliers are unable to satisfy the requirements of the buyers, the buyers can examine options like producing the item internally, by developing the capabilities of the employees. If a firm finds that it does not have the internal capabilities to meet the needs of its customers, it can outsource with a capable supplier or spend time and resources to develop these capabilities.

Changing demand patterns: Fluctuations in sales is inevitable in any company. If the demand for a particular product is high and if the company does not have adequate production capacity, it has to outsource to meet additional demand.

Technology life cycles: If the technology for a particular product is stable, the life cycle for a product will be long. But when a firm operates in an environment, where the technology is often changing, it may shift the technology risks to external sources, who specialize in that particular technology.

15.5.2 Assessing Strategic Alignment and Core Competencies

At this stage of the outsourcing decision-making process, a firm analyzes the impact of outsourcing decisions on its strategic plans. The firm should clarify, whether the outsourcing decision is in line with the strategy of the firm or not.

Strategic alignment: To analyze the strategic alignment of the outsourcing decision, the organization should take some steps. In consultation with other business units, a strategic plan should be prepared, based on the contribution of each department to the strategic goals of the organization. Planning is also necessary for the current and future production and operations strategy, the long

term vision of the supply chain of the organization, and the technology plans that each department is pursuing, both in the long-term and the short-term. The main aim of strategic alignment is to bring together the strategies of various value-adding activities. By bringing these strategies together, a firm can identify its core competencies.

Core competence alignment: A firm should identify the areas, where its performance is the best and where its skills exist. An investigation into these activities will help it in identifying its core competencies. The next step is to identify the current and expected future environment, in which the company has to operate. This has to be analyzed keeping in view the likely competition, government regulatory climate, changing characteristics of sales and supply, industry characteristics, etc. After this analysis, the characteristics that the organization needs, to stay ahead in the competitive business world, are compared with its core competencies. This comparison helps the firm in identifying the areas in the supply chain that require improvement. These core competencies also help a firm in deciding what to make and what to buy. Products or services that are closely linked to the organization's core competencies are produced in-house, while products, for which the organization does not have the required capabilities, are bought. The following guidelines help firms in identifying their core competencies and their competitive position in the industry.

It is important to identify skills or knowledge sets that can help a firm in creating a maintainable competitive edge. The first step in identifying core competencies is to look beyond the product and functional expertise of the company. Since product and functional excellence can be imitated by competitors, firms should identify those competencies, which cannot be easily duplicated by others. These could include R&D, product design, process design, logistics, marketing research, marketing, distribution, advertising, and communications.

The firm needs to concentrate on developing competencies that are valued by the customers. After identifying a list of competencies, a firm should focus on those competencies that create customer value, like improving the quality of products or the responsiveness of the supply chain. At the same time, firms should regularly reassess the preferences of their customers and strive to develop appropriate competencies.

Core competencies have to be limited in number. As the activities in the supply chain expand, it becomes difficult for the managers to concentrate on acquiring all the competencies required to serve the customer. Hence, it is advisable to concentrate on two or three activities in the supply chain that are critical for future success. Other activities that are not within the management's capability can be outsourced.

Developing in-depth knowledge about the activities in the supply chain are considered as core competencies. After identifying a limited number of supply

chain activities, which constitute its core competence, the firm has to concentrate on finding out its deficiencies in carrying out these activities. This process should be repeated until the firm attains the necessary levels of performance in those activities.

15.5.3 Conducting Cost Analysis

When evaluating outsourcing options for supply chain activities, it is essential for the firm to not only consider the purchase price, direct labor, and material but also look into other costs that will be incurred, as a result of shifting to outsourcing. These costs may include the cost of having idle equipment, loss of jobs, etc. The cost analysis should identify all the costs that are incurred across departments, functions and personnel. Although many of the costs of an outsourcing decision are included in the purchase price shown on the suppliers' invoice, the firm should also consider other costs like inbound freight, and receiving and inspection costs. Further, the firm should also determine the switching costs associated with the outsourcing decision. In other words, the firm should estimate all the variable and fixed costs associated, with an outsourcing decision. It is easy to determine the total variable costs, as they are readily identifiable and they vary directly according to the level of production. However, the proper allocation of overheads is difficult because the assumptions underlying allocation can have dramatically different effects on the total costs. Critical evaluation of underlying assumptions should always be an ongoing process, which always questions whether the basis of allocation is appropriate or not. The task of allocating costs becomes even more difficult when production personnel attempt to hide costs keeping in view their personal goals.

15.5.4 Considering Non-Cost Factors

The final step in the decision-making process is to evaluate a variety of non-cost factors like employee morale, the ability of the top management to support employees in outsourcing decisions, etc.

Example: United Airlines Outsources its Non-Core Activity of Catering to Focus on Enhancing Customer Experience

United Airlines like other airlines has been running its catering establishment with its own facilities and its own catering staff. But the airlines have reviewed this process and recognized catering as non-core activity which as such can be outsourced to organizations whose core business is catering. The management felt its resources released from catering can be better put to use to enhance overall customer experience with the airlines.

Contd….

The airlines have selected three suppliers to operate the five kitchens and manage menu design and administration. It has also informed the staff and the plan is to accommodate most of the employees in the catering division with the suppliers.

Source: https://www.reuters.com/business/aerospace-defense/united-airlines-outsource-catering-operations-october-2021-07-29/ Accessed on 06/09/2022

Activity 15.1

Even though outsourcing has been in practice since long, post-globalization, the trend has increased, due to many reasons.

- Identify the reasons for outsourcing.
- Examine the advantages and disadvantages of outsourcing.
- Explain the future of outsourcing.

Check Your Progress - 1

1. Which of the following is the most important reason for outsourcing?
    a. Cost reduction
    b. Cost reduction and speed improvement
    c. Cost reduction and service quality improvement
    d. Cost reduction and improvements in speed and service quality
    e. Customer satisfaction guarantee
2. Which activities are usually outsourced?
    a. Non-core processes
    b. Core processes
    c. High-cost processes
    d. Low-cost processes
    e. Any activity
3. Identify the most important advantage of outsourcing.
    a. To focus on core competencies
    b. To focus on non-core competencies
    c. To achieve cost reduction and quality improvement
    d. To right-size the organization
    e. To reduce losses

4. Which is the most important criterion, for qualifying an outsourcing partner?
   a. Low cost of operations
   b. Better quality of products and services
   c. Ability to deliver as per customer requirements
   d. Assured services
   e. Warranty support
5. When an organization supplies to a customer a product, whose parts are mostly outsourced, which of the following statements is correct when the product fails in the field?
   a. The outsourcing partner is responsible
   b. The manufacturer, on whom the order was placed, is responsible
   c. Both the manufacturer and the outsourcing partner are responsible
   d. Both are not responsible
   e. The issue to be resolved in a court of law

15.6 Issues in Outsourcing

There are a number of issues that must be addressed by a firm when it plans to outsource its supply chain activities. Some of them are:

- What level of interaction should it have with its suppliers?
- What should be the number of suppliers?
- Should it go for local, national or international sourcing?

15.6.1 Involvement of the Suppliers

The firm has to decide, whether it wants to involve suppliers in the product design process or not. This can bring about synergies in the production process. With companies establishing long-term relationships with their customers, it has become necessary to select only those suppliers, who can bring expertise along with supplying quality material. Most of the major firms select suppliers, after an intensive analysis of two or three pre-qualified suppliers. For example, HP has adopted a collaborative model of product development and delivery, in which suppliers do a major part of the detailed design, as well as manufacturing. However, HP remains responsible for overall system performance. The outsourcing agreements were structured in a way to allow the suppliers to make a fair profit and to encourage them to invest in upgrading their facilities and equipment.

Example: Asher Biotherapeutics, Inc Outsources the Manufacture of a Cancer Drug Product as Part of Strategic Outsourcing Partnership

Asher Biotherapeutics, Inc (a biotechnology company) Outsources the Manufacture of a Cancer Drug Product to the Global Manufacturing Partner as Part of Strategic Outsourcing Partnership. Asher Biotherapeutics, Inc. is in the business of developing precisely targeted immunotherapies for cancer and other diseases. Lonza is a global manufacturing outsourcing partner to the pharma and biotech companies globally. They have entered into a manufacturing agreement for the manufacture of the product AB359 (a cis-targeted IL-2 fusion protein) for preclinical and clinical testing.

Source: https://www.lonza.com/news/2022-04-07-14-00, Accessed on 06/09/2022

15.6.2 Supplier Base

Many MNCs have reduced the number of their suppliers. By doing so, these companies are concentrating on fewer suppliers, who can be involved in the long-term strategies of the firm like design, materials research, process value analysis, and workforce training. The benefit of reducing the number of suppliers is that a company can have better focus and pay more attention to its suppliers. Suppliers can get themselves involved in product development. It further helps in building goodwill and trust between the firm and the suppliers. Selecting the right kind of suppliers is important for any firm that plans to reduce the supplier base.

15.6.3 Single vs Multiple Sourcing

This is one of the crucial decisions in supply chain activity outsourcing, which is usually left to the discretion of the top management. By concentrating on one supplier, the benefits that a firm can achieve are that the quality, control, and coordination required with Just-In-Time (JIT) manufacturing, can be achieved. Long term relationships can be built up by engaging a single source and establishing a relationship of trust. Most companies prefer a single source for all their requirements, as they feel that in times of shortage, the supplier will give preference to their needs, as they are the major clients.

Multiple sourcing is appropriate to protect the buying firm during times of shortages, strikes and other emergencies. When a firm goes in for multiple suppliers, it can encourage them to compete to provide the best material. It is better to have multiple sources of supply when the volumes required are high. Though multiple sourcing has its benefits, most firms are moving towards single sourcing, for decreasing costs and also maintaining long term relationships with the suppliers. But in India, multi-vendor relationships are gaining importance, and foreign companies are looking at more than one software firm for outsourcing. For example, General Motors works with Wipro and Cognizant.

It works with Wipro for engineering services and with Cognizant for e-business related services.

15.6.4 Local, National, and International Sourcing

When the headquarters and manufacturing units of a firm as well as its suppliers are located in the same city or region, or use the local materials or resources, it is called local sourcing. For national sourcing, the firm has headquarters within the country and has facilities in multiple regions throughout the country. An international source is a firm, which has its headquarters outside the buying firm's country.

The advantages of local buying are:

- In JIT manufacturing strategy, it is better to have suppliers closer.
- Transportation problems are rare and goods are delivered on time.
- Shorter lead times can help in the elimination of inventory.
- It is easier to fill rush orders.

National sources can provide the following benefits:

- Economies of scale, high quality, and better service at lower prices.
- Better equipped to provide superior technical expertise than local sources.
- Larger production capacity helps them service large customer orders and shortages are rare.

Sourcing from global firms requires additional efforts from the buyer’s side. Firms opt for global souring because of the following reasons:

- For superior quality products
- If a product can be sourced globally, without compromise on quality, but at a lower price and with a shorter lead time.
- Global sourcing helps broaden the supply base. This helps in decreasing the number of contracted suppliers and pursuing collaborative or alliance relationships when needed.
- Sourcing globally can help in creating opportunities to sell in countries, where the buying firm's suppliers are based.

