

## **INVENTORY CONTROL**

**INVENTORY MANAGEMENT:** Inventory management is defined as the scientific method of finding out how much stock should be maintained in order to meet the production demands and be able to provide right type of material at right time in right quantities at competitive prices.

Inventory is actually money which is available in the shape of material , equipment, storage space , work time etc.

Drug store management is based on principles of inventory control. mismanagement of stores and non-applicability of Scientific and Modern techniques has been identified as the root cause of material storage in majority of hospitals.

### **Objective of Inventory Control**

- (i) To supply drug in time.
- (ii) To reduce investment in inventories and made effective use of capital investment.
- (iii) Efforts are made to procure goods at minimum price without bargaining the quality.
- (iv) To avoid stock out and shortage.
- (v) Wastage are avoided

### **Techniques of Inventory control / Methods Used for Analysis of Drug Expenditure**

*(i) ABC analysis*

*(ii) VED analysis*

*(iii) EOQ*

*(iv) Lead time*

*(v) Buffer stock*

#### **(i) ABC analysis**

ABC analysis is an inventory categorization technique. It is a basic tool with a selective approach for concentration upon the items. As ABC analysis the items are divided into three categories—

"A items" with very tight control and accurate records,

"B items" with less tightly controlled and good records, and

"C items" with the simplest controls possible and minimal records.

The ABC analysis provides a mechanism for identifying items that will have a significant impact on overall inventory cost, while also providing a mechanism for identifying different categories of stock that will require different management and controls.

The ABC analysis suggests that inventories of an organization are not of equal value. Thus, the inventory is grouped into three categories (A, B, and C) in order of their estimated importance.

'A' items are very important for an organization. Because of the high value of these 'A' items, frequent value analysis is required. In addition to that, an organization needs to choose an appropriate order pattern (e.g. 'just-in-time') to avoid excess capacity. 'B' items are important, but of course less important than 'A' items and more important than 'C' items. Therefore, 'B' items are intergroup items. 'C' items are marginally important.

There are no fixed thresholds for each class, and different proportions can be applied based on objectives and criteria. ABC Analysis is similar to the Pareto principle in that the 'A' items will typically account for a large proportion of the overall value, but a small percentage of the number of items.

### ***Examples of ABC class are***

'A' items – 20% of the items accounts for 70% of the annual consumption value of the items

'B' items – 30% of the items accounts for 25% of the annual consumption value of the items

'C' items – 50% of the items accounts for 5% of the annual consumption value of the items

Another recommended breakdown of ABC classes:

"A" approximately 10% of items or 66.6% of value

"B" approximately 20% of items or 23.3% of value

"C" approximately 70% of items or 10.1% of value

**(ii) VED** analysis is an inventory management technique that classifies inventory based on its functional importance. It categorizes stock under three heads based on its importance and necessity for an organization for production or any of its other activities. VED analysis stands for Vital, Essential, and Desirable.

### **V- Vital Category**

As the name suggests, the category “Vital” includes inventory, which is necessary for production or any other process in an organization. The shortage of items under this category can severely hamper or disrupt the proper functioning of operations. Hence, continuous checking, evaluation, and replenishment happen for such stocks. If any of such inventories are unavailable, the entire production chain may stop. Also, a missing essential component may be of need at the time of a breakdown. Therefore, order for such inventory should be before-hand. Proper checks should be put in place by the management to ensure the continuous availability of items under the “vital” category.

### **E- Essential category**

The essential category includes inventory, which is next to being vital. These, too, are very important for any organization because they may lead to a stoppage of production or hamper some other process. But the loss due to their unavailability may be temporary, or it might be possible to repair the stock item or part. The management should ensure optimum availability

and maintenance of inventory under the “Essential” category too. The unavailability of inventory under this category should not cause any stoppage or delays.

#### **D- Desirable Category**

The desirable category of inventory is the least important among the three, and their unavailability may result in minor stoppages in production or other processes. Moreover, the easy replenishment of such shortages is possible in a short duration of time.

#### **(iii)EOQ**

Economic order quantity (EOQ) is the ideal order quantity a company should purchase to minimize inventory costs such as holding costs, shortage costs, and order costs. The formula assumes that demand, ordering, and holding costs all remain constant. Formula and Calculation of Economic Order Quantity (EOQ)

The formula for EOQ is:

$$Q = \sqrt{\frac{2DS}{H}}$$

**where:**

$Q$  = EOQ units

$D$  = Demand in units (typically on an annual basis)

$S$  = Order cost (per purchase order)

$H$  = Holding costs (per unit, per year)

The goal of the EOQ formula is to identify the optimal number of product units to order. If achieved, a company can minimize its costs for buying, delivery, and storing units. The EOQ formula can be modified to determine different production levels or order intervals, and corporations with large supply chains and high variable costs use an algorithm in their computer software to determine EOQ.

EOQ is an important cash flow tool. The formula can help a company control the amount of cash tied up in the inventory balance. For many companies, inventory is its largest asset other than its human resources, and these businesses must carry sufficient inventory to meet the needs of customers. If EOQ can help minimize the level of inventory, the cash savings can be used for some other business purpose or investment.

#### **(iv) Lead time**

The lead time is the sum of the supply delay and the reordering delay. The lead time is the applicable duration to calculate the lead demand, the safety stock or the reorder point through

a direct quantile forecast. The longer the lead time, the higher the total inventory level or the larger is the safety stock, resulting in excess of investment in inventories. As far as possible efforts should be made to decrease the lead time for effective inventory control.

### **(V) Buffer stock**

Buffer stock is used in emergency to meet the unforeseen demands . in other words it refers to minimum quantity of a particular item which must be kept in the stores of all time. Buffer stocks can be calculated using the following formula ;
$$\text{Buffer stocks} = (\text{Maximum consumption rate} / \text{day average- consumption rate} / \text{day}) \times \text{lead time}$$

Buffer stocks needs following factors to be taken into consideration like;

- (i) Lead time
- (ii) Nature of item and rate of consumption
- (iii) Availability of substitutes
- (iv) Re-order level
- (v) Stock out cost

### **Modern Computerization of Inventory Control**

Presently national information centre (NIC) is working hard to prepare software which would facilitate proper control of inventory through the implementation of accepted principles of material management such as ABC analysis, "Last is the first out" etc. It would minimize the chances of validity of drugs expiring while in storage by the transfer of stocks from the surplus to deficit depots. Computerization will serve following purposes:

- (i) Less investment
- (ii) Less storage
- (iii) Fast supply of drug
- (iv) Control on Issue of Drugs
- (v) Minimum wastage
- (vi) Prompt payments

### **Reorder Level**

The reorder level is the level of the stock of a particular item, held by the firm, when an order is needed to be placed for avoiding the risk of being out of stock. It is based on the average time taken by the supplier for replenishment, maximum usage of the item during the replenishment time, and safety stock requirement. It is also known as reorder point. Reorder level is the stock level of a particular item of inventory, at which a firm needs to place an order for the fresh supply or replenishment of the item. It gives a signal regarding when to place a new order for the fresh supply of an inventory item. The internal factors involved in reorder level are maximum usage during the lead time, safety level, and replenishment period. Whereas the external factor involved in reorder level is lead time taken by the supplier. The main risk

factor in reorder level is being out of stock and some other risk factors are disruption in production and foregone sales.

The following formula is used for estimation of reorder level:

**Reorder level = (Average daily usage rate x Average lead time in days) + Safety level**