CATEGORIZATION OF SPARE PARTS THROUGH
ABC ANALYSIS

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Abstract - The purpose of this study was to improve the inventory management policy adopted by SAPTAGIRI Hero Bike Showroom. The objective of this study was to identify problems in the inventory management of above-mentioned firm and improving it in terms of investment, categorization of items, customer satisfaction by timely delivering what is needed and when by proposing an efficient and effective analysis. This study employs the procedure of inventory audit and uses Selective Inventory Control techniques to improve the inventory status at SAPTAGIRI Hero Bike Showroom, TAGARAPUVALASA. A survey has been conducted for inventory management at SAPTAGIRI Hero Bike showroom to improve their inventory management policy. This study uses systematic observation, mathematical tools and graphical representation in ABC analysis for categorization of items analysis as project methodology. The improvement in inventory status has been executed by identifying the category of each item which is A, B, C study and analysis was also performed to provide a comprehensive solution of inventory classification which is most suited to the firm as per their requirements.

*Key Words***:** Inventory Management, ABC analysis, Categorization of spare parts.

1. INTRODUCTION

Inventory control and management are crucial aspects of both the Manufacturing and Service sectors, encompassing the production, distribution, and sales of goods. Its purpose is to effectively plan, organize, and control inventory levels, ensuring product availability while avoiding overstocking or stockouts. A well-executed inventory management system can lead to cost reduction, improved customer satisfaction, and increased profitability. The objective of this project is to assess the existing inventory management practices at XYZ Company and propose enhancements to optimize their inventory control processes. The report will evaluate various inventory control techniques such as ABC analysis, Minimum Order Quantity (MOQ), Just-in-Time (JIT), and Economic Order Quantity (EOQ) models, analyzing their effectiveness in managing inventory levels. Additionally, the report will address the challenges encountered by the company in inventory management and provide solutions to overcome these challenges. Finally, recommendations will be provided to help the company enhance its inventory control processes, aiming for improved efficiency and profitability.

2.OBJECTIVE:

A. General Objective

To Categorize the spare parts into ABC Analysis.

B. Main Objective

The Main of this analysis is to minimize the inventory cost such as labor cost and Material cost.

3. METHODOLOGY

There are various types of inventory control analysis techniques such as ABC, HML, VED, XYZ, EOQ etc. Here we shall focus on the ABC analysis techniques

A. ABC ANALYSIS: ABC analysis has become highly popular in business circles as an influential technique for inventory control. This approach involves classifying inventory items according to their value and usage, enabling organizations to effectively manage their inventory. ABC analysis is based on the Pareto principle, which states that 20% of the items in inventory typically account for 80% of the inventory value or usage. ABC analysis helps businesses to optimize their inventory levels, reduce inventory holding costs, and increase profitability. It also helps businesses to improve their customer service levels by ensuring that critical items are always available when needed. ABC analysis is a valuable tool for businesses of all sizes and across different industries and it can be customized to meet the specific needs and goals of each organization.

ABC analysis is a technique used in inventory control management that involves categorizing inventory items into three groups based on their value and usage. The three groups are typically labelled A, B, and C, with A items being the most valuable or the most frequently used, B items being of moderate value or usage, and C items being the least valuable or the least frequently used.

B. A- CLASS ITEMS:

"A" Category - 20% of items represents 80% of the total Annual Consumption.

C. B- CLASS ITEMS:

"B" Category - 30% of items represents 15% of the total Annual Consumption.

D. C- CLASS ITEMS:

"C" Category - 50% of items represents 5% of the total Annual Consumption.

TABLE-1

Show particulars of ABC Analysis

Class	Percentage of Items	Percentage value of Annual Usage	Control
Class "A" Items	About 20% of items	About 80%	Close Day to Day Control
Class "B" Items	About 30% of items	About 15%	Regular Review
Class "C" Items	About 50% of items	About 5%	Infrequent Review

E. PROCEDURE:

To perform ABC Analysis, the following steps are necessary

1) Prepare the list of items and calculate their unit price, annual consumption.

