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TECHNIQUES OF INVENTORY MANAGEMENT

There should be a systematic approach to inventory management which must attempt to balance out the expected costs and benefits of maintaining inventories. 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 are equally important, or some of the items are given more attention?
2. What should be the size of each order or each replenishment?
3. At what level should be order for replenishment be placed?

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

- (A) ABC ANALYSIS :** The ABC analysis is based on the proportions that
- (a)** managerial time and efforts are scare and limited, and
 - (b)** some items of inventory are more important than orders.

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 items are classified as 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, followed by items in class B and then in class C.

Under ABC analysis, the different items may be placed in different groups as follows:

1. Different items are given priority order on the basis of total value of annual consumptions. Item with the highest value is given top priority and so on. The annual consumption value of all the items, already arranged in priority order, are then shown in cumulative items for each and every item.
2. Thereafter, the running cumulative totals of annual value of consumption are expressed as a percentage of total value of consumption.
3. Then these cumulative percentage of consumption values are divided into three categories i.e., A, B, and C. Usually group A is considering of items having cumulative percentage value of 60% to 70% ; group is considering of next 20% to 25% an the remaining items are placed in group C

(B) ECONOMIC ORDER QUANTITY MODEL (EOQ) : Economic order quantity is that quantity of material for which each order should be placed. Whenever the inventory comes down to the re-order point, a fresh order is placed for procuring additional inventory equal to the economic order quantity. A key issue in the inventory management is to determine the economic order quantity. Purchasing large quantities at one time and keeping the same as stock, increases carrying costs of inventories but reduces ordering costs of inventories. On the other hand, small orders reduce the average inventory level thereby reducing the carrying costs of inventories but increasing the ordering costs because of increased number of orders. Therefore,

determination of economic order quantity is a trade-off between two type of inventory costs:

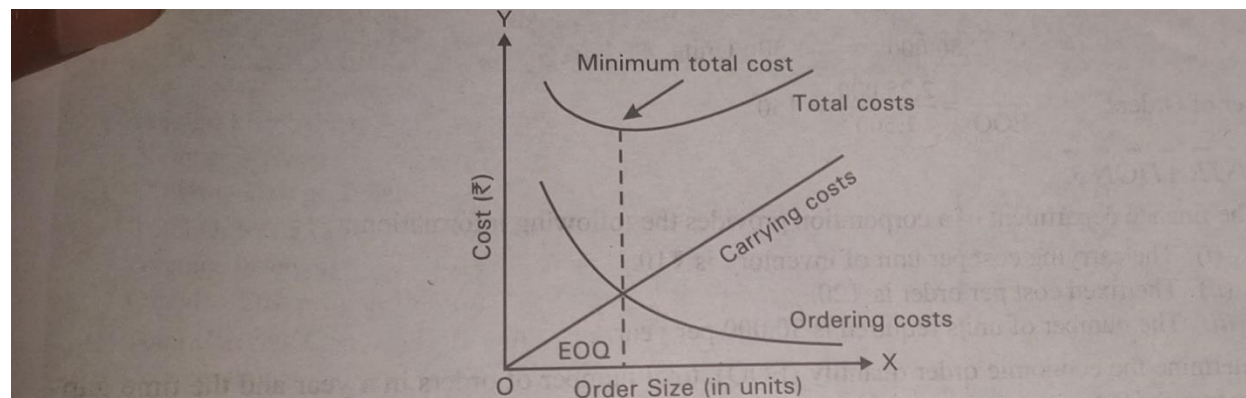
- (i) **Ordering costs**
- (ii) **Carrying costs**

(i) **ORDERING COSTS:** ordering costs include cost of placing orders and costs of receiving delivery of good such as clerical expenses in preparing a purchase order, transportation expenses, receiving expenses, inspection expenses and recording expenses and recording expenses of the good received. These expenses are generally fixed per order placed, irrespective of the quantity of the order. Total ordering costs are calculated by multiplying the ordering cost by number of order placed during the year. If the number of order placed is large, the higher will be the ordering cost. But if the firm purchases in large quantities by each order, the number of orders will decrease and therefore, the total ordering cost will be smaller. In order to calculate the number of orders, the total purchase requirement during the year is divided by the quantities per order.

(ii) **CARRYING COSTS:** Carrying cost include cost of maintaining or carrying inventory, such as godown rent, maintenance of building, insurance expenses of inventory against fire and theft, loss due to pilferage and obsolescence of inventory, clerical and accounting costs for handling the inventory, opportunity cost of funds locked up in inventory etc. These costs vary with inventory size. Larger the quantity of goods purchased each other, the higher are carrying costs because average level of inventory also increases and vice versa.

The behaviour of carrying costs is contrary to that of ordering costs. In case of purchases in large quantities, carrying costs increase but ordering cost decrease. On the other hand, if goods are purchased in small quantities, carrying costs decrease but ordering costs increase due to increased number of orders.

The sum of ordering cost and carrying cost represents the total costs of inventory. Economic Order Quantity (EOQ) is that order quantity at which the total of ordering and carrying cost is minimum.



EOQ can be determined by the following formula :

$$EOQ = \sqrt{\frac{2 \times A \times O}{C}}$$

where

- A = Annual purchase requirement in units
- O = Ordering cost per order
- C = Carrying cost per unit

EXAMPLE 1 :

Compute the economic order quantity from the following information:

Annual inventory requirement : 4,00,000 units

Cost of placing each order : Rs. 20

Carrying cost of one year : Rs. 4 per unit

SOLUTION:

$$\begin{aligned} \text{EOQ} &= \sqrt{2AO/C} \\ &= \sqrt{2 \times 400000 \times 20/4} \\ &= 2,000 \text{ units} \end{aligned}$$

EXAMPLE 2 :

Calculate EOQ from the following information. A Ltd. Sells 2,25,000 units of a wrist watch per annum. The unit cost per watch is Rs. 1,000. The cost of placing an order is Rs. 500 and carrying cost is 10% (assume always % of unit price cost) . also find out the number of orders to be placed per year.

SOLUTION:

$$\text{EOQ} = \sqrt{2AO/C}$$

Where,

A = annual inventory requirement in units

$$= 2,25,000 \text{ units}$$

O = Ordering cost per order

$$= \text{Rs } 500$$

C = carrying cost per unit

= 10% of Rs 1,000

$$\text{EOQ} = \sqrt{2AO/C}$$

$$= \sqrt{2 \times 2,25,0000 \times 500 / 100}$$

$$= 1,500 \text{ units}$$

$$\text{Number of orders} = A / \text{EOQ}$$

$$= 2,25,0000 / 500$$

$$= 150 \text{ orders}$$