

Unit-13 Inventory Management

QN1 What is inventory and its management? How do you manage or control over inventories in a business enterprise? Or how should firm manage inventories?

Inventory is defined as stock of goods. The basic types of inventory are:-

Raw materials: The raw materials inventory contains of all items purchased by the firm, usually basic materials such as screws, plastic, raw steel, or rivets.

Work-in-progress: All items currently in the production process. These are normally partially finished goods, at some intermediate state of production.

Finished goods: The finished goods inventory consists of item that have been produced but not yet sold.

Inventory management is the decision about optimum amount of inventory holding, and ordering so that smooth operation of business could be done efficiently, total inventory cost would be minimized and value of firm would be maximized.

Inventory Control may be said to be a planned method whereby investment in inventories held in stock is maintained in such manner that is insures proper and smooth flow of materials needed for production operations as well sales while at the same time, the total costs of investment in inventories is kept at a minimum. There are various methods for inventory control system. Some of them are as:

Red line method: Inventories are stored in bins. Such bins are marked by red line at the level of reorder point and when the store clerk issue of that particular inventory; he also checks the inventory level. When inventory level reaches at red line he places new order.

Two bin method: Under this method two bins are used to store item of inventory. Quantity of inventory in one bin will be equal to reorder level and all other inventories for regular use are kept in another bin. When the second bin becomes empty, store clerk places the new order.

Computerized Inventory System: Every receipts and issues are entered in the computerized system. Data relating to reorder level are also entered and an automatic system of placing order through e-mail or other connection with supplier is made.

Traditional bin-card system: Separate bin card is kept in each bin, and regular entries are made for receipts and issued of inventories from store. When cash balance as shown by the bin-card reaches at the reorder level, the store clerk places new order.

Just in Time (JIT) system: Just-in-Time System is the inventory system that minimizes the inventory investment by having material inputs arrive at exactly the time they are needed for production. Because its objective is to minimize the inventory investment, JIT system uses no, or very little, safety stocks. Extensive coordination must exist between the firm, its supplier, and shipping companies to ensure that material inputs arrive on time. Failure of materials to arrive on

time results in a shutdown of the production line. Benefits of JIT system are lower carrying cost, automatic ordering, fewer accounting errors, lower quality control costs and elimination of waste.

QN2 What are the objectives or motives of holding Inventories?

The motives for holding inventory may be enumerated as follows:

1. **Transactional Motive:** Every firm has to maintain some level of inventory to meet the day to day requirements of sales, production process, customer goods as well as raw materials.
2. **Precautionary Motive:** A firm should keep some inventory for unforeseen circumstances also. For example, the fresh supply of raw material may not reach due to strike by the transportation or due to natural calamities in a particular area.
3. **Speculative Motives:** The firm may be tempted to keep some inventory in order to capitalize an opportunity to make profit e.g., sufficient level of inventory may help the firm to earn extra profit in case of expected shortage in the market.

QN3 What are Determinants of the size of investment in inventory?

Following factor should be considered to determine the optimum level of inventory.

1. **The rate of inventory turnover:** The rate of inventory turnover is the time period within which inventory completes the cycle of production cycle and sales. When the turnover rate is high, investment in inventories tends to be low.
2. **Types of product:** Durable products are more susceptible to inventory holding as the risk of perishable and obsolescence is less. Perishable and fashion are not stocked in large amount. Thus, the type of product influences the inventory level.
3. **Costs:** Some of costs are storage cost, ordering cost, spoilage and obsolescence costs. They are directly measurable. On the other hand opportunity costs and cost of capital costs caused by price level changes, costs of sales due to shortage of stock are not measurable. All these costs influence the level of inventories.
4. **Financial position of the firm:** A financially sound company may buy materials in bulk and hold them for future use. If firms have fewer funds they cannot maintain large stocks.
5. **Inventory policy of the firm:** The inventory policy and attitude of management also influence the inventory level.
6. **Economies of production run:** Modern machinery is very costly and the cost of idle machine time is considerable. Therefore, every firm likes to maintain sufficient stock of raw materials to ensure continuous production.
7. **Market structure:** Under imperfect competition conditions, 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.

