

# LOGISTICS AND SUPPLY CHAIN MANAGEMENT

## UNIT – I

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### **COMPETITIVE ADVANTAGE**

The source of competitive advantage is found firstly in the ability of the organisation to differentiate itself, in the eye's customer, from its competition, and secondly by operating at a lower cost and hence at greater profit. The most profitable competitor is any industry sector tends to be the lowest-cost provider or the supplier providing a product with the greatest perceived differentiated values.

### **SOURCES OF COMPETITIVE ADVANTAGE**

#### **1. Product Attribute Differentiation**

One way to gain an advantage over competitors is by differentiating product from others.

Countless attributes can set product apart.

- Better customer service
- More variety
- Faster or cheaper shipping
- Location
- Colour and aesthetics
- Brand identity
- Atmosphere of brick-and-mortar locations
- Source of goods

#### **2. Customers' Willingness to Pay**

The way price of the products or services can set apart from competitors. When doing so, it's vital to understand customers' willingness to pay. Willingness to pay (WTP) is the maximum price a customer is willing to pay for a product or service. It can be a specific amount or a price range. By determining customers' WTP, can ensure maximizing profit without turning away customers.

#### **3. Price Discrimination**

Price discrimination is one of the most common and powerful price strategies for companies. With an understanding of customers' willingness to pay, find that different types of

customers are willing to pay different amounts for the products. In such cases, it can be useful to employ price discrimination, which can be a valuable tool for expanding company's reach when competing with others.

#### **4. Bundled Pricing**

Another pricing strategy that can prove to be advantageous is bundled pricing. Bundled pricing is the practice of selling two or more products together in a "bundle," for which the cost is different than that of purchasing all of the items separately. Cable companies often leverage bundling. Purchasing voice, video, and data services together often grants the customer a lower price than if they were to purchase the services individually.

#### **5. Human Capital**

A company is only as strong as its people. As such, hiring, training, and retaining a team of skilled employees is a competitive advantage for any business. Putting in the time and care to select outstanding candidates for open positions, train current employees, offer professional development opportunities, and create a culture wherein people feel supported and challenged can pay off.

### **THE TWO METHODS OF COMPETITIVE ADVANTAGE:**

- **Productivity advantage:** In any industry there will be one company that is able to achieve highest sales and thereby also achieve the lowest cost per unit due to economies of scale. There is substantial evidence to prove that in these cases that 'big is beautiful' when it comes to cost advantage. It has been accepted that one of the principal ways of improving cost advantage is through greater production and sales.
- **Value advantage:** The values of the market can only be fully realized by segmenting the market and creating distinct value segments. In other words, different groups in different markets place different values to benefits. Adding value through differentiation is a powerful way of achieving a defensible advantage in the market.

### **GAINING COMPETITIVE ADVANTAGE THROUGH LOGISTICS**

One of the distinguishing features of the value chain is to postpone the final creation of the product as much as possible. The idea behind this is that maximum flexibility can be achieved through postponement by obtaining time place and form utility. This can be achieved by aggregating production systems rather than catering to individual customer requirements.

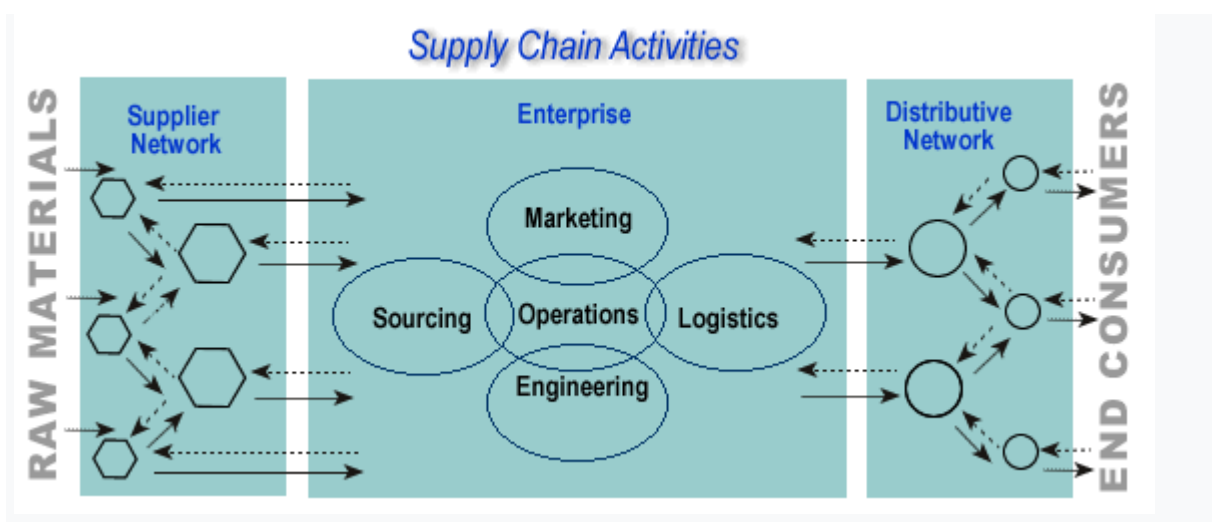
A firm can gain competitive advantage only when it performs its strategically important activities (designing, producing, marketing delivering and supporting its product) more cheaply or better than its competitors. Value chain activity disaggregates a firm into its strategically relevant activities in order to understand behaviour of costs and existing and potential sources of differentiation. They are further categorized into two types

