Inventory Terminology

(i) Bulk

The classic use of the term bulk (bulk materials, bulk inventory, bulk storage) in inventory management and distribution refers to raw materials such as coal, iron ore, grains, etc. that are stored or transported in large quantities. This would include rail cars, tanker trucks, or silos full of a single material. However, this term can also have a variety of other definitions based upon the specific industry or facility.

(ii) Cost of Ordering

Ordering cost includes the cost of receivers who take in material, the costs of setting up suppliers, and the cost of material planners and buyers, and any other cost associated with placing orders on either the factory or suppliers. Ordering costs are those costs associated with placing an order, including expenses related to personnel in a purchasing department, communications and the handling of the related paperwork. Lowering these costs would be accomplished by placing a small numbers of orders, each of a large quantity. Unlike carrying costs, ordering costs are generally expressed as a monetary value per order.

- Expense of issuing a purchase order to an outside supplier or from internal production setup costs
- Vary directly with number of orders or setups
- Order cost includes transportation cost, and cost for requisition, analyzing vendors, writing purchase orders, transportation cost to transport the order quantity, receiving
- materials, inspecting materials, following up orders and doing the process necessary to complete the transaction

(iii) Demand

Demand of a product is number of units taken from its inventory. In economics, demand is supported by

- The desire of a person to acquire a thing
- Capacity of a person to buy a thing.

There exists a relation between demand and price. It depends on

- Price of commodity
- Price of the substitutes and compliments
- Income of the purchaser.

(iv) Demand Pattern

Amount of stock, which is to be maintained, depends upon the consumption or use of a commodity. The characterization of product demand in terms of regularity, volume and timing that determine company policies in creating forecast, inventory reorder and lot size parameters. Its study depends upon past data. It is of two types

- **Deterministic Demand Pattern:** In this type of demand pattern, the quantity needed over successive periods of time is known with certainty.
- **Probabilistic or Non-deterministic or stochastic Demand Pattern:** In this type of demand pattern, the demand needed over certain period of time is not known with certainty. It may be described by the probability distribution.

(v) Deterioration, Depreciation and Obsolescence Cost

These costs arise due to the items in stock being out of fashion or items undergoing chemical changes during storage. Deterioration of an item may be defined as decay, evaporation, obsolescence, loss of utility or marginal value of an item that results in the decreasing usefulness of an inventory from the original condition. When the items of the commodity are kept in stock as an inventory for fulfilling the future demand, there may be the deterioration of items in the inventory system, which may occur due to one or many factors i.e. storage conditions, weather conditions or due to humidity.

Commodities such as fruits, vegetables and foodstuffs suffer from depletion by direct spoilage while kept in store. Highly volatile liquids such as alcohol, gasoline, etc. undergo physical depletion over time through the process of evaporation. Electronic goods, photographic film, grain, chemicals, pharmaceuticals etc. deteriorate through a gradual loss of potential or utility with the passage of time

(vi) Economic order quantity (EOQ)

A lot size model that attempts to balance the costs associated with placing individual orders with the costs of carrying inventory. One basic decision in inventory control is how much should be ordered. The right quantity to order is that which best balances the cost related to the number of orders against the cost related to the size of the orders placed, when these costs are balanced properly, the total cost is minimized. Introduction of a proper inventory control system helps in keeping the investment in inventories as low as possible.

(vii) Lead time

Lead-time can be defined as the time interval between the placing an order and to receipt of material. Different types of lead times are manufacturing lead-time, administrative lead-time, inspection lead-time and transporting lead-time. Any strategy to control lead-time must try to control inspection and administrative lead-time. If lead-time is known (constant and non zero) then one may order in advance by an amount of time equal to lead-time. If lead-time is variable (or probabilistic) then it is difficult to find when to order.

(viii) Lot size

The quantity of a planned or actual order for purchased or production items, calculated as a result of lot size.

(ix) Maximum Stock

A stock level selected as the maximum desirable which is used as an indicator to show when stocks have risen too high.

(x) Order cycle

Order cycle refers to the time between orders of a specific item also called replenishment cycle. It is easily calculated by dividing the order quantity by the annual demand and multiplying by the number of days in the year.