15.7 Areas of Outsourcing

Although the supply chain activities that are outsourced by a firm depend on its business strategy and core competencies, activities most commonly outsourced by firms across different industries are transportation, warehousing, inventory management, information systems, and packaging.

15.7.1 Transportation

Transportation is an important supply chain process, through which goods are sent to the final customer, in addition to transferring goods from suppliers to

manufacturers, manufacturers to distributors, and from distributors to retailers. Transportation has gained even more importance, with the increasing geographical distances a product has to traverse to reach the final consumer. Transportation decisions can involve three alternatives- a) a firm can operate its own transportation system, b) lease the vehicles and manage the service function, or c) use a specialist service company. The factors that influence the choice between the above three alternatives are financial policy, customer service policy, the control the company plans to have on its suppliers, and the level of competition in the market. The benefits that a firm can achieve, as a result of outsourcing transportation services, are:

- The service providers can plan shipments and the best carrier for each need.
- Service providers can give special assistance when negotiating with commercial carriers for better prices.
- Assistance in damaged and lost merchandise claims, and provision of management reports, which enable effective analysis of transportation costs and monitoring of carrier performance.
- It is easier to consolidate and centralize pre-audit and payment, for all interstate, intrastate, and international freight companies.

15.7.2 Warehousing

By outsourcing warehousing, a company can concentrate on important areas like marketing or manufacturing. When the volumes of inventory increase, contract warehousing is beneficial. Apart from assembling the goods, the contracted party can provide freight audits, order entry system operations, inventory management, and the picking and packaging of the goods. Another advantage is the effective management of seasonality in products. With third party warehousing, a firm can increase geographical coverage, with a network of facilities. A firm can gain flexibility in testing new target markets, with the help of innovative distribution ideas and cost-reducing product handling procedures. But when contracting warehousing to outside parties, the company may lose control over its logistics function. Third-party service providers can run and manage warehouses. Using systems like warehouse management systems, along with radio frequency scanning and bar code labeling, they can manage and track the movement of goods, from initial receipt to outbound shipment. Information like advanced shipment notifications can be generated and distributed to the retail partners in the supply chain.

15.7.3 Inventory Management

Another potential area of outsourcing is inventory management. Many firms are reducing the inventory they carry, to reduce the overall costs in the entire supply chain. By outsourcing inventory management, a firm can reduce cost pressures caused by new products or scarcity of assets. The major effect of outsourcing

inventory management is on inventory costs. When third party suppliers offer asset-based facilities such as warehouses, which can be combined with inventory management functions and services, it will eventually lead to improved asset productivity, which will be reflected in performance measures such as return on investment, inventory turnover, and profit margin.

15.7.4 Information Systems

Information technology, when used appropriately, can help in reducing coordination costs. Firms can implement IT systems such as integrated logistics systems, JIT systems, electronic hierarchies and markets and enterprise integration. If a firm finds that the consolidation of various software programs can be a problem, it can go in for outsourcing. The activities in an information system that can be outsourced are freight payment and auditing, cost accounting, logistics management tools for monitoring, booking, tracking, tracing, and inventory management.

15.7.5 Packaging

Packaging plays an important role in overall supply chain fulfillment. Third-party logistics (3PL) service providers often have the ability to do final product packaging in their warehouse, thus eliminating the need to ship the product to off-site packaging companies. This, in turn, means reduced product handling, reduced cycle time and reduced costs. These providers can offer a variety of packaging services like custom pallets, display shippers, inserts and coupons, labeling and printing, repackaging/ conversion, and wrapping/ bundling.

Example: Tenzo Tea Outsources Order Fulfilment to a Specialist Fulfilment Company

Tenzo Tea Outsources Order Fulfilment to a Specialist Fulfilment Company Shopmonk for Ensuring Reliable Deliveries to Customers at Very Affordable Prices. *Tenzo Tea* is a premium matcha sourced directly from Japanese tea farmers who are dedicated to cultivating the highest quality leaves. This company founders did not have a clue on packaging, fulfilment even though they had come up with a great health drink. Initially they were handling the orders themselves to ensure quality product delivered to the customers. But as the volumes increased to 10000 per month from a figure of 100 per month, the founders realized they cannot handle the fulfilment themselves anymore. Their criteria for selecting the outsourcing partners were quality and reliability. After talking to some friends in the industry, they finally chose Shopmonk who has experience in packaging, warehousing, inventory management and fulfilment functions.

Source: https://www.shipmonk.com/case-studies/tenzo-tea , Company case study, 2022, Accessed on 06/09/2022

15.8 Advantages and Disadvantages of Outsourcing

Outsourcing carries with it, certain advantages and disadvantages, as briefed below:

15.8.1 Advantages of Outsourcing

Focus on core competencies: An organization can concentrate on its core competencies, by outsourcing regular and mundane jobs.

Use of best practices and improved business process: By outsourcing, an organization has a choice to select outsourcers, who adopt best-in-class practices.

Becoming more competitive: An organization can respond more effectively to changing market demands. It also allows companies to gain more scalability.

Reduced cost and access to advanced technologies: Outsourcing provides companies access to the latest technologies. Vendors can also achieve economies of scale, bringing down the overall cost in the system.

15.8.2 Disadvantages of Outsourcing

Loss of expertise: Outsourcing can lead to a decrease in or a total loss of in-house expertise. Outsourcing of an activity or function also increases the organization’s vulnerability, as it becomes partially or totally dependent on a service provider.

Policy/ procedure: Organizations need to modify existing policies and procedures or develop new ones to coordinate with service providers. Quality control policies and problem resolution procedures need to be in place to address any situations that arise with regard to the quality of services, being provided by the service providers.

Staff morale: Staff morale issues play a significant role in outsourcing arrangements. These issues can range from layoffs to reallocation or re-training. Companies should address these issues effectively, using change management techniques. As mentioned earlier, training and education of employees, to help them adjust to new methodologies and new environment, can address these issues.

Loss of control: A firm may lose control over its operations when it outsources its products or services. The information that a firm needs to manage the business and future growth effectively may not be communicated by the supplier. Hence, there is a need to have reliable suppliers, who can give the firm information about the advancements in technology in their industry.

Loss of client focus: Sometimes, there may be a mismatch between the supplier's objectives and the firm's goals. As a result, conflicts of interest may arise between the buyer and the supplier. Conflicts of interest may also arise if the supplier provides the same services to other firms.

Example: Fisker Inc. chooses Outsourcing to Deliver Huge Volume of Quality Vehicles in a Short Time

Fisker Inc. is an American electric vehicle automaker based in Southern California. The auto maker built various innovative electric vehicles which the customers liked. The company has designed a new vehicle Fisker Ocean which can go upto 300 miles on one charge. The company announced deliveries to the customers by Nov 2022.The Company, unlike other auto makers, believes, outsourcing manufacturing to a trusted partner is the way to go. The chosen partner can maintain quality and ensure reliability in deliveries. If it has to have its own facility, the growth will be slow.

Source: https://www.forbes.com/sites/alanohnsman/2021/11/21/fisker-bets-on-outsourced-production-with-electric-ocean-suv/?sh=5292ced32967 November 21, 2021, Accessed on 06/09/2022

15.9 Outsourcing Practices

Several outsourcing practices are followed in the supply chain to make the process more effective. Some of the widely adopted outsourcing practices are:

- Vendor Managed Inventory (VMI)
- Third-Party Logistics (3PL)
- Fourth Party Logistics Providers (4PL)

15.9.1 Vendor Managed Inventory (VMI)

Vendor managed inventory is necessary for improving multi-firm supply chain efficiency. The vendor monitors the inventory of the buyer and makes deliveries periodically, according to the requirements of the organization. The advantage of this is that the transactions that are usually initiated by the buyer, like order processing and other activities, are carried out by the supplier. The firm is, hence, relieved of the burden of managing the inventory. Sometimes, financial aspects related to inventory are also transferred to the vendor. An organization having VMI agreements with its suppliers will benefit, in terms of improved services and reduced costs.

Reduced costs: At times organizations are forced to maintain high inventory, because of uncertainty in demand, increasing costs for the firm. If the firm has VMI, it lessens the burden of uncertainty in inventory requirements, as the supplier tracks the inventory levels from time to time. It allows smaller buffers of capacity and inventory, thereby reducing the costs for a firm. With VMI, the frequency of replenishment is usually increased from monthly to weekly or sometimes even daily. This is beneficial for both the company and the supplier. The vendor can make replenishment decisions tuned to operational needs, and also have heightened awareness of trends in demand.

With VMI, there is greater coordination that supports the suppliers' need for smoother production, without sacrificing the buyer's service and stock objectives. Transportation costs can also be reduced. The supplier is allowed to coordinate the resupply process, instead of responding automatically to orders as they are received.

Improved service: Customer service is an important differentiator for successful companies. From a retailer's perspective, product availability is an important measure of service. If the customer does not find a particular product, when he walks into the store then it means a loss for the firm, in terms of sales as well as goodwill. With VMI, the coordination of replenishment orders and deliveries across multiple customers helps to improve service. A non-critical delivery for one customer can be diverted for a day or two, to enable a critical delivery to another customer. With the ability to balance the needs of all the partners, the supplier can improve the system's performance, without harming any individual customer. The supplier has a more accurate view of demand and can plan more effectively, which leads to better service.

Efficient technological support is needed for the successful implementation of the VMI. Electronic Data Interchange (EDI) helps in enabling the process of VMI. VMI, combined with the right technology, can be beneficial to the firm.

15.9.2 Third-Party Logistics (3PL)

With customer service gaining importance, companies are using various methods to provide products, on time and with the right quality. Traditionally, firms have attempted to meet increased service requirements, through many tried and tested approaches such as increased inventory, expedited transportation, and on-site service representatives. While these approaches may have succeeded in the past, in today's market place, corporations need to provide substantially increased levels of service that will include several requirements. They are e-procurement, configure-to-order capabilities, complete supply chain visibility, virtual inventory management, and the requisite integrating technologies. The investment, necessary to procure these technologies and develop the skills to meet these new expectations, is proving to be too costly for most corporations. To save on costs, many corporations have turned to third-party outsourcing. Third-Party Logistics (TPL or 3PL) involves the use of an outside party to take care of the company's product distribution fully or partly. Major 3PL companies provide services such as freight consolidation, inventory management, bar coding, private labeling, as well as repair, replacement or destruction of returned goods. There are many reasons for the global growth of 3PL. Manufacturing companies want to focus on their core competencies and take advantage of the low distribution costs and improved service that 3PLs offer. In addition, the increased interest of manufacturers in one-stop shopping for logistic services and the difficulties associated with running distribution facilities overseas are contributing to the popularity of 3PLs. 'One-stop

shopping'[2] pressure has resulted in many 3PLs having partnerships with warehousing companies, trucking companies, freight forwarders, customs brokers and airfreight operations.

