

Selective Inventory Management

A.B.C. System of Selective Inventory Management

- The procedure outlined for fixing minimum quantity (or ordering level) and maximum quantity may not be necessary for every item of material since the effort and the cost of placing an order every now and then may not be worthwhile for items that are very low in value. One should remember that the main aims of the procedure are to avoid interruption of work for want of materials or cost of placing orders repeatedly and to avoid losses arising out of obsolescence and extra interest.

The aim can be well realized if:

- (i) for items, that are not at all costly, large orders are placed once, obviating the necessity to review the position again and again and to place orders repeatedly;
- (ii) for other items that account for a fairly large investment of capital, fresh orders are placed on periodical review basis—say, every month in the beginning the stock position of each such item is compared against liberal estimates of consumption during the next two months, an order being placed if the stock appears to be low; and
- (iii) for the remaining items (which will be small in number but which will account in the bulk of the investment) the full system of fixing minimum and maximum stocks and placing orders as soon as the stock reach in the ordering level should be operated.
- This system of inventory management is called the “A.B.C. System”. Items covered by (iii) above are classed as A, those covered by (ii) above are classed B’ and the remaining items are classed ‘C.

- 'A' category of items consists of only a small percentage i.e., about 10% of the total items handled by the stores but require heavy investment (cost) about 70% of inventory value, because of their heavy prices.
- 'B' Category of items are relatively less important, these may be around 20% of the total items of materials handled by the stores, the percentage of investment (cost) of such items is around 20% of the total investment in inventories.
- 'C' category items do not require much investment, it may be about 10% of the total inventory value but they are nearly 70% of the total number of items handled by stores.
- For items in class 'A', the ordering level will be fixed and a fresh order will be placed as soon as actual stock reaches this level. For items in class 'B', orders are placed on a periodical review and for items in class C, large orders are placed once, say, in a year to cover the whole year's consumption. Since the total investment in these items is low (though the number of them will be very large), there will not be much loss by way of obsolescence or interest but the cost of placing many orders will be avoided.

- Thus, ABC Analysis technique is based on classifying materials into three categories according to their importance. The A category items are small in number but high in value and are strictly controlled. Perpetual inventory records are maintained in respect of these materials. C category of materials is large in number and of small value.
- Inventories of such materials are tentatively maintained without having perpetual inventory records. The B category of materials is intermediate between the two in importance and is controlled to some extent. Whether or not perpetual inventory records are maintained in respect of these items depend upon their number and values.

Assumptions of ABC Analysis:

1. Demand is known with certainty
2. Demand is relatively constant over time
3. No shortages are allowed
4. Lead time for the receipt of orders is constant
5. The order quantity is received at once

- Advantages of ABC Analysis:
- Inventory reduction has been a constant goal for all manufacturing concerns. Using the “ABC” concept to analyze and control inventory investment and turns is the simplest and most efficient method. The ABC analysis helps the materials managers that fewer rupees should be tied up in inventory, the more money available for capital investment and expansion. The “ABC” concept also allows a manager to devote resources where it will have the biggest positive impact.
- The ultimate goal of ABC analysis is to closely supervise the items according to their share in the inventory investment. This helps to reduce time and minimize efforts towards managing those items which though are not properly taken care of, do not show noticeable effect on inventory performance.

- Limitations of ABC Analysis:
- In ABC analysis, items are divided into various categories for selective management control. These grades are decided on the basis of material price, its usage, availability, size and weight. Further, depending on the type of unit and situation, such classification is made.
- ABC analysis despite powerful inventory approach does not guarantee cent percent success. For its successful implementation, the results of ABC analysis have to be reviewed on continuous basis. Some times as advised by ABC analysis, negligence in controlling 'C' type item can be a costly affair during shortage of the same. Like it is common experience that 'sugar & oil' during Diwali will become the high value item.

VED Analysis

- VED stands for vital, essential and desirable. This analysis relates to the classification of maintenance spare parts and denotes the essentiality of stocking spares.
- The spares are split into three categories in order of importance. From the view-points of functional utility, the effects of non-availability at the time of requirement or the operation, process, production, plant or equipment and the urgency of replacement in case of breakdown.
- Some spares are so important that their non-availability renders the equipment or a number of equipment in a process line completely inoperative, or even causes extreme damage to plant, equipment or human life.
- On the other hand some spares are non-functional, serving relatively unimportant purposes and their replacement can be postponed or alternative methods of repair found. All these factors will have direct effects on the stocks of spares to be maintained.