(xi) Procurement cost or Setup cost

This cost originates from the expense of issuing a purchase order to an outside supplier or from internal production setup costs. This cost is usually assumed to vary directly with the number of orders or setups placed and not at all with the size of the order. In case of purchase models, it is known as ordering cost. In case of manufacturing models, it is known as setup cost. To place an order certain paper work is to be done. The cost of this paper work is taken as cost of ordering. In case of manufacturing, before starting production, the machine is to be setup. Only on setting of machine, the material is loaded and the production is started. The ordering cost is distributed over the items purchased in that order. Similarly, the setup cost is distributed equally over the products manufactured in that setup. This cost is also known as replenishment cost.

(xii) Profit

The amount earned from an investment or operation after the deduction of expenses is the gross profit, or gross income. Net profit includes the deduction of interest, taxes, depreciation and other expenses not associated with the cost of sales.

(xiii) Reorder point

The inventory level set to trigger reorder of a specific item. Reorder point is generally calculated as the expected usage (demand) during the lead time plus safety stock.

Fixed reorder point implies the reorder point is a static number plugged into the system. **Dynamic reorder point** implies there is some system logic calculating the order point. Generally this would be comparing current inventory to the forecasted demand during the lead time plus safety stock.

(xiv) Reorder Level

This is the point fixed between maximum and minimum stock levels at which time it is essential to initiate purchase requisition and manufacturing requisition for fresh supplies of the material.

(xv) Safety stock

It is an extra inventory held as a hedge or protection against the probability of stock out situation. It is also known as buffer stock or buffer inventory. It balances carrying costs and stock out costs.

(xvi) Setup

Setup is the set of activities required to prepare a resource for a production run. This requires different settings or tooling than the previous run. Setup costs include the labor required for machine adjustments, consumables used and defective items produced while finalizing the setup.

(xvii) Setup time

The total time required for changing settings and tooling from one production run to another is the setup time. Minimizing setup time is a key factor in reducing lot sizes and lead time, and has the goal of converting internal activities to external activities.

(xviii) Shortage cost or Stock-out cost

These costs are associated with either a delay in meeting demand or the inability to meet it at all. There, shortage costs are usually interpreted in two ways. In case of unfilled demand can be filled at a later stage (backlog case), these costs are proportional to quantity that is short as well as the delay time. They represent loss of goodwill and cost of idle equipment.

If deliveries are not made on time to customers or if products are not available on the market consistently, sales are likely to be lost. The cost of a missed sale is very difficult to calculate, but the potential of losing a customer and sales must be factored into any cost analysis. Stock-out costs include sales that are lost, both short and long term.
Shortage costs result when demand exceeds the supply of inventory on hand. These costs can include the opportunity cost of not making a sale, loss of customer good will, late charges, and similar costs. Furthermore, if the shortage occurs in an item carried for internal use (e.g., to supply an assembly line), the cost of lost production or downtime is considered a shortage cost.

(xix) Stock Replenishment

Stock replenishment may be uniformly or instantaneously

- **Uniform replenishment:** It occurs when the company manufactures the product.
- **Instantaneous replenishment:** It occurs in case of the stock, which is purchased from outside sources.

(xx) Storage cost or Carrying Cost or holding cost

The cost associated with inventory storage facilities, such as material handling equipment and personnel. It does not include the costs of holding inventory due to insurance, scrap, etc.

Carrying costs cover the cost incurred as a result of carrying inventory. These costs include the money tied up in inventory, the costs of storing and managing the inventory, such as warehouse costs, equipment costs, inventory management systems, personnel etc. Costs associated with the risk of damage, loss, scrap, wear and tear, and obsolescence must also be included here, along with the cost of insuring against some of these risks. Holding (or carrying) costs are costs such as storage, handling, insurance, taxes, obsolescence, theft and interest on funds financing the goods. These charges increase as inventory levels rise. In order to minimize carrying costs, management makes frequent orders of small quantities.

- Cost associated with investing in inventory and maintaining the physical investment in storage
- Contains capital costs, taxes, insurance, handling, storage, shrinkage, obsolescence, and deterioration

(xxi) Time Horizon

The time period over which the inventory level will be controlled is called the time horizon. It may be finite or infinite.

(xxii) Unit cost

The total of material, labor and overhead costs allocated to a single unit is known as cost of that unit.