An interesting example of 3PL is the Dell Computer Corporation. Dell manages its end customers, through direct distribution channels. When a customer places an order on Dell's website, the product is ready for delivery 36 hours later. It has an agreement with United Parcel Service (UPS). UPS, as and when it gets an e-mail from Dell, takes the monitors from the suppliers' stocks and coordinates it, to get to the customer. By doing so, the company saves freight costs of USD 30 per display unit.

Exhibit 15.2 shows how Barista has benefited by utilizing the services of Safexpress, as a 3PL provider.

Exhibit 15.2: 3PL at Barista

Barista, one of the leading coffee outlets in India is one of the best examples of transparency in supply chain operations. The company, which has 82 outlets across 11 cities in India, serves around 15,000 people every day. Barista manages this huge network with minimal inventory. The logistics function of the firm is managed by Safexpress. Safexpress looks after the distribution and inventory requirements of Barista outlets. It operates from its mother warehouse in Delhi, which supports three regional warehouses in Mumbai, Kolkata, and Bangalore.

Inventory management is important for Barista because 95% of the space at its outlets is occupied by seats for customers (the remaining is for administration work). Hence there is little or no space left for inventory. Inventory, thus, has to be replenished daily. In such a case, the efficiency of the supply chain becomes critical and requires efficient management of logistics.

All the three regional warehouses in Mumbai, Kolkata, and Bangalore have one week's stock of fast-moving items and three week's stock of slow-moving items. The logistics strategy of Safexpress focuses on reducing product response time, thereby ensuring that customer demand is met at the right time and in the right place. To develop this strategy, the firm analyzed the customer demand pattern, studied transit time reliability and captured real-time data. Safexpress believed that the supply chain strategy should be aligned with the business; only then can business partnerships lead to a win-win situation for the parties involved.

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[2] One-stop shopping offers the potential customer minimal proposals to evaluate and allows multiple functions to be outsourced or out-tasked for a better price. The primary contractor will be the focal point to the facility manager, even if there are subcontractors supplying services.

Safexpress rationalized costs and provided effective logistics solutions, through expert logistics manpower, and optimum utilization of resources. The 3PL provider is streamlining its warehouse management, by developing innovative software and web-tracking facilities that will help it track orders quickly. The company's experience in distribution and inventory management has been beneficial for Barista.

Source: ICFAI Research Center

15.9.3 Fourth Party Logistics (4PL) Providers

Another concept that is gaining importance in the supply chain context is fourth-party logistics. This concept was developed, by the consulting firm Accenture in the 1990s. It was defined as the use of a fourth party to integrate and manage a company's logistics resources and providers, including third-party logistics providers and transportation providers. Through alliances between the best-selected third-party service providers, technology providers and management consultants, 4PL creates a unique competitive advantage for the firm.

Third-party logistic providers focus on operational issues, implementation, and execution, whereas 4PL combines the capabilities of the management-consulting firms and the third-party logistics providers. In 3PL, an outside company is used for providing comprehensive supply chain management services like warehousing, transportation, etc. In 4PL an outside company is used as a logistics integrator, to help firms achieve their strategic objectives.

The main activities of the fourth party logistics providers are:

- In the initial stages, the 4PL helps in the reinvention of the supply chain, by aligning business strategy with the supply chain strategy, with the help of technology that helps in integrating operations, both within and across supply chains.
- In its transformation efforts, the 4PL focuses on improving specific supply chain functions like sales and operations planning, distribution management, procurement strategy, and customer support.
- In the implementation stage, the 4PL manages the implementation of recommendations including business process realignment, systems integration across the client organizations and service providers, and transition of operations to the 4PL delivery team. During the process, careful attention is paid to the changes taking place in the organization and their impact on the employees. This is to ensure that the change process moves smoothly.
- The fourth and final level is execution. A 4PL provider takes on operational responsibility for multiple supply chain functions and processes. Apart from the traditional third-party transportation management and warehouse

operations, it also includes manufacturing, procurement, demand forecasting, network management, customer service management, inventory management, and administration.

4PLs facilitate single point reference for all logistics needs, possess knowledge of logistics to obtain the most efficient and effective solutions, and have a strong base to network customer systems. In India, multinational companies like IBM, Dell, Nike, and Philips have handed over their logistics operations to 4PLs. A 4PL responds effectively to the broad, complicated needs of today's organizations, by delivering a comprehensive supply chain solution. This solution is focused on all elements of supply chain management, provides continuously updated and optimized technologies, and is tailored to specific client needs.

Example: Gap Inc achieves Speed and Flexibility in Supply Chain by going for "Vendor managed Inventory" practice of outsourcing

The Gap, Inc., commonly known as Gap Inc. or Gap, is an American worldwide clothing and accessories retailer. The company management had found issues with supply chain and inventory management during the annual review. The consumer preferences changed during the pandemic which led to glut in inventories and huge losses. The company management wanted to go back and fully gain the speed and flexibility it had in supply chain due to the practice of outsourcing called "vendor managed inventory". This means the retailer works closely with vendors to buy inventory more frequently, and the vendors holds it for the company and the company gets it only when needed instead of advanced buying and storing. Also, the vendors keep the fabric with them, and the company can postpone colouring them based on customer preferences. This practice will enable the company to achieve Speed and Flexibility.

Source: https://sourcingjournal.com/denim/denim-brands/gap-inc-earnings-call-old-navy-banana-republic-inventory-dress-clothes-office-368041/ August 30, 2022, Accessed on 06/09/2022

15.10 Forms of Outsourcing

There are many ways to outsource products and services. Some popular methods are discussed in the following paras.

Off-shoring (offshore outsourcing): Off-shoring is the work done for a company, by people in another country that is typically done at a much lower cost. Outside of costs, off-shoring may be used to complete tasks that the company may not be equipped to handle in-house. Call centers are a popular service that is often outsourced to other countries. Off-shoring is often blamed for increasing unemployment in various countries, due to the lack or elimination of jobs.

Outsourcing versus Off-shoring: The terms “outsourcing” and “offshoring” are often used almost synonymously. However, there is a technical difference.

When a company **outsources**, it buys from a third party a part or service it used to produce itself. This does not necessarily mean that the product is outsourced *abroad*, although it can be. For instance, General Motors, a US company, can outsource production of a certain car part to an Indian company Like Sundaram Fasteners. The Indian company, in turn, can outsource the production of various components of that part, to various other local companies.

When a company **off-shores**, it shifts the location of a service or production of a part, to a location abroad. This can include companies, who outsource to foreign companies- in the above example, GM off-shores production of a certain part to an Indian company, which in turn outsources (but does not offshore) various components of the production, to other local companies. However, off-shoring also includes companies, who transfer production or services to a location abroad, *without* outsourcing the job. So, for instance, if GM opens a factory in India, and shifts production of a car part to the factory in India, it is off-shoring but *not* outsourcing - it is still an American company running the factory, rather than an Indian one.

Near-shoring: It is a form of outsourcing, where an organization outsources its business processes to an outsourcing partner, who provides cheaper services. The main differentiator between off-shoring and near-shoring is that the outsourcing partner in near-shoring is located geographically closer than the partner in off-shoring. For example, if India outsources some textile work to Bangladesh or Pakistan outsources some IT jobs to India, they come under near-shoring. It is very common in Europe, where many countries are closely connected with different core competencies.

Earlier, outsourcing meant sending some of an organization's processes, to lower-cost countries such as India, China, the Philippines, etc. But today, more organizations are moving towards near-shore outsourcing, because it offers greater security and constancy, along with cost-effectiveness. These reasons have made near-shoring a good alternative to off-shoring. Organizations decide on near shoring because there are fewer risks and uncertainties when compared to outsourcing the work to an offshore partner.

Countries such as Canada and Mexico have good IT infrastructure and offer lower-cost services. These countries are also closer to the U.S and have experienced and skilled professionals, who can provide high-quality IT services. Such advantages have made these countries an ideal choice for near-shoring. The close proximity to these countries has made outsourcers develop better working relationships, communication, project management, quality control, and better services, to ensure smooth and efficient supply chain management.

Co-sourcing

Co-sourcing is a business practice, where a service is performed by staff from inside an organization, along with an external service provider, who provides routine assistance to

- In-house auditing for operations and control
- Evaluations in peak period activity,
- conducting special projects such as fraud investigation or plant investment Appraisals.

Another example is outsourcing part of software development or maintenance activities to an external organization while keeping the rest of the development in-house. Activities such as HR and administrative tasks can also be co-sourced. Usually, in high-tech strategic areas like Defence, Space, Atomic Energy, etc., where information security risks are very high, technologies and products are developed jointly to minimize risks and meet the exacting requirements of the project or program.

Counter-wave outsourcing

The most recent trends in outsourcing and off-shoring are exactly the opposite, as companies are going back to perform tasks themselves and develop facilities back in their home locations. For example, Dow Chemicals, BASF, GM, and many more US MNCs, who have been outsourcing to low-cost locations in other countries, are now creating new high-tech manufacturing facilities to leverage the energy situation in the US.

- Many firms are undoing their steps in outsourcing because the consequences were not entirely as expected. According to a Deloitte Consulting survey, a quarter of the companies, which had outsourced tasks had to reverse their strategy. Many big companies like Lenovo are increasingly considering turning around strategies of outsourcing. Despite saving money, companies have often faced unexpected drawbacks from outsourcing:
- Miscommunication or lower quality of intermediate products, delaying production.
- Many jobs that were outsourced abroad have been replaced, by technological advances.

Strategic Outsourcing: It is the process of engaging the services of a provider, to manage essential tasks that would otherwise be managed by in-house personnel. This is often done to allow a business to use its assets gainfully and facilitate the realization of its strategic objectives. It is an arrangement, emerging when firms rely on outside sources for specialized and cost-effective

capabilities that supplement the existing capabilities of a firm's value chain. At the strategic level, outsourcing allows not only the transfer of control to an outsider but also the method of manufacture using a different technology or process. In strategic outsourcing, a company may transfer an entire product, a product line, or an entire plant for strategic value.

The major issue in strategic outsourcing is losing control of the technology, process or product. Associated risks are- degrading of quality, delayed deliveries, production bottlenecks, theft of proprietary design or process, and inadvertent creation of a competitor. Another high risk in strategic outsourcing is that a company may effectively transfer control of a proprietary design or process that, if not controlled, may find its way into the hands of a competitor wresting competitive advantage.

Starters should never engage in strategic outsourcing. A careful analysis, of current economics and the opportunities that present themselves, will determine whether or not it is sensible. When outsourcing, a company should be looking for economic or technical advantages that a supplier can provide. A supplier as inefficient as the company cannot produce any gains. To ensure that the strategic outsourcing process is effective in yielding desired results, scope, boundaries, and performance levels should be well defined and documented.

Ford India attributed the reasons for the recall of 1.7 lakh vehicles, to a poor-quality supplier. In its aim to be cost-competitive in the Indian market, the company did not exercise adequate controls in its strategic outsourcing process to ensure quality.