- (i) **Primary** – inbound logistics, operation outbound logistics, marketing and sales, and service
- (ii) **Support** – infrastructure, human resource management, technology development and procurement

To gain competitive advantage over its rivals, a firm must deliver value to its customers through performing these activities more efficiently than its competitors or by performing these activities in a unique way that creates greater differentiation. Logistics management has the potential to assist the firm in the achievement of both a cost/productivity advantage and a value advantage. The under lying philosophy behind the logistics concept is that of planning and coordinating the materials flow from source to user as an integrated system rather than, as was so often the case in the past, managing the goods flow as a series of independent activities.

## LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Logistics management is a subset of the larger supply chain management. Supply chain management plans, implements and controls the efficient flow of storage, goods, services and related information from the point of origin to the point of consumption. This is done for the purpose of meeting the requirements of customers.



Logistics, or logistical planning, refers to the process that a business uses in order to coordinate its supply chain operations. It includes a wide variety of tasks and activities, such as managing how raw materials or inputs are acquired and transported to the business, how inventory and inputs are stored at the business facilities, and how inventory is transported within the business and beyond.

The terms supply chain management and logistics are often confused or used synonymously. However, logistics is just one -- albeit vital -- component of supply chain management. It focuses on moving a product or material in the most efficient way so it arrives at the right place at the right time. It manages activities such as packaging, transportation, distribution, warehousing and delivery. In contrast, SCM involves a more expansive range of activities, such as strategic sourcing of raw materials, procuring the best prices on goods and materials and coordinating supply chain visibility efforts across the supply chain network of partners, to name just a few. Logistics management in business works across all industries. Its aim is to manage the fruition of project life cycles, supply chains and resultant efficiencies. As businesses grow more complex and expand into a global marketplace, business logisticians have evolved into something called supply chain logisticians.

With logistics management in business the focus is twofold: inbound logistics for internal functions and outbound logistics for the external flow from the point of origin to the point of consumption. Logisticians focus on inventory management, purchasing, transportation, warehousing, consultation and the organization and mapping of these processes. Several parties are involved in the supply chain process, such as suppliers and distributors. Each represents a given risk to the business, and thus, it is important to carefully determine the accessibility and effectiveness of each entity.

### **Role of Logistics**

Logistics play a huge role in the smooth operations of a business. However, at scale, it is extremely difficult to run a flawless logistics division due to the sheer number of variables and demands that such a system is subject to. Logistics can be thought of as the business function responsible for “getting the right item in the right quantity at the right time at the right place for the right price in the right condition to the right customer.” Thus, it is imperative that companies invest in their logistics divisions to ensure maximum customer satisfaction and overall productivity.

## **Inbound Logistics**

Inbound logistics refers to the internal logistics tasks and activities that businesses need to complete in order to operate. Inbound logistics usually refers to the logistical operations of companies that operate fairly upstream (B2B). In terms of the supply chain, it involves the relationship with parties that operate further upstream than the given business. Depending on the business, the parties that operate upstream may vary dramatically in their respective operations. Internal logistics is one of the most important sections within enterprises, especially in the large manufacturing companies. It manages, arranges, plans and delivers the finished products. It is an indispensable part of the supply chain, as well as reflects the result of implementation company strategy.