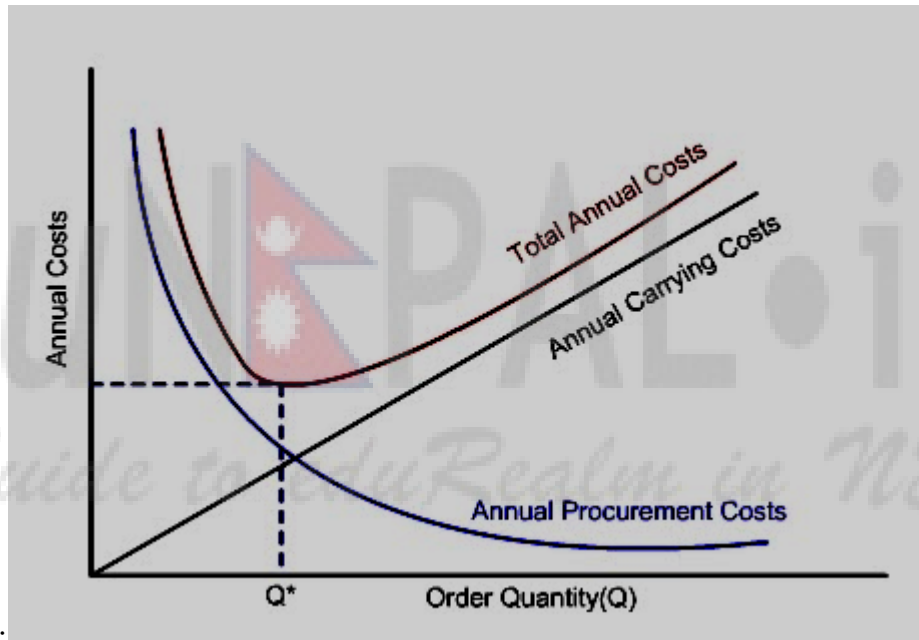
QN5 Write short notes on following:

Economic Order Quantity (EOQ):

Economic order quantity is that material order quantity if firm adopted, would minimize the inventory management cost. In determining this EOQ; it is assumed that the cost of managing an inventory is made by two parts- ordering cost and carrying cost. These two costs react against each other for the change in order size. As the order size increases, the total carrying costs decrease but ordering size is increases and vice-versa.

$$EOQ = \sqrt{\frac{2AO}{C}}; A = \text{Annual Demand}, O = \text{Ordering Cost Per Order}, C = \text{Carrying Cost Per Unit}$$

Fig: Graphical Determination of



EOQ(Q*):

Re-Order Level or Re-Order Point:

The level of inventory at which a reorder should be placed is known as re-order level or re-order point. If the order is made after reaching below re-order point the remaining stock will not be sufficient for the operation of the business. It is calculated by using the following equation.

$$ROL = \text{Safety Stock} + \text{Lead Time} \times \text{Average Consumption-Goods in Transit}$$

Lead- Time:

The term lead-time refers to the time normally taken in receiving the delivery of inventory after placing orders with the suppliers. Lead-time may also be called as the delivery or procurement time of inventory. There is a direct relationship between lead time and inventory. As lead time increases, inventories increase correspondingly.

Goods in Transit:

Goods which have been ordered but have not been received is called goods in transit. If a new order must be placed before the previous order received, goods in transit inventory will build up.

Goods in transit can be calculated as follows:

Step I: Calculation of order frequency

Order frequency: Days in a Year/ No of Order

Step II: Calculation of no of GIT

Approximate no of GIT = Lead time/Order frequency

No of GIT= Remove amount after decimal or round off to the down point

Step III Calculation of GIT

$GIT = EOQ \times \text{No of GIT}$

QN4 Classify and explain the inventory management cost. How does total cost of inventory management is calculated?

The different costs are:

1. **Material Cost:** This is the cost of purchasing and carriage of goods. The total material cost can be calculated by using following equation. $\text{Material cost} = \text{Annual Demand (A)} \times \text{Purchase price}$
2. **Ordering Cost:** Cost requires receiving the goods from ordering is known as ordering cost. Ordering costs which consists of expenditure connected with:

- Receiving quotation
- Writing a purchase order
- Following up and expediting purchase order
- Receiving material and inspecting it
- Processing seller's invoice

$\text{Total Ordering Cost} = \text{No of Order} \times \text{Ordering Cost per order}$

3. **Carrying Cost:** Carrying cost is the cost per unit of holding an item in inventory for a special time period. Carrying costs, which with quantity ordered base on average inventory and consists of:

- Storage cost
- Cost of deterioration and obsolescence
- Cost of insurance
- Opportunity Cost

$\text{Total Carrying Cost} = \text{Carrying Cost per unit} \times \text{Avg. Inventory level}$

4. **Cost of Safety Stock:** The safety stock is the minimum level of inventory that the firm wishes to hold as protection against running out. It is calculated as: $\text{Cost of Safety Stock} = \text{Safety Stock in Unit} \times \text{Carrying Cost Per Unit}$.
5. **Total Cost:** Therefore the total cost of inventory management is calculated as: $\text{Total Cost} = \text{Total Ordering Cost} + \text{Total Carrying Cost} + \text{Cost of Safety Stock} + \text{Material Cost}$.