**LOGISTICS AND SUPPLY CHAIN MANAGEMENT**

**ANSWER KEY**

**SECTION A**

1. Logistics management consists of the process of planning, implementing and controlling the efficient flow of raw materials, work in progress and finished goods and related information-from the point of origin to the point of consumption; with a view to providing satisfaction to the customer.

According to Philip Kotler, “ Market logistics involve planning, implementing and controlling the physical flow of material and final (finished) goods from the point of origin to the point of use to meet customer requirements at a profit. “

1. Decoupling Inventory

In manufacturing concern, plant and machinery should always keep running. The act of stopping machinery, cost to entrepreneur in terms of additional set up costs, repairs, depreciation, damages, trial runs etc. In a production like one machine/ process uses the output of other machines/process. The speed of different machines may not always integrate with each other. For that reason, the stock of input for all the machinery should be sufficient to keep the factory running. Such inventory is called decoupling inventory. This type of inventory decreases the business’s dependence on the sequential nature of the production line and means that Machine B doesn’t have to wait for machine A to finish before they can start. The machine B operator can pull parts from decoupling stock even if Machine A is down for repairs.

 3. Bonded storage are warehouses that are owned, managed and controlled by the government as well as private agencies. Bonded warehouses are storage facility used to store imported goods for which import duty is still to be paid. The bonded warehouses run by private agencies have to obtain a license from the government. These warehouses are found near the ports and are usually owned by dock authorities.

Bonded warehouses are subject to two types of taxes; a) Excise Duty and b) Custom Duty.

 4. Warehouse are the godowns for keeping and storing goods facilitating to the marketing and distribution functions of enterprise. In logistics and supply chain perspective, warehouses perform the storing function, where goods are stored in bulk quantities and from there, a new and different small assortment of goods is selected and moved forward to be dispersed to the next level.

 5. Procurement logistics is the flow of goods when the raw materials and parts necessary for manufacturing are procured from suppliers. This field does not attract much attention before, but now that small-lot production of a variety of models is the main type of production, main firms are actively pursuing production by procuring the necessary materials in only the necessary amount at the necessary times ( the shift to just-in-time production) because it is directly connected to reducing inventory cost.

Procurement relates to obtaining materials from outside suppliers. It includes supply sourcing, negotiation, order placement, inbound transportation, receiving and inspection, storage and handling etc.

 6. The Delphi method is forecasting process framework based on the results of multiple rounds of questionnaires sent to a panel of experts. Several rounds of questionnaires are sent out to a group of experts, and the anonymous responses are aggregated and shared with the group after each round. The experts are allowed to adjust their answers in subsequent rounds, based on how they interpret the “group response” that has been provided to them. Since multiple rounds of questions are asked and the panel is told what the group thinks as a whole, the Delphi method seeks to correct response through consensus.

**SECTION B**

7. Importance of Logistics

 Although many small businesses focus on the design and production of their products and services to best meet customer needs, if those products cannot reach customers, the business will fail. That’s the major role that logistics plays.

1. An effective logistics system contributes immensely to the achievements of the business and marketing objectives of a firm.
2. It creates time and place utilities in the products and thereby helps in maximizing the value satisfaction to the consumer.
3. By ensuring quick deliveries in minimum time and cost, it relieves the customers of holding excess inventories.
4. It also brings down the cost of carrying inventory, material handling, transportation and other related activities of distribution.
5. An efficient system of physical distribution/ logistics has a great potential for improving customer service and reducing costs.

Types of Logistics

Logistics can be split into five types by field:

1. Procurement Logistics : Procuring raw materials and parts

 b) Production Logistics : Materials Management, Distribution, Factories, Product Management, Shipping

 c) Sales Logistics : Delivery from Warehouse to Wholesalers, Retailers and Consumers

 d) Recovery Logistics : Recovering and Recycling recyclable products , Containers and Packaging

 e) Recycling Logistics : Recovering and Recycling, Recycling Products and Containers

8. CLASSIFICATION/ TYPES OF INVENTORY

1. Direct Inventories- These are inventories that are an integral part of the finished product.
* Raw Materials- These are goods which are to be used in the manufacturing process to produce final goods.
* Semi-finished goods- These are also known as work-in-progress. As the name suggests they are not 100% complete.
* Finished goods- they are fully completed goods ready for sale but not yet sold.
1. Indirect Inventories- Indirect inventories comprise of stock item that are necessary for the manufacturing of goods but are not direct component of such goods.
* MRO Inventories-Maintenance, repairs and operating supplies which are used in the production process but do not become a part of the products, called MRO Items and their stocking is called MRO inventories.

