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Lec - 29

B.C.A 2 Semester

Subject - Financial Accounting
& Management

Unit - VI

Topic - Inventory Management

Meaning and definition of Inventory

Meaning →

The word "Inventory" is understood differently by various authors.

In accounting language, it may mean stock of finished goods only. In a manufacturing concern, it may include raw materials, work-in-progress and stores etc.

According to Bolton S.E. "Inventory refers to stock pile of products a firm is offering for sale and components that make up the product."

International Accounting Standard Committee

Define inventories as "Tangible property".

1) Held for sale in the ordinary course of business.

2) In the process of production for

Such sale or.

3) To be consumed in the process of production of goods or services for sale.

Types of Inventory

There are many types of inventory:

• Buffer Stock / Safety Stock ⇒ The demand for material may fluctuate from day to day or from week to week. Similarly, the actual delivery time may be different from the normal leadtime.

• Movement Inventories ⇒ movement inventories are held for the also called transit or pipeline inventories. Their existence goes to the fact that transportation.

• Anticipation Inventories ⇒ Anticipation inventories are held for the reason that a future demand for the product is anticipated.

- Decoupling Inventories - The inventories in between the various machines and various departments are held for progress of work.

Objectives of Inventory Management

The objectives of Inventory Management may be discussed under two heads:

1) operating objectives:

- (i) Minimizing the wastage
- (ii) Control over the production level
- (iii) Better service to customers.
- (iv) Availability of materials.

2) Financial objectives.

- (i) Economic in purchasing
- (ii) Efficient use of Capital.
- (iii) Minimizing the Cost.

10. Factors Determining the Optimum Level of Inventory

10.1 Financial Position of the Firm

Financial position of the firm has significant influences on inventory level. A financially strong company may buy materials in bulk but financially weak company can not maintain large stock.

10.2 Rate of Inventory Turnover

It is time period within which inventory completes the cycle of production and sales. When the turnover rate is high, investment in inventories tends to be low.

10.3 Type of Product

The type of product also influences the inventory level. For example, The fashionable goods are not stocked in large amounts, durable products are more susceptible to inventory holding as the risk of obsolescence is less.

10.4 Costs

There are certain costs of carrying stock. Some of these costs (storage costs, ordering costs) are directly measurable. On the other hand, certain costs (cost of loss of sales due to shortage of stock) are not measurable. All these costs influence the level of inventories.

10.5 Market Structure

Under the conditions of imperfect competition, demand is uncertain and stocks must be held if the firm wants to take advantage of profitable sales opportunities the optimum level of sales will depend upon the variability of sales and the cost revenue relationship. The level of inventory raises with increase in the difference between price and marginal cost. Thus market structure influences the level of inventories.

11. Inventory Management Techniques

In order to ensure efficient management of inventories, the finance manager may be required to answer the following questions:

1. Are all items of inventories equally important, or some of the items are to be given more attention ?
2. What should be the size of each order or each replenishment ?
3. At what level should the order for replenishment be placed ?

Various technique has been suggested to deal with these problems. Some of these has been discussed as follows:

1. Economic Order Quantity (EOQ)
2. ABC (Always Better Control)
3. SDE (Scarce, Difficult, Easy to obtain)
4. VED (Vital, Essential, Desirable)

- HML (High, Medium, Low)
- FSN (Fast moving, Slow moving, Non-moving)
- GOLF (Government, Ordinary, Local, Foreign sources)
- SOS (Seasonal, Off-Seasonal)
- Analysis/(Ranked & score Method)
- 10. JIT (Just In Time)
- 11. Kanban System

11.1 Economic Order Quantity (EOQ)

According to EOQ model, "The economic order quantity is that inventory level that minimizes the total of ordering and carrying costs." The importance of effective inventory management is directly related to the size of the inventory. The inventory management basically focus on maintaining an optimum level of inventory in order to minimize the costs attached with different inventory levels.

The Economic Order Quantity (EOQ) model attempts to determine the order size that will minimize the total inventory cost.

Total inventory cost = Total carrying cost + Total ordering cost

Parameters:

1. Minimum level of inventory of that item, depending upon the usage rate of that item, time lag in procuring that item and unforeseen circumstances, if any.
2. The reorder level of that item, at which next order for that item must be placed to avoid any chance of stock-out, and
3. The re-order quantity for which each order must be placed.

Assumption: The EOQ model is based on the following assumptions:

- (i) The total usage of a particular item for a given period (usually a year) is known with certainty and that the usage rate is even through out the period.
- (ii) That there is no time gap between placing an order and getting its supply.
- (iii) The cost per order of an item is constant and the cost of carrying inventory is also fixed and is given as a percentage of average value of inventory.
- (iv) That there are only two costs associated with the inventory, and these are the cost of ordering and the cost of carrying the inventory.