Example: Infosys (the IT Major) is adopting Nearshore outsourcing approach to service US clients from offices in Canada

Infosys has built its business primarily using offshore development of outsourcing model serving customers in US and other geographies. Of late, the company has also enhanced its local US staff significantly to address some of the Immigration issues for temporary workers. But now the company has initiated the practice of "near shore" outsourcing. It has selected countries like Canada which are in the same time zone, where educated person power is available, and the costs are low. The company has opened two centres in Canada.

Source: https://www.livemint.com/companies/news/it-firms-choose-multi-shore-delivery-to-meet-client-needs-11630947792553.html September 7, 2021, Accessed on 06/09/2022

15.11 Emerging Trends in Outsourcing

2015 saw companies embrace increased standardization and cloud computing options of all flavors, use their leverage to renegotiate or rebid their deals, and settle into a best-of-breed approach to outsourcing. Experts expect a number of

shifts in the industry that include a focus on hyper-speed deal-making, the emergence of new multi-sourcing headaches and potential cures, increased man-machine collaboration, and significant expansion of the service provider universe.

Security takes center stage: Security is top of mind from the boardroom and it will influence outsourcing strategy. Indeed, the security risk is poised to increase as telematics and the Internet of Things (IoT) become more prevalent in consumer and commercial products. Increasing numbers of threat actors will use increasingly creative ways, to exploit weaknesses, often with devastating effect. Regulators will impose increasingly large fines for poor security. Service providers have often been the weakest link in a company's security and will need to find better ways to address it.

"The threat profile changes every day and with every added protection comes a new vulnerability, and it is becoming harder and harder to tie products together, to deliver a robust security solution," says Rahul Singh, managing director at outsourcing consultancy Pace Harmon.

Offshore captives come back: Companies will leverage the experience they have gained in process maturity, as a result of working with outsourced offshore teams and set up their own shops, predicts Randy Vetter, senior director with outsourcing consultancy Alsbridge. "The objective of this approach will be to reduce costs by taking away the provider's margin, as well as increase flexibility by removing contractual constraints." Companies are likely to get smarter about insourcing, in general, says Alsbridge director Mary Patry. "Rather than insourcing as a knee-jerk reaction to a bad outsourcing relationship and repeating past mistakes, clients will benefit from lessons learned and be smarter about, what and how they repatriate."

Production workloads—and more—hit the cloud: "There's no denying Amazon's first-mover advantage with the public cloud. And IT shops, who reached for the cloud first, did so with non-critical systems."

VMOs go mainstream: Multi-sourcing has multiplied the vendor management workload. "As clients look for ways to address the challenges of overseeing increasingly complex multi-vendor service delivery models, the vendor management office will establish itself, as a way to provide a high-level, enterprise-wide view, while managing day-to-day operational details and multiple touch points, between different providers in the service delivery chain," says Mike Slavin, Senior executive, Alsbridge.

Integration challenges surge: "Customers adopting an ever-larger number of emerging digital technologies will face an ever-larger integration challenge," says Rebecca Eisner, a partner in the law firm Mayer Brown. "Many of the most powerful cloud technologies will require integration efforts, comparable to

those required to install ERP systems. Because most companies do not have employees capable of managing multiple emerging technology platforms, they'll have to outsource service integration, incident management, and change management. Expect increasing partnerships among providers", predicts Mayer Brown partner Brad Peterson.

The service providers universe expands: "Customers will buy from an expanding list of technology providers," says Dan Masur, partner in Mayer Brown. "Customers will continue to turn to ITO, BPO, and cloud service providers, who have blazed a digital trail for help in becoming digital businesses. They will source services from an ever-expanding list of emerging and digital technology providers." Pace Harmon's Singh says that we will see more product-driven managed services, "as more product-oriented vendors, such as Cisco and others, move beyond just selling their products, to also delivering services around their products. It is expected to ramp up, in 2016, as very large clients are growing their managed services capabilities."

Multi-speed IT hits outsourcing: Gartner dubbed it "bimodal IT." McKinsey named it "two-speed." Outsourcing clients will recognize the need to take different approaches to manage the "run the business" part of IT and the "change the business" part this year. "Clients will use the bi-modal approach to implement commercial and contractual mechanisms with vendors, to clearly delineate the roles of the respective groups and to optimize the contributions of each, to the business," says Eleanor Winn, managing director at Alsbridge.

Vendors get soft(er): "After 20 years, vendors who have been accustomed to bending customers to their one-sided terms, by offering low prices, will come to realize that further market penetration - particularly penetration into core functions or large companies - will require a more accommodative approach, to meeting the needs of those companies," says Peterson, Mayor Brown partner. "Having exhausted the opportunities to move work to lower-cost people, ITO and BPO companies are now focused on moving it to machines," says Roy, the Operations Manager. "Buyers with contracts designed to purchase people will need to reconcile their contracts to this new world." Both customers and providers will have to rethink their deals as they integrate more Robotic Process Automation (RPA) into IT service delivery.

"Clients will rethink their sourcing strategies and how to build their RPA capabilities and providers will continue to build automation into their solutions," says Craig Nelson, managing director with Alsbridge. "Both parties will have to redefine roles and skills requirements for human jobs, as well as manage the touch points, between automation functions and jobs performed by humans. This will present a significant challenge for outsourcing relationships, as agreements will need to be flexible to accommodate these highly dynamic environments."

Agile sourcing emerges: With technology itself seeming to advance on a dime, outsourcing decision making will have to speed up. "Companies who decide on a digital strategy will execute quickly, to avoid seeing a technology shift or a competitor jumping ahead," predicts Peterson of Mayer Brown. "We see increasing numbers of clients deploying substantial negotiating teams, working on an agile basis to close smart deals fast."

Example: NSW (New South Wales) Government Moves from Total Outsourcing to a Mix of Insourcing and Outsourcing

NSW (New South Wales) Government Moves from Total Outsourcing to a Mix of Insourcing and Outsourcing Keeping the Security and Delivery Aspects in Mind for Citizen Services. NSW government terminated its 6-year outsourcing contract with Unisys based on the underperformance of the company. Now the government has shifted to a blend of Insourcing (getting things done through some 150 own staff) and outsourcing. Security, delivery of services are the criteria for deciding insourcing or outsourcing. Some 13 services will be provided with in house staff.

Source: https://www.itnews.com.au/news/nsw-govt-replaces-unisys-it-services-with-blend-of-insourcing-outsourcing-563303 April 15, 2021, Accessed on 06/09/2022

Activity 15.2

One of the advantages of outsourcing is in the area of inventory management.

Explain the concept of Vendor Managed Inventory and its advantages and disadvantages.

Identify the areas, which are generally outsourced.

Check Your Progress - 2

6. Which, of the following, is not a major issue in outsourcing?
    a. Involvement of suppliers
    b. Single Vs Multiple Sourcing
    c. Local, National, and International Sourcing
    d. Selection of suppliers
    e. Quality Management

7. Which, of the following, is the most important requirement in outsourcing?
   a. Clarity of requirements
   b. Competence of the supplier
   c. Infrastructure
   d. Resources of the supplier
   e. Capability to deliver as per requirements
8. Which, of the following, is not recommended for outsourcing?
   a. Transportation
   b. Warehousing
   c. Working capital management of the company
   d. Inventory Management
   e. Packaging
9. Which is the most disadvantageous feature of outsourcing?
   a. Attrition of employees
   b. Loss of expertise
   c. Staff morale
   d. Changes in policies
   e. Loss of control
10. In Fourth Party Logistics (4PL), which is the additional requirement over 3 PL?
   a. Freight consolidation
   b. Inventory Management
   c. Bar coding
   d. Management of Returned Goods
   e. Integrate and Manage

15.12 Summary

- Outsourcing is extensively used by both manufacturing and service industries.
- Many business functions are being outsourced to enable organizations to concentrate on their core competencies. Companies outsource for strategic, tactical, and transformational reasons.
- Improving business processes, gaining access to world-class activities, and sharing risks are some of the strategic reasons for outsourcing.
- Tactical reasons include controlling operating costs and making capital funds available for other uses.

- Transformational reasons include bringing faster and newer solutions to customers, responding to shorter product cycles, and tackling competitors.
- An important step in the outsourcing process is decision-making. The various steps in decision-making are: analyzing technological trends, assessing strategic alignment and core competencies, cost analysis, and considering non-cost factors.
- A number of other aspects in outsourcing should be considered like the involvement of suppliers, the supplier base, single vs multiple sourcing, or local, national, or international sourcing.
- There are various forms of outsourcing like vendor-managed inventory, third-party logistics providers (3PL), and fourth-party logistics (4PL) providers.
- Vendor managed inventory is important for improving multi-firm supply chain efficiency. The vendor monitors the inventory of the buyer and periodically supplies, according to the requirements of the organization.
- TPL or 3PL involves the use of an outside party, to take care of the company's product distribution fully or partly.
- 4PL combines the capabilities of management consulting firms and third-party logistics providers.

15.13 Glossary

3PL (Third-Party Logistics): Covers such activities as freight consolidation, warehousing, inventory management, bar coding, etc., performed by outside parties.

4PL (Fourth-Party Logistics): Over and above the activities of 3PL, integration and management of resources are performed by the vendors.

Core competence: Specific capability of the organization, not available with competitors.

Co-sourcing: Co-sourcing is a business practice, where a service is performed by staff from inside an organization, along with an external service provider

Counter-wave outsourcing: It is form in which companies are going back to perform tasks themselves and develop facilities back in their home locations.

Near-shoring: It is a form of outsourcing, where an organization outsources its business processes to an outsourcing partner, who provides cheaper services.

Off-shoring: Off-shoring is the work done for a company, by people in another country that is typically done at a much lower cost.

Outsourcing: Strategic use of outside resources to perform activities, traditionally handled by internal staff and resources.

Strategic Outsourcing: It is the process of engaging the services of a provider, to manage essential tasks that would otherwise be managed by in-house personnel.

Vendor Managed Inventory (VMI): The vendor monitors the inventory of the buyer and makes deliveries periodically according to the requirements of the organization.

15.14 Self-Assessment Test

1. What is outsourcing and why it is resorted to by organizations? Explain.
2. What are the major areas of outsourcing and why?
3. What are the major issues to be addressed in outsourcing?
4. What are the major advantages and disadvantages of outsourcing?
5. Distinguish between 3PL and 4PL.

15.15 Suggested Reading / Reference Material

1. Ashley McDonough, Operations and Supply Chain Management Essentials You Always Wanted to Know: 15 (Self Learning Management Series) Paperback – 1 January 2020.
2. Russel and Taylor, Operations and Supply Chain Management, 10ed, ISV Paperback – October 2019.
3. Chopra and Kalra, Supply Chain Management 6/e Paperback – 17 June 2016.

15.16 Answers to Check Your Progress Questions

1. (d) Cost reduction and improvement in speed and service quality.

