

INVENTORY CONTROL TECHNIQUES

Inventory

- Inventory is the goods or materials a business intends to sell to customers for profit.
- Types of inventory
 - i) Raw materials
 - ii) Purchased parts and supplies
 - iii) Finished goods
 - iv) Working process (partially completed product)
 - v) Item being transported
 - vi) Tools and equipment

❖ Inventory control

- Inventory control is the process of managing inventory in order to meet customer demand at the lowest possible cost and with a minimum of investment.
- Unlike many factors in pharmacy, inventory is controllable.
- The pharmacy decides how much inventory investment to make, when to reorder, and in what quantities.
- A successfully implemented inventory control program takes into account such things as purchasing goods commensurate with demand, seasonal variation, changing usage patterns, and monitoring for pilferage. The challenge of productive inventory management is to support an upward trend in sales while keeping the investment at the lowest level consistent with adequate customer service.

❖ Inventory control techniques

Following techniques are used

- i) ABC analysis
- ii) VED analysis
- ✓ iii) Economic order quantity (EOQ)
- iv) Lead time
- v) Buffer stock
- ✓ vi) Reorder quantity level
- ✓ vii) Inventory turnover
- viii) Perpetual inventory system
- ✓ ix) FEFO and FIFO methods

1. **ABC analysis**- ABC (**Always Better Control**) analysis is one of the most commonly used inventory management methods. ABC analysis groups items into three categories (A, B, and C) based on their level of value within a business
2. **VED analysis**- Divide drugs into three category vital, essential and desirable
3. **Lead time**- Lead time in inventory management is **the lapse in time between when an order is placed to replenish inventory and when the order is received.**
4. **Buffer stock**- An inventory buffer is **additional inventory kept on-hand in case of emergencies, transportation delays or surges in demand**
5. A **perpetual inventory system** is a program that continuously estimates your inventory based on your electronic records, not a physical inventory
6. **Economic order quantity (EOQ)** –

Inventory Control Techniques

ABC Method

- ABC : Always Better Control
- or Proportional Part Value Method
- Concentrates on important items and thus also referred to as Control by Importance and Exception

Inventory Control Techniques

ABC Method

- **Group A** constitutes costly items which are 10 to 20% of the total items and may account for about 50% of the total value of stores
 - Very strict control
- **Group B** constitutes 20 to 30% of the stores items and represent 30% of the total value of stores
 - Moderate Control
- **Group C** constitute to 70 to 80% of the items are covered costing about 20% of the total value

Inventory Control Techniques

VED Analysis

- This technique is ideally suited for spare parts in the inventory management like ABC analysis.
- Inventories are classified into three categories on the basis of usage of the inventories.
- V = Vital
- E = Essential
- D = Desirable item of inventories

Inventory Control Techniques

VED Analysis

- **V = Vital item of inventories**
 - Required for Regular Production Process
 - non availability of this may stop production
- **E = Essential item of inventories**
 - Considered essential for production but
 - non availability of this may be tolerated for few hours or day
- **D = Desirable item of inventories**
 - Does not affect production directly,
 - they facilitate production

Economic order quantity (EOQ) –

➤ What is EOQ?

- It is refer to the optimum order size that should be placed with a vendor to minimise blockage of funds and holding and ordering cost or quantity of materials which can be purchased at minimum costs.
 - It is the size of the lot to be purchased which is economically viable.
 - The framework used to determine this order quantity is also known as Wilson EOQ Model or Wilson Formula.
- In determining EOQ, it is assumed that cost of managing inventory is made up solely of two parts i.e.,
- a) Ordering costs/ Buying costs
 - b) Carrying costs/ Holding costs

a) Ordering Costs/ Buying Costs - (2)

- Costs which are associated with the purchasing or ordering of materials.
- These costs include:
 - i) Costs of staff posted for ordering of goods.
 - ii) Expenses incurred on transportation of goods purchased.
 - iii) Inspection costs of incoming materials.
 - iv) Cost of stationary, typing, postage, telephone charges, etc.

b) Carrying Costs

- Costs for holding the inventories.
- These costs include :
 - i) the cost of capital invested in inventories.
 - ii) cost of storage which could have been used for other purposes.
 - iii) the loss of materials due to deterioration and obsolescence.
 - iv) insurance costs.
 - v) cost of spoilage in handling of materials.

➤ Assumptions of EOQ Model

- The ordering cost is constant.
- The rate of demand is known, and spread evenly throughout the year.
- The lead time is fixed.
- The purchase price of the item is constant i.e. no discount is available.
- The replenishment is made instantaneously, the whole batch is delivered at once.

➤ EOQ Formula

$$EOQ = \sqrt{\frac{2xDxO}{H}} = \sqrt{\frac{2xDxO}{i.c}}$$

D = Annual demands in units of products

O = Ordering cost per order

H = holding cost per unit of product

i.c = inventory carrying cost

➤ Limitations of EOQ

Unrealistic Assumptions

The most significant limitation is that the assumptions are unrealistic.

- It assumes that the holding cost, ordering cost, demand, price, quality, etc., of the product or part to be constant throughout the year. It is not realistic in the real world.
- Holding and ordering costs may vary due to changes in rentals, salaries of personnel, and other overhead expenses.
- Constant demand, as well as the price of a product, can hardly be constant. They fluctuate a lot in the real world.
- Consumer income, tastes, and preferences, prices of inputs and raw materials, seasonal variation in demand, etc., are key factors that will affect demand as well as price.

- Similarly, the assumption of the constant quality of the product is not realistic. The quality of the product generally changes with every production batch. The production process also does not remain constant because of factors like an interruption in power supply, breakages, and repairs in plant and machinery, overheating, changes in the quality of inputs and raw materials, etc

Reorder quantity level

- It indicates that level of material stock at which it is necessary to take the steps for the procurement of further lots of material.
- The reorder level is slightly more than minimum stock level to guard against abnormal use of item and abnormal delay in supply.
- Reorder level = Maximum lead time × Maximum reorder periods