OTHER TYPES OF INVENTORIES

* Goods in transit- Under normal conditions, a business transport raw materials, WIP, finished goods etc from one site to other for various purpose like sales, purchase, further processing etc.
* Buffer Inventory- buffer inventory is the inventory kept or purchased for the purpose of meeting future uncertainities.
* Anticipatory stock- Based on the past experiences, a businessman is able to forecast the future trends of the market and takes certain decisions based on that.
* Decoupling Inventory-In manufacturing concern, plant and machinery should always keep running. The act of stopping machinery, costs to the enterpreneur in terms of additional set up costs, repairs, idle time depreciation, damages, trial runs etc.
* Cycle inventory- it is a type of inventory accumulated due to ordering in lots/sizes to avoid carrying the cost of inventory.

9. Third party logistics is an industry to which a shipper(owner of transported goods) outsources various elements of the supply chain to perform some/ all logistics management functions including inbound freight, customs, warehousing, order fulfillment, distribution and outbound freight.

ADVANTAGES OF 3PL

* Maximising Revenues- By outsourcing the logistics function, companies are able to concentrate on their core areas and can utilize both financial and non-financial resources where it can maximize returns.
* Cost control- controlling costs is distinct from reducing costs.
* Scalability- A 3PL provider can scale a companys space, labour and transportation depending on exactly what services are required.
* Time savings and cost savings- A business recognizes that success relies on a certain level of efficency and thats where a 3PL can have a huge effect.
* Expansion- 3PL services make it easier than ever to expand business into emerging markets and new areas including emerging countries.

DISADVANTAGES OF 3PL

* Loss of control- when choosing a 3PL provider, an organization is giving up a certain amount of control of the delivery.
* Cost- while a 3PL can save a business lots of time and money, external factors(tariffs,over-regulation, weather etc) can lead to escalating costs.
* Lowering of standards-The 3PL will potentially have no experience or understanding of the core business of the company and will be motivated by profit and meeting the terms of the contract at the lowest possible cost.
* Breach of confidentiality- outsourcing to a 3PL could potentially lead to a breach confidentiality, resulting in the exposure of customer personal data or the sharing of commercially sensitive information.

10. TRANSPORTATION FUNCTIONALITY

Following are the two major functionality of transportation.

* Product Movement

Whether the product is in the form of materials, components, assemblies, work-in-process, or finished goods, transportation is necessary to move it to the next stage of the manufacturing process or physically closer to the ultimate customer.

* Product storage

A less common transportation function is temporary storage vehicles make rather expensive storage facilities..

PRINCIPLE OF TRANSPORTATION

* Economy of Scale- It refers to the characterstic that transportation cost per unit of weight decreases when the size of the shipment increases.
* Economy of distance- It refers to the characterstic that transportation cost per unit of distance decreases as distance increases.

11. OBJECTIVES OF PHYSICAL DISTRIBUTION

* Customer Satisfaction
* Profit Maximisation
* To make available the right goods in right quantity at right time and right place at least cost.
* To acheive minimum inventory level and speedier transportation.
* To establish price of products by effective management of physical distribution activities.
* To gain competitive advantage over rivals by performing customer service more effectively.

COMPONENT OF PHYSICAL DISTRIBUTION

1. Order processing- order processing includes activities like receiving order, handling order, granting credit, invoicing, dispatching, collecting bills etc.
2. Storage and warehousing- storage means making proper arrangement for retaining the goods in proper condition till they are demanded by customers.. There are two types of warehouse
* Storage warehouse- it helps in storing the good for long and medium period of time to ensure matching of supply and demand.
* Distribution warehouse-it facilitate assembling the product and redistributing it within a short period of time.

 3.Inventory Control- Inventory control refers to efficent control of goods stored in warehouses: Maintaining adequate level of inventory is very essential for smooth flow of business.

4. Material handling- it includes all those activities which are associated in moving products when it leaves manufacturing plant but before it is loaded on the transport.

5. Transportation- transportation as a component of physical distribution is concerned with the movement of goods from the warehouse to customer destination.