The most important reasons for outsourcing by firms are cost reduction and improvement in speed and quality.

2. (a) Non-core processes.

These are the activities which are can be performed by anybody and are normally outsourced.

3. (a) To focus on core competencies.

Core competence is the actual expertise of the organization. To focus on core competence is the best advantage of outsourcing as resources can be better utilized.

4. (c) Ability to deliver as per customer requirements.

The outsourcing partner should have the ability to meet customer requirements. It is the most important criterion, for qualifying as an outsourcing partner.

5. (b) The manufacturer on whom the order was placed is responsible.

When a product fails in the field, it is the responsibility of the manufacturer, even if the activity is outsourced.

6. (d) Selection of suppliers.

Outsourcing is done to qualified suppliers and therefore, it is not a major issue in outsourcing.

7. (e) Capability to deliver as per requirements.

The outsourcing partner should have the capacity to meet the requirements. It is the most important requirement in outsourcing.

8. (c) Working capital management.

Working capital management is an internal responsibility of the firm. It is not recommended for outsourcing, as it is a purely internal day to day aspect.

9. (b) Loss of expertise.

Firms may lose expertise due to the transfer of technology and may gradually lose control of the product. It is the most disadvantageous feature of outsourcing.

10. (e) Integrate and manage.

To integrate and manage is the additional requirement in 4 PL over 3 PL.

Unit 16

Measuring Supply Chain Performance

Structures

"Measure what is measurable and make measurable what is not so."

- Galileo

16.1 Introduction

For improving supply chain performance, organizations should measure all parameters which are aligned with goals and look for new measures and find ways to measure them.

In the previous unit, we discussed, 'Role of outsourcing in a supply chain'. The concepts covered include overview of outsourcing, reasons for outsourcing, outsourcing process, issues in outsourcing, areas of outsourcing, advantages and disadvantages of outsourcing, outsourcing practices, forms of outsourcing and emerging trends in outsourcing.

In this era of global markets, more and more companies are building supply chains to enhance their competitiveness, customer responsiveness, and bottom-line profits. Companies wish to measure/ monitor their supply chain performance on a regular basis so that they can see if there are ways to improve the effectiveness of their supply chains. For this, companies need to develop reliable performance measures and metrics that gauge the soundness of each and every link in the supply chain. This unit looks at the need for supply chain performance measurement and draws up a framework for developing

appropriate supply chain metrics. It also looks at different approaches to measuring supply chain performance.

In the present unit, we will discuss measuring supply chain performance. The concepts covered in this unit are overview of supply chain performance measurement (SCPM), framework for developing supply chain metrics, performance metrics and measures in a supply chain, requirements for designing an ideal SCPM system, and approaches to SCPM.

16.2 Objectives

By the end of the unit, you will be able to:

- Define Supply Chain Performance Measurement (SCPM)
- Explain the Framework for Developing Supply Chain Metrics
- Identify the Performance Metrics and Measures in a Supply Chain
- Examine the Requirements for Designing an Ideal SCPM System
- Discuss Approaches to SCPM

16.3 Overview of Supply Chain Performance Measurement (SCPM)

Today, firms compete not only on their products or services but also on the strength of their supply chains. They have discovered that they can come out with differentiated product offerings and offer better value to their customers, only when they make improvements, in all the supply chain processes. All the activities and processes in the supply chain are equally important as they impact quality, cost, delivery, and ultimately customer satisfaction. They include product development and engineering, procurement and material control, production planning and control, testing, packing and transportation, delivery and installation, commissioning and handing over to the customer. This requires continuous improvements in the supply chain performance, across all these processes. This is discussed at length in subsequent paragraphs.

16.3.1 Supply Chain Reengineering

Supply chain re-engineering aims at analyzing the existing supply chain, identifying opportunities for improvement, and planning and implementing improvement initiatives. The major task is to evaluate cost efficiency and ensuring that costs are driven down, without compromising quality. The vast scope and importance of supply chain engineering call for a logical and systematic approach, to harness all resources-material, manpower, machines, etc. optimally. Based on the initiatives taken by various companies across the world, four distinct elements have been identified, viz., customer service, methodology, best practices, and tools and techniques.

- Market-driven customer service strategy provides the inputs for designing the supply chain.

- Methodology provides guidance to address the market-driven process in a systematic manner, with the help of global benchmarks.
- Every organization designs its own supply chain strategy, suiting the specific needs of its product-mix, processes, people, etc.
- There are no established tools and techniques exclusively for supply chain management, but tools like SWOT analysis, etc. be effectively applied.

Example: Diebold Nixdorf (American Multinational Financial and Retail Technology Company) is Planning to Monitor Input Costs Closely

Diebold Nixdorf (American Multinational Financial and Retail Technology Company) is Planning to Monitor Input Costs Closely as Part of "Supply Chain Reengineering" to Arrest Decline in Profit Margins. Diebold Nixdorf specializes in the sale, manufacture, installation, and service of self-service transaction systems (such as ATMs and currency processing systems), point of sale terminals, physical security products, and software and related services for global financial, retail, and commercial markets. The company management has strategies in place to manage costs well to protect the profit margins for the shareholders without affecting customer service. Recently they have added "fuel surcharge" as percentage of fuel costs as part of contracts. This will ensure fuel price increases do not increase costs. As part of "supply chain reengineering", the company is closely monitoring the input costs by being proactive in procurement and changing the list prices based on raising costs. The company strategy is to face future challenges proactively rather than reactively.

Source: https://www.fool.com/earnings/call-transcripts/2022/05/10/diebold-nixdorf-dbd-q1-2022-earnings-call-transcri/ May 10, 2022, Accessed on 08/09/2022

16.4 Framework for Developing Supply Chain Metrics

Today, organizations have extended supply chains, which link them to various vendors, who supply raw materials, components, and finished products, and to the distributors, who carry their products to the end-customers, through various channels. Most of these vendors and distributors extend their services to more than one manufacturer; so, there are overlapping supply chains. Since the supply chains are complex, it is difficult for supply chain managers to develop appropriate metrics to measure the overall supply chain performance. And comparing the effectiveness of a manufacturer's supply chain, with its competitors, becomes an almost impossible task.

Douglas M. Lambert and Terrance L. Pohlen have laid out a framework for developing supply chain metrics that align the performance of key business processes, across different companies that constitute a supply chain.

This framework attempts to measure the performance of every supply chain link, starting from the manufacturer to the final consumer. In Lambert and Pohlen's analysis, every member in the supply chain acts as a customer to the previous member up the supply chain, and as a supplier to the following member down the supply chain. At every link, there is a supplier-customer relationship, and hence, this framework describes every supply chain as a set of supplier-customer pairs. Measuring customer relationship management and supplier relationship management processes at each link will help determine the overall effectiveness of the supply chain. The following steps need to be followed to determine and improve the effectiveness of the supply chain.

- Identify key supply chain links
- Evaluate the links
- Draw up Profit and Loss (P&L) statements
- Realign supply chain processes
- Align non-financial measures with the P&L statements
- Compare across firms and replicate

16.4.1 Identify Key Supply Chain Links

The first step in developing metrics for supply chain performance is to make a graphical representation of the supply chain. This should depict all the key constituents of the supply chain and the paths, through which materials and information flow among them. These graphs help managers to identify the links crucial for the supply chain's success, enabling them to concentrate on these links, to improve the performance and profitability of the supply chain.

16.4.2 Evaluate the Links

Once the crucial links in a supply chain are identified, the next step is to evaluate the performance at each of these links. This can be done, by observing how the supplier and customer relationship is managed at each of the links. The supplier may work in close coordination with the customers to chalk out procedures that minimize the costs for the customers, which in turn increases sales. The supplier may initiate Supplier Managed Inventory (SMI) systems, where he offers to take over the ownership of and responsibility for, the customer's inventory. This reduces the inventory carrying costs for the customer and the forecasting costs for the supplier. Customers also strive to maintain cordial relations with their suppliers, through effective Supplier Relationship Management (SRM) processes. The SRM processes may result in decreased costs, lower consumer prices, and improved product quality. Managers can measure the value created at each link by examining the SRM, CRM, and other Supply Chain Management (SCM) process initiatives, at each link.

16.4.3 Draw up Profit and Loss Statements (P&Ls)

Drawing up a P&L statement for every supplier-customer pair is the third step in developing supply chain performance metrics. The P&L statements give the exact value added, or financial benefits, resulting from the activities (SRM, CRM, and other SCM processes), undertaken by both the supplier and the customer at each link.

16.4.4 Realign Supply Chain Processes

P&L statements act as effective measures for gauging supply chain performance. They can form the basis for aligning various processes in the supply chain and improving their efficiencies. For example, SMI may result in additional costs for the supplier on account of increased inventory maintenance costs, but may also attract more business from customers, as they enjoy reduced inventory costs due to SMI. Both the firms (supplier & customer) will be in a better position to appreciate the results of aligning their processes if they undertake a combined profit analysis. This enables them to identify those supply chain practices, which result in maximum supply chain profitability. Thus, all the players in the supply chain can work out procedures for sharing the costs and profits, resulting from improved supply chain processes. By realigning the processes across the supply chain, firms can clearly identify the metrics that should be used for measuring the supply chain performance.

16.4.5 Align Non-financial Measures with P&L Statements

Although P & L and Economic Value-Added (EVA) measures help in tracking supply chain performance, they alone cannot help bring about overall supply chain performance improvement. Hence, managers should develop metrics to measure the effectiveness of basic tasks, involved in all the supply chain processes. For example, by increasing the efficiency of order picking- one of the basic order fulfillment tasks -, the efficiency of the order fulfillment process can be improved as reduced order picking time and increased accuracy would reduce order picking costs. When there are elaborate non-financial metrics, for each and every task of the supply chain processes, a manager can easily work out the EVA, through process improvements.

16.4.6 Compare across Firms and Replicate

The last step in measuring the overall supply chain performance is to find the overall increase in shareholder value and market capitalization of the firms in the supply chain. Then the best practices used in this firm should be implemented, throughout the supply chain.

Once the overall performance figures are available, a manager has to ascertain, whether the metrics being used are capable of helping the managers in bringing about the required process improvements or not. If the answer is negative, he can develop some other appropriate metrics. Thus, he can arrive at a balanced

mix of metrics, which are capable of measuring the performance of the supply chain.

Example: CBRE has Built a "Supplier Relationship Management" Framework to build Closer Collaborative Relationships with Key Suppliers

CBRE is world's largest commercial real estate services and investment company. The company has built a "Supplier Relationship Management" framework to support its procurement teams in building closer collaborative relationships with key suppliers. The company identified their key suppliers, evaluated each supplier link, created three segments, and worked the alignments needed with each supplier. The framework provides guidelines to the procurement teams to have the right conversations and govern their approach to building constructive relationships with their most crucial suppliers. KPI (Key performance indicators) are specified both at individual supplier level and across suppliers. The data for metrics are collected, analysed, and communicated to the suppliers. This will enable the company and its key suppliers align their processes, improve efficiencies, and reduce costs.

