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Implementation of Inventory Management Technique in Manufacturing Industry

M. Tech. Scholar Priyank Jain, Prof. Trilok Mishra
Department of Mechanical Engineering,
BIST, Bhopal,MP,India

Abstract- To achieve optimum inventory replenishment is significantly difficult due inherent uncertainties in demands and supplies which resulting in loss of sales or keeping excessive inventories. An unkempt inventory can take up to one-third of an organization's annual investment. Therefore, in order to compete with invariably erratic demands, it is not only challenging to develop an intelligent system to maintain and control an optimum level of inventory but has also become mandatory. In this study inventory analysis has been done.

Keywords- ABC analysis, inventory control, FSN analysis.

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.

Following are the objectives of this research:

- To study and understand inventory control techniques in industry.
- To determine whether or not inventory management in company, can be evaluated and understood using ABC-analysis in inventory management.

II. LITERATURE REVIEW

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.

According to **Onwubolu and Dube (2006),** when ABC analysis is applied to an inventory situation, it shows the importance of items and level of control placed on the items.

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% and

75% 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 annual consumption (units).
- Determine unit price (or cost) of each item.
- Multiply each annual consumption by its unit price (or cost) to obtain its annual consumption in rupees (annual usage).
- Arrange items in the descending order of their annual usage starting with the highest annual usage down to the smallest usage.
- Calculate cumulative annual usages and express the 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.

1. Advantages of ABC Analysis:

- It ensures a closer and a more strict control over such items, which have high investment.
- It releases working capital, which would otherwise have been locked up for a more profitable channel of investment.
- It reduces inventory-carrying cost.
- It enables the relaxation of control for the 'C' items and thus makes it possible for a sufficient buffer stock to be created.

III. FSN ANALYSIS

Classification based on Frequency of Issues/Use:

F, S & N stand for fast moving, slow moving and Normal moving items. This form of classification identifies the items frequently issued, less frequently issued for use and the items which are not issued for longer period. This classification helps spare parts management in establishing most suitable stores layout by locating all the fast moving items near the dispensing window to reduce the handling efforts.

Also, attention of the management is focused on the Non-Moving items to enable decision as to whether they are required in the future or they can be salvaged. Experience shows that many industries which are more than 15 years old have more than50% of the stock as non-moving spares.

Even if a few of them are disposed off and the locked up capital is made available, it will make available additional working capital to the organization. Action for disposal should be taken based on the value of each item of spare.

IV. METHOD

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.

V. 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.

1. 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 the research project in mind, directly from primary sources. Data are collected through personal interviews and discussion with company officials.

2. 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

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collected from the company records maintained by the company for the past 1 years viz., 2015 – 2019.

VI. RESULTS AND DISCUSSION

1. Economic Order Quantity (EOQ):

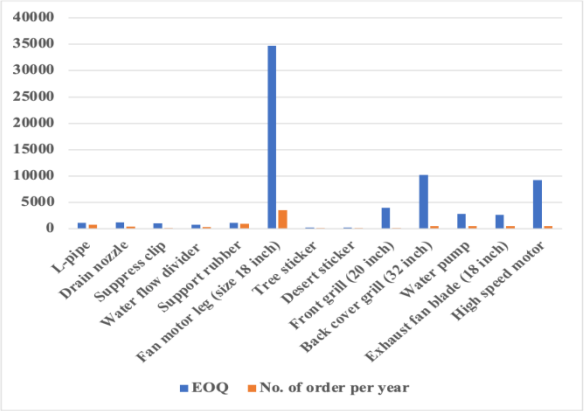

Fig 1. Comparison between EOQ and no. of units ordered.

2. ABC Analysis:

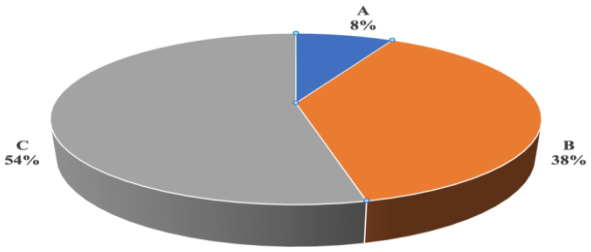

Fig 2. ABC Analysis.

3. FSN Analysis:

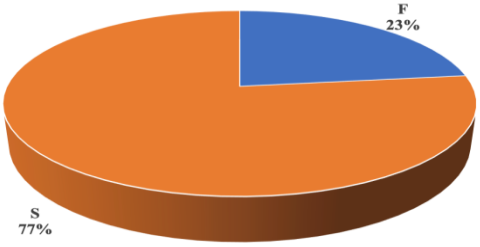

Fig 3. FSN Analysis.

VII. CONCLUSION

Our analysis shows that the ABC analysis is followed by manufacturing company and there is relation between annual demand and total costs of the materials. 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.

An FSN technique significantly reduces unnecessary motions while issuing materials if they are arranged accordingly. Inventory analysis and control has become inevitable for a manufacturing industry.

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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