12. TYPES OF DISTRIBUTION CHANNEL

1. Direct channel- when the manufacturer or the producer supplies goods directly to the consumers is called direct channel.
2. Indirect channel-it can be defined as marketing of goods first to retailers who in turn sell it to consumers is known as indirect channel of distribution.
3. Selective distribution channel- These distribution channel enables the manufacturer to sell goods in lot to a few selected wholesalers, who sell it to retailers, who further in turn sell product to the consumers.
4. Intensive distribution channel- In intensive distribution channels, the producer uses many wholesalers and retail middlemen for the promotion of the product.

FUNCTIONS OF DISTRIBUTION CHANNELS

1Transactional function- distribution channel provides time, place and ownership entity.

2. Logistics and physical distribution- Marketing channels are responsible for assembly,storage, sorting and transportation of goods from manufacturers to customers.

3.Facilitation- Channels of distribution even provide pre-sale and post purchase services like finance, maintenance, information dissemintation and channel coordination.

4.creating effectiveness-this is done in two ways bulk breaking and assortments

5.sharing risks-since most of the channels buy the products beforehand, they also share the risk with manufacturer and do everything possible to sell it.

 SECTION -C

13.warehousing are the godowns for keeping and storing finished goods facilitating to the marketing snd distribution functions of the enterprise.

ECONOMIC AND SERVICE BENEFIT OF WAREHOUSING

1. ECONOMIC BENEFITS-
	* Movement Consolidation- reduction in transportation cost by consolidating movement,
	* Break -bulk- goods from a plant for various customers are shipped to a warehouse obtaining the benefit of bulk shipment and then send to the customers in small quantities as per their requirements.
	* processing/postponement- products uncommited to a customer are sent to warehouse as per order labels.

 2.SERVICE BENEFITS

1. Spot stocking- stocking of products in strategically located warehouses during demand sensitive period
2. Assortment- assortment of stock from different manufacturers enables an opportunity for the customers(retailers) to choose what they want.
3. Mixing- products from different plants are received and combinations are prepared as per the order.

TYPES OF WAREHOUSES

1. Private warehouses- These are owned and managed by the channel suppliers(manufacturere/traders) and resellers and are used exclusively for their own distribution activities.
2. Public warehouses- These are warehouses owned by govt and semi-govtbodies and are made available to private firms to store goods on payment of rent.
3. Bonded storage- these are warehouses are owned, managed and controlled by government as well as private agencies.
4. Field warehouses-These warehouses are managed by a public warehousing agencies in the premises of factory or company which needs the facility of borrowing from a bank against the certification of goods in storage.
5. Cold storage-Type of warehouse used to store fresh/frozen perishable fruits, vegetables, sea food, diary productsetc at a desired temperature to maintain the quality of product for orderly marketing.
6. Cooperative warehouses- These warehouses are owned, managed and controlled by cooperative societies.
7. Distribution centres- This type of storage facility usually has large space which enables fast movement of large quantities of stores for short period while on the other hand, conventional warehouses hold goods for long time say 2monthsor1 year.

14. CODIFICATION

The act or process of arranging something such as laws or rules into a system.It implies evolution and employment of a code or a system that uses a uniform pattern of numbering the items and denoting each item by a well defined scientific nomenclature which will uniquely identify a store when so referred to.

SYSTEM OF CODIFICATION

* Alpahabetic system-letters are chosen to represent particular classification. Aiphabet code has 26 letters.
* Simple Numeric Method-Under this method specific numbers are assigned to denote a particular classes of material.
* Combination system- This system as the name suggests, is the combination of both the alphabetical and numericla system described before.
* Block system-block of numbers are reserved for specific classification such as 1700-1799 for the raw materials and 1800-1899 for manufacturing parts etc.
* Decimal system- numbers are assigned in such a manner that each digit represents a sub-groupor sub-account of the prevous digit.
* Mnemonic codification- when we use letters to help memory, we call such a system a mnemonic system.

ADVANTAGES OF CODIFICATION

1. To avoid long and unwieldly description.
2. To have accurate and logical identification.
3. To prevent duplication.
4. To standardize items.
5. To reduce varities,
6. To have an efficent purchasing department.
7. To obtain efficency in recording and accounting.
8. To simplify and facilitate mechanical recording.
9. To simplify and facilitate pricing.
10. To have proper system of location and indexing.
11. To assure correct and efficient inspection.
12. To implement production as planned.