Source: How CBRE Built a Supplier Relationship Management Programme (procurementleaders.com) December 2021, Accessed on 09/09/2022

16.5 Performance Metrics and Measures in a Supply Chain

Firms use a variety of metrics to measure the effectiveness of functions like finance, operations, marketing, etc. But most of these metrics do not capture the performance of various supply chain processes that stretch beyond the physical limits of the firm. Therefore, firms had to develop metrics specific to the supply chain. Metrics that are used for measuring various supply chain activities are discussed below.

16.5.1 Metrics for Performance Evaluation of Planned Order Procedures

All the activities in a supply chain are triggered by customer orders. Hence, the process of measuring a supply chain's performance starts with evaluating the way the order is processed and filled by the firm. Order processing is critical, as the work of every other entity in the supply chain is based on the specifications given in the order. Some of the order-related aspects that help measure the effectiveness of order processing are the order entry method, the order lead-time, and the customer order path.

Order entry method

The order entry method used by a firm should be capable of capturing and disseminating appropriate order specifications, to various entities in a supply chain. Order entry is a crucial activity as the information circulated by it forms

the basis for various schedules prepared by the manufacturers and suppliers downstream. Hence, the ability of the order entry method to provide accurate information can be taken as a measure to evaluate the performance of the order procedure.

Order lead-time

Order lead-time or the total order cycle time is another metric, which organizations can use to measure the effectiveness of their order procedures. Order lead-time refers to the time that elapses, between the receipt of the customer order and the delivery of the goods. This includes time for order transmitting, processing, preparation, and shipping. A shorter order lead-time increases the supply chain response time, which in turn leads to enhanced customer satisfaction. Often, customers consider order lead-time as a major factor, when selecting a supplier/ manufacturer. Therefore, order lead-time can be used as a metric to evaluate the performance of order procedures in a firm.

Customer order path

The time and other resources utilized to fulfill a customer's order depend on the path traversed by an order. Tracing the path of an order enables the firm, to eliminate the stages and activities that do not add value to the product. Studying various stages that the order passes through also enables the firm to identify the areas that can be improved, using modern technologies and procedures like e-commerce, e-procurement, Electronic Data Interchange (EDI), and Just-in-time (JIT) practices.

16.5.2 Supply Chain Relationship Metrics

Nowadays, businesses outsource a sizeable portion of their activities, for either strategic or technical reasons. They also procure raw materials, parts, and spares, from different suppliers. This requires coordination between various suppliers and the manufacturer, to ensure that the supply chain functions smoothly. Therefore, the activities defining the relationships, between various constituents of a supply chain, have become a focus of supply chain performance measurement. The effectiveness of supply chain relationships depends on:

- The level and degree of information sharing, among the supply chain partners.
- Supplier-customer cost-saving initiatives.
- Quality improvements, resulting from co-operation between supply chain partners.
- Extent of coordinated efforts, to solve common problems in the supply chain.
- The functioning of suppliers in the supply chain.

16.5.3 Production Level Measures and Metrics

A manufacturing unit forms the heart of the supply chain. The manufacturing unit transforms raw materials into finished goods. Most of the activities in a supply chain are either planned to facilitate or are affected by the activity of manufacturing. Moreover, the effectiveness and efficiency of the manufacturing unit in producing goods has an impact on the cost of goods, their quality, and the time taken to satisfy a customer's need. Therefore, measuring the effectiveness of the manufacturing process is a must for gauging the overall performance of a supply chain. Businesses use a wide variety of measures to monitor the performance of their production processes. They include process efficiency, human resource efficiency, inventory levels, capacity utilization, production costs, etc. Some of the common metrics, used to measure the performance of a manufacturing process, are discussed below.

Product range

The range of products manufactured by a company has a profound influence on its supply chain strategy. Research shows that companies offering a wider range of products tend to be less efficient than those offering a narrow range of products. The companies with a wide product range often score low on innovation, value-added per employee, product turnout speed, etc. Hence, one can use the product range of a company, as an effective metric to measure the performance of a production facility.

Capacity utilization

Capacity utilization is another key measure of the performance of a production process. The extent, to which a firm is able to utilize its capacity, directly affects its ability to respond to customer demands. The capacity constraints are reflected in the firm's flexibility, lead-time, and costs.

Effectiveness of scheduling techniques

As mentioned earlier, the manufacturing unit acts as the heart of the supply chain; hence, the scheduling techniques used to plan manufacturing processes determine the agility of the entire supply chain. For example, if a manufacturing unit prepares its schedules based on JIT deliveries, there should be close coordination, between the supply chain partners with lower inventories in the supply chain. Effective scheduling techniques also contribute to the responsiveness of the supply chain to customer demand. Therefore, scheduling techniques provide an indication of the supply chain's performance.

16.5.4 Measures for Evaluating Delivery Links

The way a firm delivers goods and services to its customers determines the level of customer satisfaction. A delivery system operates in a dynamic environment,

so it is difficult to design appropriate metrics, for evaluating its performance. A way out is to evaluate the delivery link's performance, by studying its distribution modes and the costs associated with it.

16.5.5 Measures for Delivery Performance Evaluation

In any supply chain, the effectiveness of delivery is determined by the mode of distribution selected, the delivery channel, the location of distribution centers, and the scheduling of vehicles. A firm can measure its delivery performance by monitoring parameters like delivery-to-request date, delivery-to-commit date, order fill lead-time, percentage of goods-in-transit, the flexibility of the delivery system, and the percentage of faultless invoices. Apart from these parameters, the delivery performance also depends on the quality of information flow, between various depots of the delivery system.

Total distribution cost is an effective measure of the performance of a delivery system. The major components of costs in a distribution system are the transportation costs and the local delivery costs. The efficiency of a delivery system can be improved, by decreasing the delivery costs. This can be done by assessing the benefit that can be derived (against the cost incurred) from increasing the number of warehouses.

16.5.6 Measures of Levels of Customer Service and Satisfaction

Providing exemplary customer service is one of the primary objectives of a supply chain. Hence, the level of customer service provided by a supply chain can be used as a metric for measuring supply chain performance. The following are some performance metrics related to customer service.

Service flexibility

A customer's perception of the service provided by a firm depends on the firm's ability to provide personalized goods and services at the time and place, specified by the customer. This requires firms to adopt flexible manufacturing systems and quick response systems. Hence, the flexibility of a firm can be a metric for measuring customer satisfaction.

Response time for queries

Ability to provide timely response to customer queries, regarding the products and their availability, is another parameter to judge the level of customer service. Firms strive to minimize the response time, as delay in responding to queries leads to decreased customer satisfaction or the loss of the customer.

Post-transaction measures

Post-transaction activities like providing spares and after-sales service also add to customer satisfaction. A firm can measure the performance of these activities by comparing its own services with the service levels of its competitors or by analyzing customer perceptions, based on personal interviews.

Exhibit 16.1 shows on-time delivery performance at Amazon.

Exhibit 16.1: On-Time Delivery Rate at Amazon

The On-Time Delivery Rate (OTDR) represents shipments delivered by their estimated delivery date, as a percentage of total tracked shipments. OTDR only applies to seller-fulfilled orders. OTDR performance is considered when determining, which Transit Times you are eligible to set, and which may enable you to promise faster delivery times and improve your conversion. Sellers to Amazon should maintain an OTDR greater than 97% in order, to provide a good customer experience, but there is no penalty for not meeting the performance target at this time. Customers tell Amazon that receiving their orders on time and having the ability to track their packages are important factors, in their overall satisfaction with an order. Research shows that tracked orders have 60 percent fewer order defects and that tracking also helps reduce order inquiries from buyers.

The importance of on-time delivery. If sellers meet Amazon's targets for On-Time Delivery and Valid Tracking Rate, they may be eligible to offer reduced shipping or handling times on products.

Late or missed on-time delivery. This metric is intended to help you understand the cause of negative feedback and claims. When packages arrive late or are shipped without tracking, buyers are more likely to leave negative feedback or file claims. This directly impacts the seller's performance metrics. Therefore, it is important to review on-time delivery and tracking-usage rates regularly. Failure to meet Amazon's target for this metric generally does not result in the suspension of the selling account. However, it could cause negative feedback or claims, which could impact selling account status.

On-time delivery rate calculation. A package is considered on time if the following requirements are met:

Tracking information is recorded, within 48 hours of entering the shipment confirmation.

The package is delivered by the estimated delivery date, according to the carrier's tracking updates.

To calculate the percentage of packages delivered on time, we divide the number of tracked packages that were delivered on time, as confirmed by the carrier, by the number of packages that have valid tracking information. Your on-time delivery rate typically reflects your shipping performance data as of two weeks before the date you view the rate. This allows carriers time, to update delivery confirmation data in their databases. If a package is confirmed as shipped after the estimated delivery date, the package is not considered to be delivered on time.

Contd….

Relationship between the number of packages and the on-time delivery rate is the total number of packages buyers received on time. It is used to calculate the on-time delivery rate.

Source: Amazon Seller Central

Example: Walmart Strictly Ensures the "Supply Chain Metric" "Ontime Full in Full"

Walmart (the retail giant) Strictly Ensures the "Supply Chain Metric" "Ontime Full in Full" With Penalties to Ensure Prompt Customer Deliveries and Reduce Operational Costs. Walmart`s success and growth are primarily due to efficient supply chain management. The efficiency is achieved by defining the relevant metrics, measure the data, analyse the data against the goals and communicate the results to the concerned in the supply chain. Improvement plans are put in place to meet the targets. The whole idea is to drive performance excellence throughout supply chain.

The company is trying to improve the "on time in full" through penalties. The metric expects the supplier to supply full orders on time 90 percent of the time. If the percentage falls below 90%, a 3% penalty is raised.

Source: Walmart Raising the Supply Chain Metrics Bar - LMA Consulting Group, Inc. - Lisa Anderson (lma-consultinggroup.com) December 27, 2021, Accessed on 10/09/2022

Activity 16.1

Supply chain efficiency is very important for ensuring competitive advantage. Therefore, monitoring its performance continuously, to take necessary corrective and preventive measures, is essential.

Identify the steps to be followed, to determine and improve the effectiveness of the supply chain.

Is there a need to align non-financial parameters also in the profit and loss statement?