For example, consider being a car manufacturer. The manufacturer's inbound logistics would entail the sourcing of raw material inputs (sheet metal, glass, wiring, plastics, etc.), how to store the materials in preparation for and during the assembly process, and how to manage the flow of manufactured automobiles that leave the factory.

## **Outbound Logistics**

Outbound logistics refer to the tasks and activities involved with moving the product to the end user. Such logistic duties usually apply to players that operate relatively downstream, which are usually the last party in the supply chain. The duties include the storage of manufactured inventory, the transportation of manufactured goods to the point of sale, and sometimes, the shipping and handling involved to get certain products to the end user.

Going back to the auto manufacturer example, the parties involved with the outbound logistics of that supply chain would be the wholesalers and dealers. The factory operations would be in charge of assuring that the right amount of ordered inventory arrives at the dealer at a given time. In turn, the dealer would be in charge of coordinating the storage and upkeep of the vehicles on its lots, as well as the shipping and handling of vehicles that are ordered by customers that live in faraway areas.

## **COMPONENTS OF SCM**

- **Planning**— Every enterprises need to plan and manage all resources required to meet customer demand for their product or service. Enterprises needed to design their

supply chain and then determine which metrics to use in order to ensure the supply chain is efficient, effective, delivers value to customers, and meets enterprise goals.

- **Sourcing**— Organisations must choose suppliers to provide the goods and services needed to create their product. When suppliers are under contract, supply chain managers must use a variety of processes to monitor and manage supplier relationships. The key processes include ordering, receiving, managing inventory, and authorizing supplier payments.
- **Making**— The supply chain managers need to conduct and coordinate all the activities that are required to accept raw materials, manufacturing the product, testing for quality, packaging for shipping, and scheduling for delivery. Many of the enterprises measure quality, production output, and worker productivity to ensure the enterprise creates products that meet quality standards.
- **Delivering**— Logistics as it is often called involves coordinating customer orders, scheduling delivery, dispatching loads, invoicing customers, and receiving payments. Delivering depends on a fleet of vehicles to ship product to customers. Most of the enterprises that outsource large parts of the delivery process to specialist organizations, particularly if the product requires special handling or is to be delivered to a consumer's home.
- **Returning**— Supplier should have a responsive and flexible network to take back defective, excess, or unwanted products. If any of the product is found defective it needs to be reworked or scrapped. If the product is found unwanted or excess it needs to be returned to the warehouse for sale.
- **Enabling**— The supply chain requires number of processes that support to monitor information throughout the supply chain and assure compliance with all regulations in order to operate efficiently. Enable processes like finance, HR, IT, facilities, portfolio management, product design, sales, and quality assurance.

## **INTEGRATED SUPPLY CHAIN MANAGEMENT**

Integrated supply chain management refers to an enterprise resource planning approach to supply chain management. A business facilitates relationships with all of its suppliers and manages all distribution and logistics activities through a centralized system rather than having multiple systems within the organization. Supply chain integration is a process where the all the parties involved with the fulfilment of a product are integrated into a single system. This requires significant coordination and alignment in order to ensure everyone is effectively

working toward the same goal at all times. Integrated supply chain is a process wherein every phase from procurement of raw materials to production, quality control to packaging, distribution or supply to eventual delivery is streamlined and inseparable. It is a holistic collective of the various processes, which may be under complete control of one company or multiple partners will come together to have collective control over the integrated process. When it comes to integrating supply chains within a company, there are quite a few things that need to come together. The following are some of the key steps that most companies will need to take during this process:

- **Choosing Vendors** - Choosing vendors is more than just finding one that can provide the necessary parts. In addition to that, the vendor must be able to supply their piece at the needed time and place based on the overall supply chain.
- **Internal Teams** - Working with the internal teams of a company to work based on the needs of the overall system rather than just their department. Having set procedures based on the big picture can help to eliminate waste, and improve efficiency.
- **Waste Elimination** - While often overlooked, waste elimination should be an important part of an effective supply chain integration. This can happen when either a vendor or an internal team will physically relocate in order to more efficiently complete the work that needs to be done.

## **ADVANTAGES OF INTEGRATED SUPPLY CHAIN**

### **Increase in revenue**

Integrated supply chain allows a company to focus on assets that would allow the organization to reap more rewards. There are always facets of a business that will have a more pronounced impact on the revenues and hence must be optimized as much as possible. Integrated supply chain management allows companies to prioritize and focus on the specialized assets that would improve their products, increase market share or enhance operating profits.