EOQ model may be presented as follows:

$$EOQ = \sqrt{\frac{2AO}{C}}$$

or

$$EOQ = \sqrt{\frac{2R \cdot C_p}{C_h}}$$

Where,

EOQ = Economic quantity per order
A = Total annual requirement for the item
O = Ordering cost per order of that item
C = Carrying cost per unit per annum

Total

R = Requirement
Cp = Cost of purchase
Ch = Cost of holding

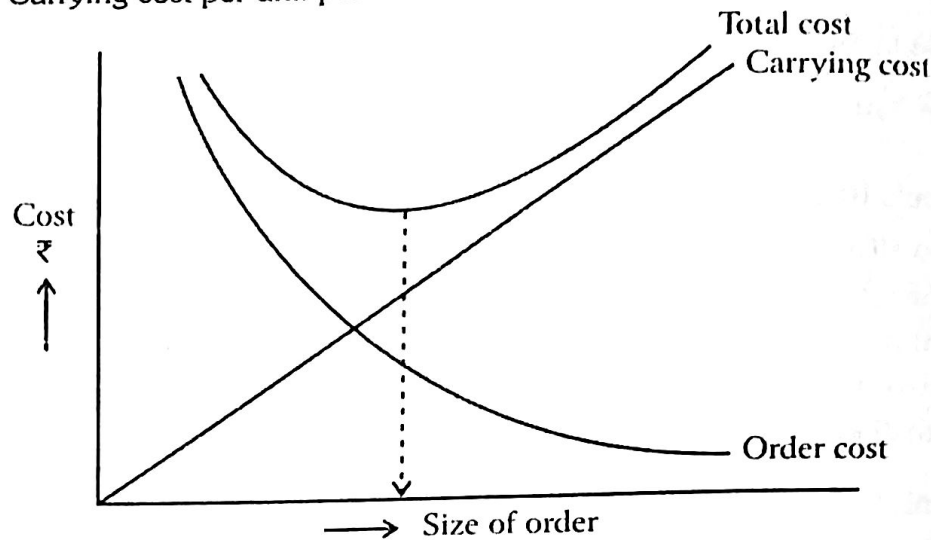


Fig. 1: Graphical presentation of the EOQ model

The EOQ model can also be presented graphically as the above fig. 1. The figure shows that the total ordering cost for any particular item is decreasing as the size per order is increasing. This will happen because with the increase in size of the order, the total number of orders for a particular item will decrease resulting in decrease in the total order cost. The total annual carrying cost is increasing with the increase in order size. The trade-off these two costs is attained at the level at which the total annual cost is the least.

12. Reorder Level/Ordering Point

The reorder level is the level of inventory at which the fresh order for that item must be placed to procure fresh supply. The reorder level depends upon:

1. Length of time between the placement of an order and receiving the supply, and
2. The usage rate of the item. The inventory is constantly being used up. This is true regardless of the type of inventory, Raw materials and work-in-progress.

Inventories are being used in the production while the finished goods are being sold regularly. The rate, at which the inventory is being used up is called the usage rate. The reorder level can be determined as follows:

$$\text{Reorder level} = \text{Lead time demand} + \text{Safety stock}$$

or

$$\text{Reorder level} = \text{Lead time} \times \text{Rate of consumption}$$

13. Safety Stock / Buffer Stock

Safety stock is the minimum level of inventory desired for an item given the expected usage rate and the expected time to receive an order. The safety stock protects the firm from stock-outs due to unanticipated demand for the item or to slow deliveries. Increasing the amount of inventory held as safety stock reduces the chances of a stock out and therefore, reduces stock out costs over the long run.

$$\text{Safety stock} = (\text{Maximum usage rate} - \text{Average usage rate} \times \text{Lead time})$$

$$\text{Safety stock} = \text{Minimum stock}$$

14. Lead Time/Procurement Time

This is the time gap between placement of an order and the time actual supply it is not necessarily identical to delivery time. It is composed of three components, namely.

$$\text{Lead time} = \text{Servicing time} + \text{Delivery time} + \text{Receiving time}$$

14.1 Servicing Time

It is time taken for placing an order it includes:

1. Time for obtaining quotations.
2. Time for visiting potential suppliers.
3. Time for contracts.

14.2 Delivery Time

The time taken by the suppliers to comply certain order.

14.3 Receiving Time

This includes:

1. Time for inspection of goods.

2. Time for movement of goods to store.
3. Time for entering goods in stocks.

14.4 Ways to Reduce Lead-Time

The aim of lead-time reduction is to reduce the amount of unnecessary time within the order-to-delivery process and thus reduce the need to hold so many inventories as cover for this time delay. This can be achieved in a number of different ways, as follows:

1. **Manage the supply chain:** This will allow stock to be reduced at various stages in the total pipeline because it is clear that other stock exists to provide the necessary safety stock cover.
2. **Use information better:** If there is a clearer picture throughout the supply chain of what the true final demand for a product is, then it will be much easier to provide more accurate forecasts of the likely demand at other points in the supply chain.
3. **Better stock forecasting:** This will allow for clearer and more confident planning of stock requirement at the various stock-holding points in the chain and thus reduce the need to hold safety stock.
4. **Use faster transport:** Faster transport will almost certainly cost more but there will be an associated reduction in the need to hold stock and savings will be made accordingly. Ideally this will provide an overall cost reduction in the supply of that product as a whole.

15. ABC Analysis

The ABC analysis is based on the propositions that:

1. Managerial time and efforts are scarce and limited.
2. Some items of inventory are more important than others.

The ABC analysis classifies various inventory items into three sets or groups of priority and allocates managerial efforts in proportion of the priority. The most important items are classified as class 'A' those of intermediate importance are classified as class 'B' and the remaining items are classified as class 'C'. The financial manager should monitor different items belonging to different groups in that order of priority. Utmost attention is required for class 'A' item, followed by items in class 'B' and then items in class 'C'.

The following points should be kept in the mind for ABC analysis:

1. Where items can be substituted for each other, they should be preferably treated as one item.
 2. There can be more than three classes and the period of consumption need not necessarily be one year.
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