2) Arrange items in the decreasing of their annual usage.

3) Calculate percentage of annual usage, cumulative of annual usage and then categories the inventory item.

4) Plot the graph based on cumulative of annual usage and then categories the inventory items.

4. CASE STUDY

Step1. Prepare the list of spare parts items and calculate their unit price, annual demand, Annual usage and percentage of annual usage.

Step2. Arrange the spare parts items in the decreasing order of their annual usage.

Step3. Calculate cumulative of annual usage and then categories the inventory item.

TABLE 2

Categorization of Spare parts items using ABC Analysis

CATEGORY	NO OF ITEMS	% OF ITEMS	% OF VALUE	CONTROL
A	339	20%	80%	Close Day to Day Control
B	464	27.30%	15%	Regular Review
C	897	52.80%	5%	Infrequent Review

Step4. Plot the graph based on cumulative of annual usage and then categories the inventory items.

X-axis shows = Number of items

Y-axis shows = Cumulative percentage

ABC analysis based on cumulative of annual usage is shown in fig.1

No of Items
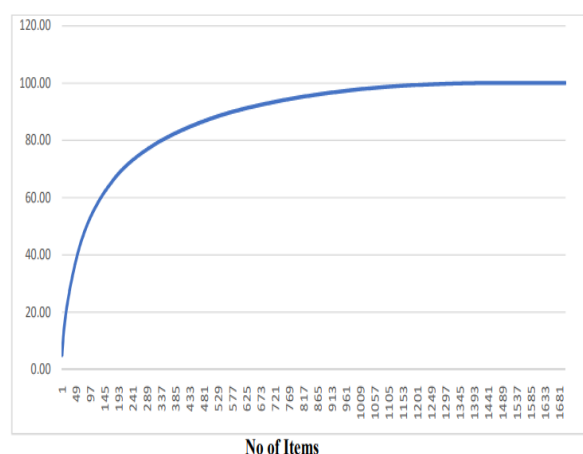
ABC ANALYSIS

Fig.1 Shows ABC analysis based on cumulative of annual usage

5. RESULTS

The Categorization of the annual consumption Value for the analysis period (March 2022 – March 2023) is shown in Table 1. Correspondingly Graph is plotted and it Indicates that 339 items out of 1700 acquires 80% of the annual consumption Value hence are considered as Category "A" Item.15% of total annual consumption value is from 464 items which are Categorized as "B" items and 5% of the total annual consumption value is from 897 items hence these items are considered as "C" Category items.

6. DISCUSSIONS

Based on the above results and previous observations some recommendations can be made for the SAPTHAGIRI AUTOMOBILE SHOWROOM, according to their standard measures they chose to be have for Selective Inventory Control. This showroom can utilize the Primary inventory control method ABC analysis to categorize their ordered items and also to prioritize their spare parts and maintain their Inventory successfully and productively. For instance, they should give careful consideration for A class items; moderate on B class items; and also, least on C class items. Almost 80% of the total money invested in A class item so it can be observed with an incredible care to avoid from Overstocking. So whenever buying the products in Bulk volume A class items are maintained with high attention. It will help the Automobile showroom in these ways: -

☐ Storage charges will get reduced as the ordered spare parts are sold rapidly so there will be no reason for holding their inventory for longer time.

☐ By this Categorization of items can help them to maintain Inventory in an efficient way.

☐ Smooth and transparent sales will take place whenever the inventory hits the rapid movement.

☐ Discounts are also gets huge for bulk ordering.

☐ Customer Satisfaction takes demand to the showroom over this area for maintaining on time delivery.

7. CONCLUSION

The Objective of this study is to identify the highly prioritized items in their annual ordering Inventory items and managing them with an efficient inventory control technique. The integrated ABC analysis methodology is opted for the classification of the spare parts inventory at SAPTHAGIRI showroom. Generally, the ABC analysis is used for the classification of the inventory accordingly they can take control over the highly invested items. This categorization of items can simplify their inventory management and it also helps to use Advanced inventory techniques over their Ordering cost, Inventory carrying cost, stock maintenance cost and storage management.

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