### **Controlled costs**

Integrated supply chain will always reduce costs, especially transactional costs which are unavoidable among subsidiaries, partners or vendors. Having a centralized or integrated supply chain management, a company is essentially doing away with frills that would have otherwise delayed the process and would have also incurred needless costs.

### **Quality control**

Supply chain integration helps in ensuring quality. When there is a concerted attempt to keep a stringent compliance check, it is immensely difficult to approve or pass along faulty products. There is only one authority overseeing compliance throughout the process.

### **Competitive edge**

With financial advantages, stricter compliance and better products, a company will be able to fight its competition and emerge as the winner with integrated supply chain management.

## **DIS-ADVANTAGES OF INTEGRATED SUPPLY CHAIN**

### **Excessive regulation**

Integrating all suppliers will pose challenges to a business trying to manage every internal and external supply. Not every supplier needs to comply with every regulation or norm. A company trying to have a generic approach which will be the case with integration supply chain management will needlessly compel all its suppliers to adhere to the same standards.

### **Needless complications**

Integrated supply chain management can easily lead to a complicated scenario where resources are shared and unnecessarily wasted. Not every supplier needs every system. Every supplier and department needs to operate according to its own strengths while overcoming its weaknesses.

### **Dearth of compliant suppliers/vendors**

There can be a shortage of suppliers or vendors that would choose not to renew contracts if the terms of supply chain integration don't suit their business priorities. This can have an impact on the procurement and supply costs as those willing to comply with the new norms may have a steeper rate.

### **Vulnerable to system collapse**

There can be a collapse in the checks and balances if there is any lapse in the inspections or compliance checks. An integrated supply chain means one error somewhere can bring the whole system down.

## **ROLE OF LOGISTICS IN COMPETITIVE PERFORMANCE**

Rapidly growing global competition and Recession are the two major obstacles faced by the organizations in their chase for leading and enduring competitive edges. However, this is also the truth that offering a quality of service to the client which outstands others is exceptionally attainable if a company supplier section falls short in managing their logistics planning. An



organization in order to achieve their goal, should deal with a fresh market concept where logistics should not be recognized just as a support system but instead is considered as an important part of a business which needs to be regulated in the right direction on a strategic ground.

### **Potential and Proficient Services is essential**

There is no challenge to this statement that logistics is turning up as a substantial unit in business revival processes. In fact, logistics can play a major role in achieving competitive performance, especially in terms of better customer service and cost-effective system. Couriero one such leading courier aggregator where one can select from varieties of service providers to pick up their parcel with continuous support and all in one app.

### **Logistics to be implemented at strategic platform**

A cooperative, extensive and integrated planning method will attain respective competitive performance through valuable service that helps in providing client's satisfaction and retaining future demands. The strategic planning of logistics functions in the direction of overall organizational goals and objectives, which expects knowledge of how various components and actions of logistics contribute to trade-off and price to the business. Logistics is a sensitive section of the supply chain which requires expertise and better management, which can come from a professional and experienced partner. Acquisition, transportation and warehousing management required expertise practice to take a lead in the market.

### **Managing Production Costs**

Transport is an essential part of a business's logistics action plan, hence, the worth corresponding with a specific logistics unit has to be precisely administered. Transport estimate ascertains what an individual shipment will cost per unit weight for a specific distance. Hence an Organization should be suitable enough to handle this part skilfully if they seek for competitive growth.

### **Logistics impact on the overall performance of an organization**

To analyze the chances for a longer duration of excellent competitive performance, a business must deal with any upcoming management challenges in the logistics before choosing the correct logistics strategies to benefit competitive growth in the market.

Here is a survey data as per economic times 2019, logistics impact in gaining competitive advantage in respect of profit.

### **Profit Growth**

Thirty-five percent of companies after adapting a third-party logistics have grown with a profit of 20% or more since 2018; 18% of business grew with 15% profits; and 20% have

influenced 10% growth. Today's rigid market competition calls for influential measures in dealing with functionalities of various business subunits as an outcome, many companies are targeting over minimizing the overall cost by maximizing the capacity without compromising the quality of the service.

