

CLASS 3

BENEFITS OF INVENTORY CONTROL:

The following are some benefits of inventory control:

- Inventory control reduces excess stock and lowers storage costs.
- Inventory control prevents stock outs and ensures product availability.
- Inventory control improves cash flow by avoiding overinvestment in stock.
- Inventory control minimizes waste from damage or expiry.
- Inventory control improves order accuracy and reduces delivery errors.
- Inventory control supports better demand forecasting and planning.
- Inventory control increases profitability through efficient stock management.
- Inventory control enhances customer satisfaction with timely supply.
- Inventory control helps detect theft and inventory discrepancies.
- Inventory control ensures smooth production and business operations.

INVENTORY SYSTEM:

A system a business uses to keep track of its stock, record what items are available, monitor what is sold or used, and decide when and how much to reorder to avoid shortages or excess.

DIFFERENT TYPES OF COSTS IN AN INVENTORY SYSTEM:

The inventory costs are affected (i.e. increase or decrease) by the policies of an organization to maintain a particular level of inventory. The inventory costs are classified as follows:

1. Purchase cost This cost is the actual price per unit (in Rs) paid for the procurement of items. The price per unit, C of an item is independent of the size of the quantity ordered or purchased (or manufactured). The purchase cost is given by:

$$\text{Purchase cost} = (\text{Price per unit}) \times (\text{Demand per unit time}) = C \times D$$

When price-break (or quantity discounts) is available on purchase, the unit price becomes smaller as the size of order, Q exceeds a specified quantity level. In such cases, the purchase cost become variable and depends on the size of the order. In this case purchase cost is given by:

$$\text{Purchase cost} = \text{Price per unit when order size is } Q \times \text{Demand per unit time} = C(Q) \times D$$

2. Carrying (or holding) cost: The inventory cost incurred for carrying (or holding) inventory items in the warehouse is referred as *carrying cost*. The carrying cost includes cost incurred on:

- (i) storage cost for rent paid for warehouse space,
- (ii) inventory handling cost for payment of salaries,
- (iii) insurance cost against fire or other form of damage,
- (iv) opportunity cost of the money invested in inventory,
- (v) obsolescence costs, deterioration costs, lost or pilfered costs,
- (vi) Depreciation, etc.

Carrying cost can be determined by two different ways:

- (a) Carrying cost = (Cost of carrying one unit of an item in the inventory for a given length of time, usually one year) \times (Average number of units of an item carried in the inventory for a given length of time)
- (b) Carrying cost = (Cost of carrying one rupee's worth of inventory for one year) \times (Rupee value of units carried)

Further, if r is the carrying (or holding) charges as a percentage of average rupee value on an annual basis and C is the unit cost of the item in rupees, then the annual carrying cost may be expressed in terms of percentage of the average rupee value of inventory as: $r \times C$.

3. Ordering (or set-up) cost: The inventory cost incurred each time an order is placed for procuring items from the vendors is referred as *ordering cost*. The cost per order generally includes:

- requisition cost of handling of invoices, stationery, payments, etc.
- cost of services which includes cost of mailing, telephone calls, transportation, and other follow up actions
- materials handling cost incurred in receiving, sorting, inspecting and storing the items included in the order
- Accounting and auditing, etc.

When an item is produced 'in-house', ordering cost is referred as *set-up cost*, which includes both paperwork costs and the physical preparation costs.

Ordering (or set-up) cost does not vary with size of the order (or production), but varies with the number of orders placed during a given period of time. Ordering cost can be calculated as follows:

Ordering cost = (Cost per order/per set-up) × (Number of orders/set-ups placed in the given period)

4. Shortage (or stock out) and customer-service cost: The shortage occurs when inventory items cannot be supplied due to delay in delivery or demand becomes more than the expected demand. The shortage can be viewed in two different ways:

- *Customers are ready to wait for supply of items, (back ordered):* In this case there is no loss of sale but the nature and magnitude of back ordering cost, extra paper work and expenses incurred in processing the order is not exactly known.
- *Customers are not ready to wait for supply of items:* In this case, an organization may suffer with a loss of customer goodwill and therefore causes loss of sale. The loss of goodwill is expected to increase in proportion to the length of the delay, and causes decline in the growth of business due to loss of potential revenue.

Shortage cost in a given period may be calculated as follows:

$$\text{Shortage cost} = (\text{Cost of being short one unit of an item}) \times (\text{Average number of units short})$$

The average number of units short in a given period is determined as follows:

$$\text{Average number of units short} = \frac{\{\text{Minimum shortage}\} + \{\text{Maximum shortage}\}}{2} \times \{\text{Period of shortage}\}$$

5. Total inventory cost: If price discounts are offered, the purchase cost per unit becomes variable, and depends on the quantity purchased. In such a case, the total inventory cost is calculated as follows:

$$\text{Total variable inventory cost (TVC)} = \text{Purchase cost} + \text{Ordering cost} + \text{Carrying cost} + \text{Shortage cost}$$

But, if price discounts are not offered, the purchase cost per unit of an item remains constant and is independent of the quantity purchased, and then the total inventory cost is calculated as follows:

$$\text{Total inventory cost (TC)} = \text{Ordering cost} + \text{Carrying cost} + \text{Shortage cost}$$