Therefore, it is necessary to classify the spares in the following categories:

- V: Vital items which render the equipment or the whole line operation in a process totally and immediately inoperative or unsafe; and if these items go out of stock or are not readily available, there is loss of production for the whole period.
- E: Essential items which reduce the equipment's performance but do not render it inoperative or unsafe; non-availability of these items may result in temporary loss of production or dislocation of production work; replacement can be delayed without affecting the equipment's performance seriously; temporary repairs are sometimes possible.
- D: Desirable items which are mostly non-functional and do not affect the performance of the equipment.
- As the common saying goes "Vital Few — trivial many", the number of vital spares in a plant or a particular equipment will only be a few while most of the spares will fall in 'the desirable and essential' category.
- However, the decision regarding the stock of spares to be maintained will depend not only on how critical the spares are from the functional point of view (VED analysis) but also on the annual consumption (user) cost of spares (ABC — analysis) and, therefore, for control of spare parts both VED and ABC analyses are to be combined.

SDE Analysis

- Starting with the basics, what does SDE stand for? It represents three levels of classification: Scarce, difficult and easy. The SDE analysis looks at what inventory is available and classifies it according to the scarcity of supply. With this analysis, scarce products are usually imported, take longer to arrive and the supply is harder to come by. An example of a scarce product is one that might have to go through government agencies. This slows down the process, whether it be in customs or through regulatory bodies. Either way, these channels can make a product scarce.
- Next is the difficult classification. This refers to items that could be available domestically but they are still harder to get hold of in the market. The lead time to acquire these goods might be two weeks but is generally less than six months. Lastly, easily identifies inventory that is readily available and easy to access. These items are available locally and can be procured quickly.

- The characteristics of the three categories – SD and E – are:
- S: Refers to scarce items, items which are in short supply. Usually these are raw materials, spare parts and imported items.
- D: Stands for difficult items, items which are not readily available in local markets and have to be procured from faraway places, or items for which there are a limited number of suppliers; or items for which quality suppliers are difficult to get.
- E: Refer to items which are easily available in the local markets.

- **Why should you use SDE analysis?**

- If you use the SDE classification, it can help you counteract any difficulties faced in the procurement process. By classifying items as scarce, difficult or easy, it can help you clearly plan your year with the procurement team. You can see which items you need to get in advance and which products can be sourced with ease.

- **Benefits of SDE analysis**

- One of the main benefits of conducting an SDE analysis is future planning. Since it highlights which products might be trickier to acquire than others, it can kick-start your procurement process. This allows a business owner to prepare the warehouse and organise plans with other suppliers when they can get this process underway. It is a simple system that can provide guidelines and a quick snapshot of what's going on and what needs to be ordered.

- **Disadvantages of SDE analysis**

- Although using this type of analysis can help make a foggy inventory picture clearer, it isn't always very accurate. It can help loosely with planning, but one difficult product might vary drastically from another difficult product. For instance, one could be acquired in three weeks, while another one could take four months to procure. However, they are both marked D for difficult. It can provide some overarching guidance, but this classification shouldn't be used to plan exact dates in the calendar. Consulting with individual suppliers is necessary and each product needs to be managed on an individual basis.

FSN Analysis

- Here the items are classified into fast-moving (F), slow-moving (S) and Non-moving (N) items on the basis of quantity and rate of consumption. The non-moving items (usually, not consumed over a period of two years) are of great importance. It is found that many companies maintain huge stocks of non-moving items blocking quite a lot of capital.
- Moreover, there are thousands of such items. Scrutiny of these items is made to determine whether they could be used or to be disposed off. The classification of fast and slow moving items helps in arrangement of stocks in stores and their distribution and handling methods.

- The formula for the average stay and consumption rate is –
- $\text{Average stay} = \text{cumulative no. of inventory holding days [or unit of time]} \div (\text{total quantity of items received} + \text{opening balance})$
- $\text{Consumption rate} = \text{Total issue quantity} \div \text{Total period duration}$
- After the calculation of the average stay and consumption rate is done, then the calculation of cumulative average stay and cumulative consumption rate is carried out, followed by deriving the percentages of both. And then, with the help of these percentages, we can identify and segregate the products into FS & N.
- $\text{Cumulative average stay} = \text{average stay of item} + \text{average stays of all items that stay longer in inventory than itself}$
- $\text{Cumulative consumption rate} = \text{consumption rate of item} + \text{consumption rate of all items consumed faster than itself}$
- $\text{Percentage average stay} = (\text{cumulative average stay of item} \div \text{cumulative average stay of all items}) \times 100$
- $\text{Percentage consumption rate} = (\text{cumulative consumption rate of item} \div \text{cumulative consumption rate of all items}) \times 100$

- **According to cumulative average stays -**

- Fast-moving products are 10% or less of the average cumulative stay.
- Slow-moving stocks are 20% of the average cumulative stay.
- Non- moving items constitute around 70% of the average cumulative stay.
- This means that the fast-moving products stay only 10% or less of the average stay of the inventory and hence travels quickly through the supply chain.