## MODELS IN LOGISTICS MANAGEMENT

The decision areas of Logistics can be addressed using various quantitative models from Operations Research namely

### **i. Forecasting Models:**

Trends and patterns of data are easier to spot, and extrapolation of previous demand can be used to predict future demands. Methods for forecasting sales data when a definite upward or downward pattern exists. Models include double exponential smoothing, regression, and triple smoothing.

### **ii. Mathematical Programming Models** – Location Models, Allocation Models, Distribution Network Design Models

Mathematical modelling approaches that are usually considered in supply chain problems include linear programming, mixed-integer/integer linear programming, nonlinear programming, multi-objective programming, fuzzy mathematical programming, stochastic programming, heuristics algorithms, and meta-heuristics and hybrid models.

### **iii. Inventory Models**

Inventory model is a mathematical model that helps business in determining the optimum level of inventories that should be maintained in a production process, managing frequency of ordering, deciding on quantity of goods or raw materials to be stored, tracking flow of supply of raw materials and goods to provide uninterrupted service to customers without any delay in delivery.

There are two types of Inventory model widely used in business.

1. Fixed Reorder Quantity System: is an Inventory Model, where an alarm is raised immediately when the inventory level drops below a **fixed quantity** and new orders

are raised to replenish the inventory to an optimum level based on the demand. The point at which the inventory is ordered for replenishment is termed as **Reorder Point**.

2. Fixed Reorder Period System: is an Inventory Model of managing inventories, where an alarm is raised after every **fixed period of time** and orders are raised to replenish the inventory to an optimum level based on the demand. In this case replenishment of inventory is a continuous process done after every fixed interval of time.

#### **iv. Routing Models**

The model has a number of components such as products, vehicles, and personnel. Products: The product moves from one geographic location to another, often described as the origin and the destination. The product will be defined by its weight and its volume, which are important factors for shipping.

#### **v. Scheduling Models**

Scheduling involves taking decisions regarding the allocation of available capacity or resources (equipment, labour and space) to jobs, activities, tasks or customers over time. Scheduling thus results in a time-phased plan, or schedule of activities. The schedule indicates what is to be done, when, by whom and with what equipment. Scheduling seeks to achieve several conflicting objectives: high efficiency, low inventories and good customer service. Scheduling can be classified by the type of process: line, batch and project.

#### **vi. Alternatives Analysis**

Alternative routes help in rerouting of the supplies in case of problems (either man –made or natural) on one route. GIS presents outputs visually, these visual features can be converted into business variables like cost, gross margin and profit for effective decision making.

### **TYPES OF LOGISTICS MANAGEMENT**

#### **1. Supply Management and Logistics**

This involves the planning, procuring and coordinating materials which are needed at a certain time at a particular place for the production of a task. This includes transportation of the materials as well as a place to store them. Additionally, evaluating the level of supply at

the different stages of the process is required to make sure the needs of the customer are met, for example delivering materials to a construction site or parts for a manufacturing plant.

## **2. Distribution and Material Movement**

This takes stored materials and transports them to where they need to go. The issues in this involve moving materials; including loading, unloading and transportation, as well as keeping track of the stock and how it is used. This type of management controls the movement of supplies from a central warehouse to the stores that sell the product to the public.

## **3. Production Logistics and Management**

This manages the stages of combining distributed supplies into a product, such as coordinating what is needed to make or put together something. This involves the staging of materials at the right time to work with the building of a product. This type of logistics management falls in the realm of product management.

## **4. Reverse Logistics and Product Return**

This is about the management of reclaiming materials and supplies from production. For example, on a construction site it involves the removal of excess material and returning those materials to one's stock. It can also refer to the return of unwanted or unused products from the end customer seeking a refund.

## **DISTRIBUTION NETWORK OF LOGISTICS MANAGEMENT**

The various linking points of distribution in a logistics management network include the following:

- Factories that manufacture products
- Warehouses that store products
- Distribution centres to receive and return items for clients
- Transport to deliver product
- Retail locations, from small to larger stores to sell product

These are the major hubs for the logistics of a product, though there can be vendors and intermediaries operating between these points.