Check Your Progress-1

1. Why is performance measurement essential, in Organizational Performance?
   a. To change processes
   b. To change products
   c. To change people
   d. To change infrastructure
   e. To plan for continuous improvement

2. Which, of the following, is most important, to improve supply chain performance?
   a. Identification of key supply chain links
   b. Evaluating the links
   c. Making profit and loss statements
   d. Align non-financial measures with organizational performance
   e. Compare across firms and replicate
3. Which, of the following, is the focus of a Metric in SCM planned order process?
   a. Order evaluation
   b. Order entry
   c. Order lead time
   d. Customer order path
   e. First time turn-on rate
4. What is the purpose of a Metric, for supply chain relationships?
   a. Level and degree of information sharing
   b. Customer-supplier sharing initiatives
   c. Quality Improvement due to partnerships
   d. Problems solved jointly as % of problems reported
   e. Supplier performance
5. Which is the most effective metric, to ensure repeat orders and brand loyalty?
   a. Capacity utilization
   b. Effectiveness of scheduling techniques
   c. Product range
   d. Service quality
   e. Customer satisfaction

16.6 Requirements for Designing an Ideal SCPM System

Of the many metrics, which can be used for designing a Supply Chain Performance Measurement (SCPM) system, managers should only select those that can gauge the overall supply chain performance. Larry Lapide stated, "Throughout the last decade, companies have expended significant amounts of time and effort, to re-engineer their supply chains through business process change and technology focused on implementing integrated Supply Chain Management (SCM) principles." He has outlined some criteria for selecting supply chain metrics. They are as discussed below:

16.6.1 Process-based Metrics

Traditionally, firms used function-specific metrics, which were focused on improving the performance of individual functional departments. This kind of choice may result in functional departments optimizing their individual performances, without taking into account the effects on overall supply chain efficiencies. Therefore, the supply chain metrics should be process-based, to improve performance across the supply chain.

16.6.2 Metrics that are Defined at Executive and Operational Levels

An SCPM system should include executive-level metrics, which are aligned to operational-level metrics. These metrics should be in line with the strategic objectives of the company. Executive-level metrics would enable the top management, to know whether the supply chain performance is in line with the strategic objectives of the firm or not. On the other hand, operational metrics are the tools, which help executives to measure the effectiveness of lower-level activities that are crucial for supply chain efficiency. Thus, a set of metrics, which focuses on both executive and operational performance is useful, for measuring supply chain performance.

16.6.3 Metrics Aligned to Overall Business Objectives

The ultimate aim of supply chain metrics should be to achieve corporate objectives in terms of profits, market share, market capitalization, return on assets, etc.

16.6.4 Metrics that can Measure Cross-enterprise Processes

As various firms across a supply chain are integrating their processes, they need to focus on measuring the performance of processes that are outside their physical boundaries. For example, to ensure on-time delivery, a firm should coordinate with both upstream and downstream firms. Many firms are initiating SCM programs like Vendor-Managed Inventory (VMI), category management programs, production scheduling, and quick response systems, to achieve greater control over the processes, outside their boundaries. Measuring these cross-enterprise processes requires relevant program-specific measures. For example, measuring the performance of quick response systems requires metrics like customer sales, in-stock availability, and inventory turnover.

Example: PETstock (an Australian Pet Care Supplier Company) Improves the "In Stock Availability" by Adopting the SCM Program "Category Management"

PETstock is one of the most trusted Australian Pet care supplies company. During the recent pandemic, the pet adoption has gone by around 69% in Australian Households. But most of the pet owners had faced difficulty in getting the pet supplies in the store.

Contd….

This has prompted PETstock to digitally transform its Supply Chain. The company worked with Blue Yonder's for supply chain "category management solution." The company implemented data-driven, analytical store layouts to optimize allocations of category space to meet consumer demand, driving customer satisfaction. Basically, using category management, all the procurements are divided into categories and for each category, there is a category manager who deals with specific vendors. This way, the right product in right quantity is available in the store for the customer to pick up whatever he needs. This approach has improved the company performance on the Supply Chain Metric "In stock availability".

Source: https://www.businesswire.com/news/home/20220906005197/en/PETstock-Improves-Product-Availability-in-Stores-with-Blue-Yonder September 6, 2022, Accessed on 15/09/2022

16.7 Approaches to SCPM

Over the years, many companies have used approaches, based on financial measures, to measure their performance. Even though these measures were able to measure the performance of company operations, they failed to gauge the overall supply chain performance. Many of the approaches used by them measured the past performance, based on historic data, and they were not capable of providing future performance insights, as most of the financial measures are not linked to strategic, non-financial performance issues. There are several approaches to the measurement of supply chain performance, which are based on metrics that provide past performance, along with insights regarding the likely performance of the supply chain in the future. Some of them broaden the scope of the metrics beyond financial performance, to issues like customer service, customer loyalty, product quality, and operational efficiency. These approaches include:

- The Balanced Scorecard
- The Supply Chain Council's SCOR Model
- The Logistics Scoreboard
- Activity-Based Costing (ABC)
- Economic Value Added (EVA) Analysis

16.7.1 The Balanced Scorecard

In the balanced scorecard system, there is a judicious mix of financial and operational measures, for measuring the performance of a supply chain. This approach was first mooted in a publication by Robert S. Kaplan and David P. Norton. They were of the view that no single measure, either financial or operational, could give a vivid picture of the performance of the critical areas of a business. Hence, they designed a scorecard, which has a balance between parameters of financial performance and operational metrics, related to the underlying drivers of long-term profitability like customer satisfaction, internal

business processes, and organizational innovation. This enables senior managers to track their supply chain performance, by looking at it from four perspectives (See Figure 16.1):

***Customer perspective*:** Attempts to understand the customer's perception of the supply chain. Supply chain performance from a customer's perspective can be related to parameters like customer satisfaction, on-time delivery, order-fill rate, order accuracy, condition of incoming products, and shipping costs.

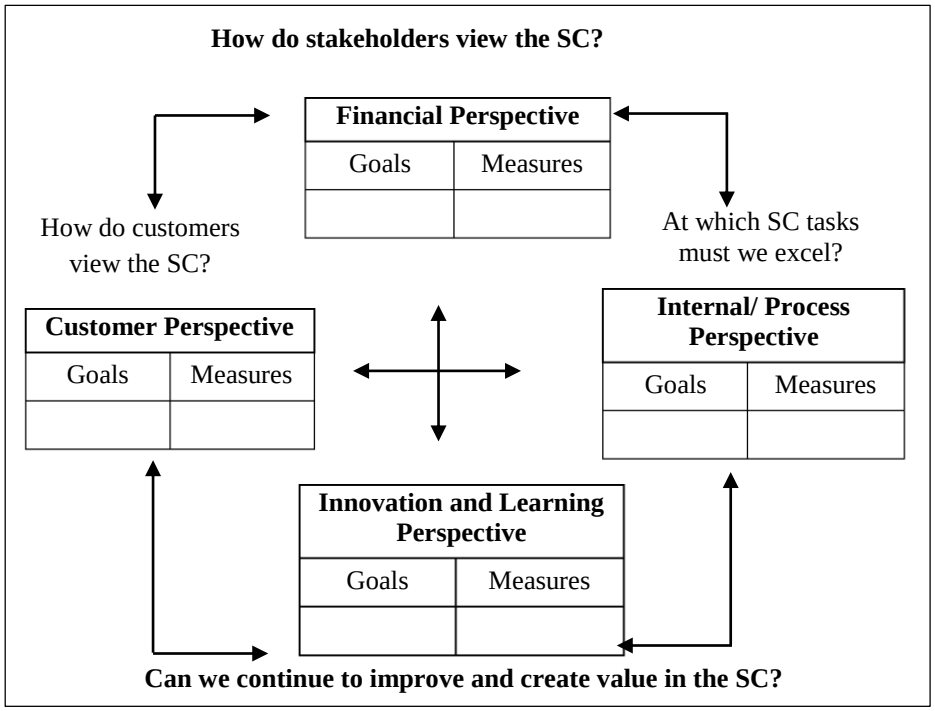
***Internal process perspective*:** Looks at the efficiency of the internal business processes. Some of the metrics used in a balanced scorecard approach are supply chain costs, supply chain cycle efficiency, response time, etc.

***Innovation and learning perspective*:** Look at the company's ability to innovate, improve, and learn. This can be measured by monitoring product and product innovations, new product launches, information sharing among supply chain members, use of new supply chain technologies, training costs, number of certified employees, etc.

***Financial perspective*:** This deals with measures that give the costs associated with the supply chain. Some common measures are manufacturing and warehousing costs, return on supply chain assets, etc.

Figure 16.1 shows the balanced scorecard model for measuring supply chain performance.

Figure 16.1: Balanced Scorecard Model for Measuring Supply Chain (SC) Performance



Adapted from Robert S. Kaplan and David P. Norton, "The Balanced Scorecard - Measures that Drive Performance," Harvard Business Review, January - February 1992, pp. 71-79.

16.7.2 The Supply Chain Council's Supply Chain Operational Reference (SCOR) Model

The SCOR model is another approach, which offers one of the best methodologies for examining business processes across a supply chain. This model was first developed and introduced by the Supply Chain Council in 1996. SCOR was developed to explain all the business activities, involved in satisfying a customer's demand.

The SCOR model has four levels. They are:

Level 1: The top or process type level.

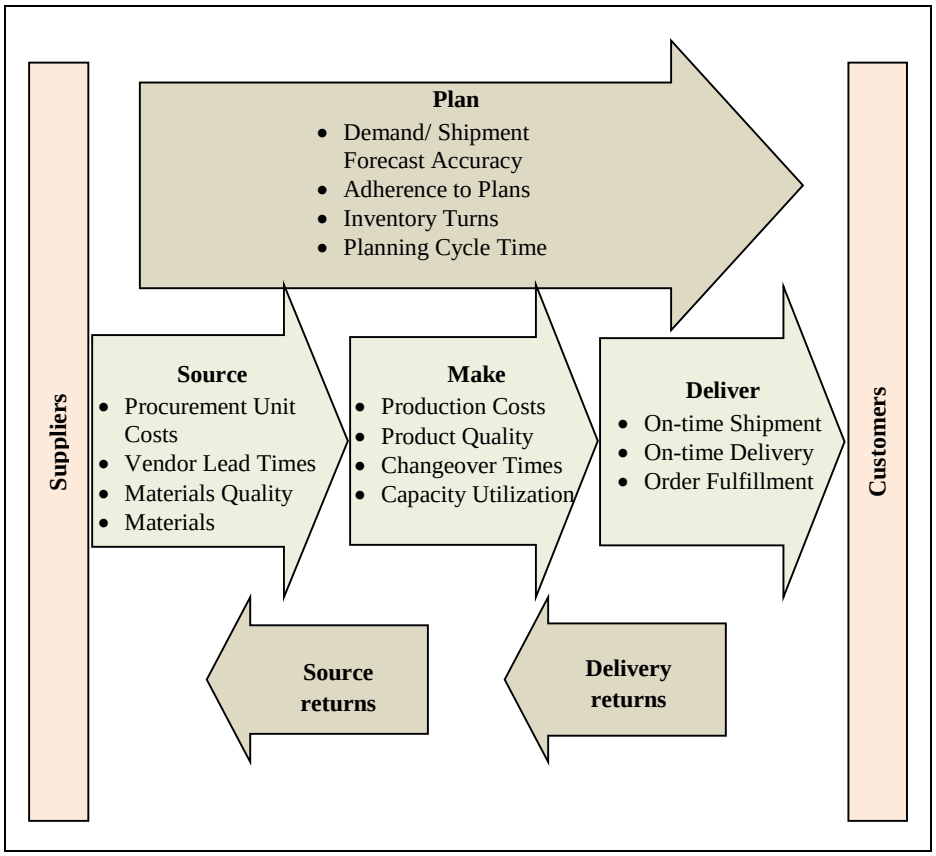
Level 2: The configuration level.

