Implementation of Inventory Management Technique in Manufacturing Industry

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Abstract- Inventory management is the accurate tracking of all materials in the company's inventory. The company has purchased these items from another supplier. There are three possible areas of loss that are reduced through effective inventory management: shrinkage, misplacement, and short shipments.There are various types of inventory control analysis techniques. Here we shall focus on the ABC analysis. It is possible to utilize the concept of ABC model in formation of rational inventory policy which should give the best possible service level to production while minimizing investment costs. ABC analysis tends to measure the significance of each item of inventory in terms of value.

Keywords- Inventory management, ABC analysis, productivity, quality.

I. INTRODUCTION

Inventory management is significant for effective and efficient organization. It is also important in the control of inventories that have to be stored for later use in case of production. The goal of inventory management involves having to balance the conflicting economics of not wanting to hold too much stock.

Inventory management is the activity involved in developing and managing the inventory levels of raw materials, semi-finished materials (work-in-process) and finished goods so that adequate supplies are available and the costs of over or under stocks are low.

The studied Company is a public sector wheel manufacturing company. It is observed that more parts damage and reduced company's revenue. It was also observed that company does not always adopt inventory optimization model to evaluate their inventory using raw materials as a parameter for measurement. This paper intends to discuss the inventory control technique for a manufacturing company by using the ABC analysis to promote a better material management policy that would affect the company's profit.

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possible service level to production while minimizing investment costs. ABC analysis tends to measure the significance of each item of inventory in terms of value.

In any industry today inventory optimization is such a vital function. Excess and Shortage of inventory in alllevels of the supply chain can affect the availability of products and/or services to consumers. Several monitoring systems andprocesses can be employed to check inventory imbalances to minimize the supply and demand dynamics. To simply thesemonitoring systems and process items/materials/products are classified into different groups.

Effective inventory Management has played an important role in the success of supply chain management. Fororganizations that maintain thousands of inventory items; it is unrealistic to provide equal consideration to each item. Manager's arerequired to classify these items in order to appropriately control each inventory class according to its importance rating.There are various types of inventory control analysis techniques such as FSN, XYZ, ABC, HML, VED, S-OS etc. Here we shallfocus on the ABC.

II. ABC ANALYSIS

ABC classification is a method of classifying inventory items according to the money value to a firm. Class 'A' items normally range from 10% to 15% of all inventory items and account for between 70% and75% of total annual consumption value. The class 'B' items normally range from 15% to 20% of all inventory items and account for 20% of total annual consumption value. The Class 'C' items normally constitute 70% to 75% of all inventory items and account for 5% to 10% of total annual consumption value.

Steps for implementation of ABC analysis are:
- Prepare the list of items and estimate their annualconsumption (units).
- Determine unit price (or cost) of each item.
- Multiply each annual consumption by its unit price (or cost) to obtain its annual consumption inrupees (annual usage).
- Arrange items in the descending order of theirannual usage starting with the highest annual usage down to the smallest usage.
- Calculate cumulative annual usages and expressthe same as cumulative usage percentages. Also express the number of items into cumulative item percentages.
- Graph cumulative usage percentages against cumulative item percentages and segregate the items into A, B and C categories.
- To separate items into A, B and C categories, first few items which contribute between 70% –75% of cumulative usage can be considered as A category, next few items which together with A category items segregated earlier contribute between 80% – 90% of cumulative usage can be considered B category, and left over items can be taken as C category.

III. RESEARCH METHOD

1. Research Design:
The research design used in this project is analytical in nature the procedure using, which researcher has to use facts or information already available and analyze these to make a critical evaluation of the performance.

2. Data Collection:
Primary data is the type of data that is collected by researchers directly from main sources while secondary data is the data that has already been collected through primary sources and made readily available for researchers to use for their own research.

3. Primary Sources:
Primary data is data that is collected by a researcher from first-hand sources, using methods like surveys, interviews, or experiments. It is collected with there search project in mind, directly from primary sources. Data are collected through personal interviews and discussion with company officials.

4. Secondary Sources:
Secondary data refers to data that is collected by someone other than the user. Common sources of secondary data for social science include censuses, information collected by government departments, organizational records and data that was originally collected for other research purposes. The data are collected from there cords maintained by the company for the past years.

5. Tools Used in the Analysis:
- Economic OrderQuantity.
- SafetyStock.
- ABC Analysis.
- FSN Analysis.
- Linear Regressionmethod.
- Inventory turnoverratios.

IV. RESULTS AND DISCUSSION

The items are classified into 3 categories on the bases of their unit cost:
- A consists of the most important investment products i.e. 70–75% of the total stock value and 10% of the total number of items.
- B is composed of items which include relatively small investments i.e. 15% to 20% of overall inventory costs, 20% to 25% of overall items.
- C, products with low use frequency, i.e. from 5 to 10 percent of the overall inventory value. These stocks account for 70-75% of the total number of products.
- Category A requires strict supervision, C requires minimal attention and B deserves less attention than A, but more attention than C. Figure 3.6 shows the percentage of annual usage vs annual cost.
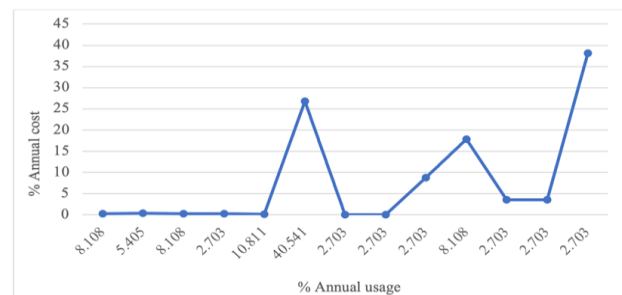

Fig 1. Percentage of annual usage vs annual cost.

Fig. 2. shows how various components are classified into groups A, B, and C using unit value-based ABC analytical techniques. A class accounts for 2.5% of the total components in classification A. As shown in Figure 3.7, Class B is a unit that accounts for 25% of the total and Class C is a unit that accounts for 72.5 percent of the total components. It is commendable that the organization manages its inventories using value-based principles.
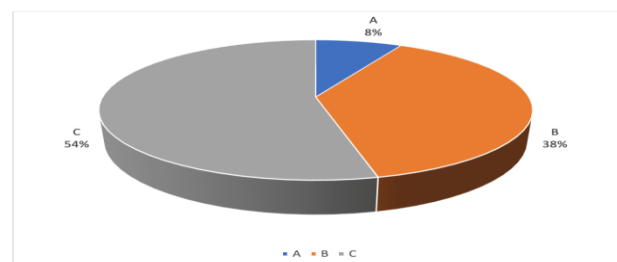

Fig 2. ABC analysis.

V. CONCLUSION

Our analysis shows that the ABC analysis is followed by manufacturing company and there is relation between annual demand and total costs of thematerials. As compare to ABC analysis, FSN works with usage rate and ABC works with annual consumption value.

As per the importance of materials in production ABC and FSN are used.In order to refrain from having an inventory go dead it is of utmost importance to stay abreast with the number and condition of items in that particular inventory. In this regard both periodic and continuous techniques can be used for appraising the stats of the stocks.

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