

- **Inventories** Companies hold inventories in the form of raw materials, work-in-process and finished goods. Inventories represent investment of a firm's funds. The objective of the inventory management should be the maximisation of the value of the firm. The firm should therefore consider: (a) costs, (b) return, and (c) risk factors in establishing its inventory policy.
- **Transaction Motive to Hold Inventory** for facilitating smooth production and sales operation.
- **Precautionary Motive to Hold Inventory** to guard against the risk of unpredictable changes—in usage rate and delivery time.
- **Speculative Motive to Hold Inventory** to take advantage of price fluctuations.
- **Ordering Costs** requisition, placing of order, transportation, receiving, inspecting and storing and clerical and staff services. Ordering costs are fixed per order. Therefore, they decline as the order size increases.
- **Carrying Costs** warehousing, handling, clerical and staff services, insurance and taxes. Carrying costs vary with inventory holding. As order size increases, average inventory holding increases and therefore, the carrying costs increase.

- **Economic Order Quantity (EOQ)** The firm should minimise the total cost (ordering plus carrying). The economic order quantity (EOQ) of inventory will occur at a point where the total cost is minimum. The following formula can be used to determine EOQ:

$$EOQ = Q^* = \sqrt{\frac{2AO}{c}}$$

where A is the annual requirement, O is the per order cost, and c is the per unit carrying cost. The economic order level of inventory, Q^* , represents maximum operating profit, but it is not optimum inventory policy.

- **Optimum Inventory Policy** The value of the firm will be maximised when the marginal rate of return of investment in inventory is equal to the marginal cost of funds. The marginal rate of return (r) is calculated by dividing the incremental operating profit by the incremental investment in inventories, and the cost of funds is the required rate of return of suppliers of funds.
- **Reorder Point** The inventory level at which the firm places order to replenish inventory is called the reorder point. It depends on (a) the lead time and (b) the usage rate. Under perfect certainty about the usage rate, and instantaneous

delivery (i.e., zero lead time), the reorder point will be equal to: $\text{Lead time} \times \text{Usage rate}$.

- **Safety Stock** In practice, there is uncertainty about the lead time and/or usage rate. Therefore, firms maintain safety stock which serves as a buffer or cushion to meet contingencies. In that case, the reorder point will be equal to: $\text{Lead time} \times \text{Usage rate} + \text{Safety stock}$. The firm should strike a trade-off between the marginal rate of return and marginal cost of funds to determine the level of safety stock.
- **Selective Control System – A-B-C Analysis** A firm, which carries a number of items in inventory that differ in value, can follow a selective control system. A selective control system, such as the A-B-C analysis, classifies inventories into three categories according to the value of items: A-category consists of highest value items, B-category consists of high value items and C-category consists of lowest value items. More categories of inventories can also be created. Tight control may be applied for high-value items and relatively loose control for low-value items.

- **Total Quality Management (TQM) System** Large numbers of companies these days follow the total quality management (TQM) system which requires companies to adopt JIT and computerised system of inventory management.