## **IMPORTANCE OF LOGISTICS MANAGEMENT**

The purpose of logistics management is obviously about finding more efficient and effective ways to move resources and products from conception to completion and, finally, to the customer. But the driving force of these actions is to meet customer demand and provide the best service possible to retain customers and maintain their satisfaction by meeting their requirements. As customers demand better service, there's a need to ship faster, more accurately and with a high level of quality. It is through logistics management that customer satisfaction is achieved. But that's not the only benefit of logistics management. It also helps to create visibility in the business' supply chain. By analyzing the historical data and tracking the real-time movement of goods, logistics managers can better the flow of materials and avoid any potential disruptions.

Therefore, logistics management helps drive up revenue. It improves customer service, adds to the company's good reputation and brand, which in turn creates new and more business. With more visibility into the supply chain there is the opportunity to save costs in operations, by controlling inbound funds, keeping inventory at the right level and organizing the reverse flow of goods.

## **FOCUS AREAS IN SUPPLY CHAIN MANAGEMENT**

A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. Supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm.

### **Location Decisions**

The geographic placement of production facilities, stocking points, and sourcing points is the natural first step in creating a supply chain. The location of facilities involves a commitment of resources to a long-term plan. Once the size, number, and location of these are determined,

so are the possible paths by which the product flows through to the final customer. These decisions are of great significance to a firm since they represent the basic strategy for accessing customer markets, and will have a considerable impact on revenue, cost, and level of service. These decisions should be determined by an optimization routine that considers production costs, taxes, duties and duty drawback, tariffs, local content, distribution costs, production limitations, etc.

### **Production Decisions**

The strategic decisions include what products to produce, and which plants to produce them in, allocation of suppliers to plants, plants to customer markets. As before, these decisions have a big impact on the revenues, costs and customer service levels of the firm. These decisions assume the existence of the facilities, but determine the exact path(s) through which a product flows to and from these facilities. Another critical issue is the capacity of the manufacturing facilities--and this largely depends the degree of vertical integration within the firm. Operational decisions focus on detailed production scheduling. These decisions include the construction of the master production schedules, scheduling production on machines, and equipment maintenance. Other considerations include workload balancing, and quality control measures at a production facility.

### **Inventory Decisions**

These refer to means by which inventories are managed. Inventories exist at every stage of the supply chain as either raw materials, semi-finished or finished goods. They can also be in-process between locations. Their primary purpose to buffer against any uncertainty that might exist in the supply chain. Since holding of inventories can cost anywhere between 20 to 40 percent of their value, their efficient management is critical in supply chain operations. It is strategic in the sense that top management sets goals. However, most researchers have approached the management of inventory from an operational perspective. These include deployment strategies (push versus pull), control policies, the determination of the optimal levels of order quantities and reorder points, and setting safety stock levels, at each stocking location. These levels are critical, since they are primary determinants of customer service levels.

## **Transportation Decisions**

The mode choice aspect of these decisions are the more strategic ones. These are closely linked to the inventory decisions, since the best choice of mode is often found by trading-off the cost of using the particular mode of transport with the indirect cost of inventory associated with that mode. While air shipments may be fast, reliable, and warrant lesser safety stocks, they are expensive. Meanwhile shipping by sea or rail may be much cheaper, but they necessitate holding relatively large amounts of inventory to buffer against the inherent uncertainty associated with them. Therefore customer service levels, and geographic location play vital roles in such decisions. Since transportation is more than 30 percent of the logistics costs, operating efficiently makes good economic sense. Shipment sizes (consolidated bulk shipments versus Lot-for-Lot), routing and scheduling of equipment are key in effective management of the firm's transport strategy.

## **CUSTOMER SERVICE IN THE SUPPLY CHAIN**

Customer service has an important place in the supply chain. It is responsible for the way customers feel about the product and the company who is selling it. Customer service is everywhere along the supply chain, it affects the way it begins when products are sold to the customer and it is there when products are delivered. Through the processes of manufacturing, distributing and selling the finished goods, companies should focus their efforts on supply an excellent assistance to their clients, answering their questions and counting on their feedback to improve their operations

Companies should measure the way customers respond to their service and the way those numbers affect their sales. It is very likely that companies with better customer service along their supply chain will have better sales than those who barely care about their relationship with their clients. Understanding this concept will help you to be more competitive.

### **Important factors for customer service in logistics**

#### **1. Time**

For today's life, time is always the most important factor. Therefore, in customer service of logistics, time is an extremely important factor to create customer satisfaction. Not only for the logistics industry but for any industry, the shorter the time the customer receives the product, the more satisfied the customer will be.