- **According to consumption rates the FSN can be categorized as -**

- Fast-moving inventory is 70% of the average consumption rate
- Slow-moving inventory is 20% of the average consumption rate
- Non-moving inventory is 10% or less of the average consumption rate.
- The consumption rate of the F products will always be high because of the apparent reason that they are sold quickly and have a higher inventory turnover ratio.

HML Analysis

- HML Analysis classifies inventory based on how much a product costs/its unit price. The classification is as follows:
- High Cost (H) – Item with a high unit value.
- Medium Cost (M) – Item with a medium unit value.
- Low Cost (L) – Item with a low unit value.

- HML analysis helps an organization to take decisions on the following:
 - a) It helps to assess the security requirements and the type of storage for high priced items. For example, expensive ball bearings can be kept under lock and key in a cupboard.
 - b) The frequency of stock checking is decided on the basis of the cost item. In other words, more expensive the item, more frequent will be its stock-checking.
 - c) A control on purchases and buying policies can be exercised by the company. This means H and M items will not be ordered in excess of the required minimum quantity. However, in the case of L items, they may be purchased in bulk in order to avail the benefits of bulk purchase.

Inventory Control System

- An inventory control system is a technology solution that manages and tracks a company's goods through the supply chain. This technology will integrate and manage purchasing, shipping, receiving, warehousing, and returns into a single system.
- The best inventory control system will automate a lot of manual processes. It will provide an accurate picture of what inventory you have, where it is, and when you need to reorder to keep your stock at optimal levels.

Types of Inventory Control Systems

- Inventory control systems have evolved. Earlier systems were little more than spreadsheets, and now machine learning is adding more automation to inventory control. There are two key types of inventory control systems.

1. Perpetual inventory system.

- A perpetual inventory control system tracks inventory in real-time. As soon as a product is sold, its barcode is scanned and it is removed from a global inventory database. When one is received, it is scanned and added to the inventory database. Each part of the system has access to the same database and information.
- A perpetual inventory provides a highly detailed view of inventory changes and an accurate accounting of inventory levels without the need for manual inventory counts. It is suitable for all sizes of businesses and is necessary for stores with high sales volume or multiple locations.

2. Periodic inventory system.

- A periodic inventory system is kept up to date by a physical count of goods on hand at specific intervals. With a periodic inventory system, a business will not know how many products it has until after the physical count is completed. It is easy to see how this can be a problem when it comes to filling orders. Your stock count was accurate weeks or months ago, but now when a customer wants to buy, you have to physically check your inventory to see if you have it to sell.
- Counting stock manually is a process that takes a lot of time and manpower. Each and every SKU has to be counted. This would not work well for a large store. A periodic system is only acceptable for smaller businesses with minimal amounts of inventory.

Why Are Inventory Control Systems Important?

1. Real-time inventory levels.

A perpetual inventory system will update inventory levels globally whenever a product is sold, purchased, manufactured, or returned. With an accurate real-time inventory, you can analyze inventory flow to set effective reorder points. This helps eliminate out-of-stock situations and excess inventory. Real-time inventory levels improve customer relationships by preventing backorders and improving employee relationships by giving them an accurate view of inventory status.

2. Optimize your logistic workflow.

Your supply chain is complex. There are a lot of steps involved in getting a product to your customer. An effective inventory control system will not only allow you to track a product each step of the way, but also give you the tools to find bottlenecks in your logistic workflow. This gives you more time to work on improvements.

3. Financial savings.

There are many ways inaccurate inventory can cost you. If you don't have a product in stock, a customer could cancel an order and buy that product somewhere else rather than wait on a backorder. On the other hand, an inaccurate inventory can also lead to excess stock which will increase storage cost, insurance cost, and taxes. An inventory control system will save you money by keeping inventory at optimal levels.

4. Reduce manual labor inaccuracies.

Physical inventory tracking can be prone to errors and fraud. By tracking a product from purchase order to customer delivery, an inventory control system will take human error and theft out of the equation.

5. Improve customer satisfaction.

In this day and age of next-day or even same-day delivery, customers expect to get their orders quickly. If your inventory is inaccurate, a customer could order an item you show in stock but don't actually have. This could result in a backorder or canceled order, which can lead to an unhappy customer who may not order from your store next time.