Level 3: The process element level.

Level 4: The implementation level.

For our discussion, we limit ourselves to the Level 1 SCOR model, which is built around the five primary management processes of the plan, source, make, deliver, and return. Firms can describe the supply chains, based on the five management processes and develop measures for each of these processes. Figure 16.2 gives the supply chain council's top-level SCOR model.

Figure 16.2: The Supply Chain Council's Top Level SCOR Model



Adapted from Supply-Chain Operations Reference-model, Overview of SCOR Version 5.0

16.7.3 The Logistics Scoreboard

Logistics Resources International Inc. developed a logistics scoreboard that uses a set of metrics to measure the performance of warehousing and transportation activities in a supply chain. But this approach is incomplete, as it does not consider the production and procurement activities in the supply chain. The logistics scoreboard consists of various measures concerned with financial performance, productivity, quality, and cycle time of the logistics function.

The following 16.1 table gives a list of measures appearing in a logistics scoreboard.

Table 16.1: List of Measures used in Logistics Scoreboard

Category	Metric
Financial performance measures	Expenses and return on assets
Productivity measures	Orders shipped per hour, transport container utilization
Quality measures	Inventory accuracy, shipment damaged
Cycle time measures	In-transit time, order entry time

Source: ICFAI Research Center

16.7.4 Activity-Based Costing (ABC)

Activity-based costing measures the cost of a process based on the activities that comprise the process. Instead of allocating costs to the supply chain processes, the ABC method splits these processes into activities and tasks and then allocates costs to each of these tasks. Thus, the ABC method attaches costs first to the activities and processes, and then to the product, service and customers. This enables the managers to see clearly, where problems arise in the supply chain. This method provides insights into profitability, related to individual customers and products, and process efficiency. Thus, ABC helps employees across functions, to understand various costs involved in the supply chain, which enables them to analyze the cost elements, identify value-added and non-value-added costs, and make improvements to the supply chain's performance.

16.7.5 Economic Value (EVA) Analysis

Most of the performance measurement approaches discussed above concentrate on short-term revenues/ profits and do not measure the ability of the supply chain to create long-term ownership value. This shortcoming in the earlier approaches is addressed in the EVA approach, developed by Stern, Stewart et. Al., during the 1990s and accessed in 2020. Although this approach estimates the economic value, added at each stage in the supply chain, it does not provide a detailed performance appraisal of complex supply chains. Therefore, EVA should be used along with other approaches in the evaluation of a supply chain.

16.7.6 Setting Performance Targets

Even well-defined metrics would not be able to improve supply chain performance in the absence of appropriate performance targets. Hence, organizations should set targets that help them measure the performance of a process on a particular metric. Targets also enable firms to know to what extent the performance has improved. Targets should be set for a group of metrics, which together bring about the desired change in the performance of the supply chain. For example, an increase in manufacturing productivity, with a decrease in cost, would lead to an improvement in supply chain performance. But if the increase in manufacturing productivity results in cost escalation and customer service deterioration, the end result would be decreased supply chain productivity. Hence, performance targets for individual metrics should be set in coordination with other metrics and the overall supply chain objectives. Some of the methods used to set performance targets are as follows:

- Historically-based targets
- Benchmarks
- Theoretical targets

Historical data-based Targets

This method for setting targets is most popular with firms. Here, firms base their targets on the historical performance of various processes. For example, if the average delivery time over the last year is 4 days, then the firm may set a target of 3 days for improvement of the delivery process.

Benchmarks

Performance targets can also be developed based on benchmarks, either internal or external to the firm. These benchmarks may be related to the best practices in the industry.

***External benchmarks*:** Selecting best practices from firms, within the industry or from other industries is a common practice used by firms, to improve supply chain processes. The firms using this method should collect all the information relating to relevant best practices and the metrics used to measure them. This method cannot be applied across all industries, as it may not be possible to replicate best practices from one industry to another. But using the best practices of one's competitors as a benchmark can yield results in the form of improved supply chain performance.

Internal benchmarks: The major objective of using this approach is to replicate the best practices established in one department to another, or from one process to another. For this, the firm should identify similar organizational units-production plants, distribution centers, products, etc., determine the best performing unit, and set its practices as a benchmark for other similar units to lay down targets. The major disadvantage of this method is that its inward

orientation may divert the company's attention from the performance of its competitors.

Theoretical Targets

Setting targets, based on a theoretical analysis of supply chain processes, is a comparatively novel approach. Here, the firm first undertakes an in-depth analysis of the present supply chain processes and tries to identify new ways of improving the processes. These research-based conclusions or assumptions form the basis for new targets.

Example: Walmart Uses Automation to Increase "Inventory Accuracy" which is Metric as per Logistics Scoreboard

Walmart had deployed automated Supply chain to gain efficiencies. The company rolled out VizPick technology to their associates across U.S. stores. This tool is based on augmented reality. The inventory management process is hastened, and the associates can get needed product from the back room to the sales floor more efficiently. Associate time is saved. Missing sales can be avoided. Walmart has turned the back of their stores into miniature warehouses. Store level "inventory accuracy," as a result is much higher.

Source: https://www.forbes.com/sites/stevebanker/2022/08/17/walmarts-supply-chain-woes/?sh=42af3ee513d0 August 17, 2022, Accessed on 15/09/2022

Activity 16.2

There are many approaches to Supply Chain Performance Measurement (SCPM).

Identify the most popular approaches for SCPM.

Discuss in detail the approach suggested by Kaplan and Norton.

Check Your Progress - 2

6. Which of the following makes the supply chain metrics effective?
    a. Process-based
    b. Product-based
    c. Function-based
    d. Employee-based
    e. Finance-based

7. Which of the following is not a perspective under the Balanced Score Card?
   a. Customer perspective
   b. Quality perspective
   c. Internal process perspective
   d. Financial perspective
   e. Innovation & Learning perspective
8. Supply Chain Operational Reference (SCOR) Model mainly focuses on which of the following?
   a. Process level
   b. Configuration level
   c. Process element level
   d. Implementation level
   e. Corporate level
9. Which, of the following, is not an advantage of Activity-based costing?
   a. Enables to see where problems arise.
   b. Provides insights into profitability.
   c. Helps employees understand various costs.
   d. Identify value-added and non-value-added costs.
   e. Identify overhead costs and eliminate them.
10. Which of the following is the focus of Economic Value Analysis method?
   a. Long-term sustainability
   b. Corporate Social Responsibility
   c. Environmental compliance
   d. Socio-economic performance
   e. Financial performance

16.8 Summary

- To be competitive in the market, firms need to measure the performance of their supply chains continuously.
- Measurement of supply chain performance requires specific supply chain metrics that capture the present performance of the supply chain and plan for its future performance.
- A list of metrics, to measure the performance of various supply chain components and activities like planned order procedures, supply chain relationships, production, delivery links, and customer service and satisfaction, were given.

- Some approaches for measuring supply chain performance like the balanced scorecard, the supply chain council's SCOR model, the logistics scoreboard, Activity-Based Costing (ABC), and Economic Value (EVA) Analysis were also explained.
- We looked at various methods, for setting targets to measure the improvement in supply chain performance. The methods discussed include historically-based targets, benchmarks, and theoretical targets.

16.9 Glossary

BSC-Balanced Score Card. It is a system of a judicious mix of financial and operational measures, for measuring the performance of a supply chain, covering four perspectives- customer, internal process, financial and learning perspectives.

EVA- Economic Value Added Analysis. It is a performance measurement approach that estimates the economic value, added at each stage in the supply chain

Metrics-Measures of performance of any activity are called metrics

SCPM-Supply Chain Performance Management. It is the entire system of planning, implementing and realizing the performance of supply chains. It has four levels namely, The top or process type level, The configuration level, The process element level, and The implementation level.

16.10 Self-Assessment Test

1. Explain why Supply Chain Performance Measurement is essential in an organization.
2. What do you suggest to improve the supply chain performance? Elaborate.
3. Which are the important metrics for customer service quality?
4. Give an overview of the Balanced Score Card
5. What is Economic Value Added? Why is its importance growing?

16.11 Suggested Reading / Reference Material

1. Ashley McDonough, Operations and Supply Chain Management Essentials You Always Wanted to Know: 15 (Self Learning Management Series) Paperback – 1 January 2020.
2. Russel and Taylor, Operations and Supply Chain Management, 10 ed, ISV Paperback – October 2019.
3. Chopra and Kalra, Supply Chain Management 6/e Paperback – 17 June 2016.

16.12 Answers to Check Your Progress Questions

1. **(e) To plan for continuous improvement.**

   It is essential in organizational performance to achieve continuous improvement.

2. **(d) Aligning non-financial measures with organizational performance.**

   It is most important to achieve and improve supply chain performance.

3. **(a) Order evaluation.**

   Metric in SCM is for planned evaluation.

4. **(d) Problems solved jointly as % of problems reported.**

   Supply chain relationships are a metric required for this purpose.

5. **(d) Service quality.**

   It is the most effective metric to ensure sustainable organizational performance.

6. **(a) Process-based.**

   Supply chain metric should be process-based to make it effective.

7. **(b) Quality Perspective.**

   It is not a direct perspective defined in the Balanced Scorecard.

8. **(a) Process level.**

   SCOR model mainly focuses on the process level.

9. **(a) Enables to see where the problem arises.**

   Activity-based costing does not enable to see where the problem arises.

10. **(a) Long-term sustainability.**

    It is the focus of the value analysis method.

Supply Chain Management

Course Structure

Block 1: Principles of Supply Chain Management	
Unit 1	Supply Chain Management-An Overview
Block 2: Supply Chain Planning & Design	
Unit 2	Supply Chain Integration
Unit 3	Demand Forecasting in a Supply Chain
Unit 4	Managing Demand and Supply in a Supply Chain
Unit 5	Facility Network Design
Block 3: Supply Chain Processes	
Unit 6	Purchasing and Supply Chain Management
Unit 7	Manufacturing in a Supply Chain Context
Unit 8	Inventory Management
Unit 9	Managing Transportation in a Supply Chain
Unit 10	Warehousing in a Supply Chain
Unit 11	Returns Management and Supply Chain
Unit 12	Customer Service in a Supply Chain
Unit 13	Order Fulfilment and Supply Chain
Block 4: Supply Chain Coordination	
Unit 14	Cooperation and Coordination in a Supply Chain
Unit 15	Role of Outsourcing in a Supply Chain
Unit 16	Measuring Supply Chain Performance
Block 5: Contemporary Issues in Supply Chain Management	
Unit 17	Information Technology in Supply Chain
Unit 18	E-Business and the Supply Chain
Unit 19	Financial Flow in Supply Chain
Unit 20	Emerging trends in Supply Chain Management