## **2. Reliability**

This is an indispensable factor for customer service in logistics. For reliability, the brand will always be the most important factor for customers. If the brand of service that your company provides is more reliable. Then customer service has the opportunity to satisfy larger customers. Typically, when we buy products, if we buy in reputable brands, we will always feel safer.

## **3. Price**

The price competition has never cooled down in the market today. Especially when customers always like cheaper products. Or rather, there is a price that suits their needs. If your logistics service can provide the same items, same quality (or higher quality). But with cheaper prices, obviously, you will have a huge advantage.

## **4. Flexibility**

Flexibility is the ability to flexibly deliver products according to customers' needs. Currently, customers always want to use products that can solve their problems. Therefore, if possible, always customize the product so that it can best suit customer needs.

## **VOICE OF THE CUSTOMER**

The term Voice of the Customer (VoC) is related to what customers have to say about our service. Counting on this feedback allows companies to improve their customer service experience making the necessary changes to please customers. This changes immediately affect the company's profitability thanks to sales rising numbers. Customers who give feedback are not only those outside the company. There are inside customers who are often more important than those from outside since they are the ones taking care of our business. The VoC process is related to being proactive and innovative, for this reason, it is vital to listen to inside customers' opinions and what they believe should be different inside the company.

## **BASIC CUSTOMER SERVICE CAPABILITY**

Three fundamental dimensions of customer service were identified:

- Availability



- Performance
- Reliability

All three aspects of service are important. However, a given service attribute may be more or less important depending on the specific marketing situation.

**Availability:** Availability is the capacity to have inventory when it is desired by a customer.

Inventory can be classified into two groups:

1. Base stock determined by forecasted requirements and held to support basic availability,
2. Safety stock to cover demand that exceeds forecasted volumes and to accommodate unexpected operational variances. Availability is usually based on the three performance measures they are:

- Stock out frequency
- Fill rate
- Orders shipped complete

These three measures determine a firm's ability to meet specific customer inventory requirements.

**Operational performance:** Operational performance measures specify the expected performance cycle in terms of

- (1) Speed
- (2) Consistency
- (3) Flexibility
- (4) Malfunction/recovery

Operational performance involves logistical commitment to expected performance time and acceptable variance.

**Reliability** • Logistics quality is all about reliability. A fundamental quality issue in logistics is the ability to comply to levels of planned inventory availability and operational performance. The key to achieving logistical quality is measurement. Inventory availability and operational performance are critical in the eyes of customers. However, high-level performance can be maintained only by exacting measurement of achievements and failures.

## **VALUE ADDED SERVICES IN LOGISTICS**

Every transport company can move products from A to B, but it is difficult to stand out with that in a market full of competition. Carriers therefore provide an increasing number of services, not only do they organise transport, they also pack, weigh and label the products.

- **Form Utility:** It refers to the value added to goods through a manufacturing, production or assembling process. For example, form utility results when raw materials are combined in some predetermined manner to make a finished product. The simple process of adding the raw materials together to produce the soft drink represents a change in product form that adds value to the product.
- **Place Utility:** Logistics provides place utility by moving goods from production surplus points to points where demand exists. Logistics extends the physical boundaries of the market area, thus adding economic value to the goods. This addition to the economic value of goods and services known as place utility.
- **Time Utility:** Not only must goods or services be available whenever consumers need them, but they must also be at that point when customers demand them. This is called time utility or the economic value added to a good or service by having it at a demand point at a specific time. Logistics creates time utility through proper inventory maintenance and the strategic location of goods and services.
- **Possession Utility:** The role of logistics in the economy depends upon the existence of possession utility, for time or place utility make sense only if demand for the product or service exists.

**Efficient logistics contributes to added-value in four major interrelated ways:**

- **Production costs.** Derived from the improved efficiency of manufacturing with appropriate shipment size, packaging and inventory levels. Thus, logistics contributes to the reduction of production costs by streamlining the supply chain.
- **Location.** Logistics adds value by taking better advantage of various locations, implying access to expanded markets (more customers) and lower distribution costs.
- **Time.** Added value derived from having goods and services available when required along the supply chain (e.g. lower lead times) with better inventory and transportation management.
- **Control.** Added value derived from controlling most, if not all, the stages along the supply chain, from production to distribution. By better synchronizing cycles and lead times, logistics enables better marketing and demand response, thus anticipating flows and allocating distribution resources accordingly.