A STUDY ON INVENTORY MANAGEMENT AT WHEELS INDIA LIMITED

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ABSTRACT

Inventory management stands as a cornerstone of operational excellence across industries, with profound implications for cost-effectiveness and overall business performance. In the context of manufacturing companies, such as Wheels India Limited, efficient inventory control assumes paramount importance due to its direct impact on operational efficiency and financial health. This research endeavors to delve into the intricacies of inventory management within Wheels India Limited by leveraging financial statements to assess the soundness of its inventory practices.

At the core of effective inventory management lies the optimization of resources to ensure the availability of the right quantity of goods at the right time, place, and cost. For manufacturing entities operating in dynamic and competitive markets, adept inventory control becomes imperative to navigate through the complexities of production and distribution.

Furthermore, the study explores the utilization of inventory management technologies and systems by Wheels India Limited, such as inventory tracking systems. These technological advancements play a pivotal role in enhancing inventory accuracy, minimizing discrepancies, and streamlining inventory-related processes.

The findings of this research endeavor will not only illuminate the current state of inventory management within Wheels India Limited but also provide actionable insights and recommendations to optimize inventory control practices. By capitalizing on growth opportunities and fortifying its position as a frontrunner in the manufacturing domain, Wheels India Limited can enhance its competitiveness and sustain long-term success in the market.

Keywords: Inventory, wheels India, Trend, Efficiency

1.INTRODUCTION

1. **Trend Analysis:** It involves examining historical data over a period to identify patterns, tendencies, or changes in variables. By analyzing trends, businesses can make informed decisions about future strategies, such as sales forecasting, investment planning, or market positioning. Techniques like moving averages, exponential smoothing, or regression analysis are often used to identify and interpret trends in data.

2. **Correlation:** Correlation measures the strength and direction of the linear relationship between two variables. It ranges from -1 to 1, where 1 indicates a perfect positive

correlation, -1 indicates a perfect negative correlation, and 0 indicates no correlation. Correlation analysis helps in understanding how changes in one variable relate to changes in another, aiding in decision-making processes, risk management, and portfolio diversification in finance, economics, and other fields.

3. **Material Budget:** This is a component of the overall budgeting process for a business or project, focusing specifically on the allocation of financial resources for acquiring materials required for production or operations. It involves estimating the quantity and cost of materials needed based on production forecasts, inventory levels, supplier contracts, and other factors. Effective material budgeting ensures that the necessary materials are available at the right time and cost to support production goals and minimize waste.

4. **Production Budget:** The production budget is a detailed plan that outlines the expected production levels for a specific period, typically based on sales forecasts, market demand, inventory policies, and production capacity. It specifies the quantity of goods or services to be produced and serves as a guide for resource allocation, scheduling, and performance evaluation. The production budget is a critical component of the overall master budget, providing insights into the operational requirements and efficiency of the production process.

5. **Economic Order Quantity (EOQ):** EOQ is a formula used in inventory management to determine the optimal order quantity that minimizes total inventory costs, including ordering costs and holding costs. It balances the costs of ordering too frequently (resulting in high ordering costs but lower holding costs) versus ordering in large quantities (resulting in low ordering costs but higher holding costs). The EOQ formula considers variables such as demand rate, ordering cost, and holding cost per unit to calculate the ideal order quantity that maximizes efficiency and minimizes expenses.

6. **Inventory Levels:** Inventory levels refer to the quantity of goods or materials that a company holds in stock at a specific point in time. Maintaining appropriate inventory levels is crucial for meeting customer demand, avoiding stockouts or excess inventory, and optimizing operational efficiency. Inventory levels are influenced by factors such as production schedules, sales forecasts, lead times, storage capacity, and inventory management policies. Businesses use various techniques, such as just-in-time (JIT) inventory management, economic order quantity (EOQ) analysis, and inventory turnover ratios, to monitor and control inventory levels effectively. Efficient inventory management ensures that the right products are available at the right time and cost, contributing to customer satisfaction and profitability.

2. REVIEW OF LITERATURE

1. Plinere, D. &Borisov, A. (2015). Concluded that. Inventory management is necessary to every company, having inventories. Companies have stock, but so much as to keep away from overstock and out-of-stock situations. Inventory management can better company inventory control existing condition and reduce costs of the company.

2. Jose, T. Jayakumar. A. &Sijo. M. T. (2013) found the difference between EOQ & number of pieces purchased. It is observed that the company is not using EOQ for buying the materials. Therefore, inventory management is not reasonable. From estimate of safety stock. Company can decide how much inventory the company can keep in back stock per annum.

3. Mohamad. S. J. A. N. bin S. Suraidi. N. N. Rahman. N. A. A. &Suhaimi. R. D. S. R. (2016) concluded that efficiency of inventory management is a major concern area of business. Suggestions are given to improve the performance of inventory management. Demand forecasting, scattered inventory & cycle counting.

4. Lwiki et al (2013) a survey conducted and established that there is generally positive correlation between each of inventory management practices. Specific performance indicators were proved to depend on the level of inventory management practices. We established that Return on Equity had a strong correlation with lean inventory system and strategic supplier partnerships. As such, we concluded that the performance of sugar firms could therefore be stated as being a function of their inventory management practices.

5. Panigrahi (2013) Undertook an in-depth study of inventory management practices. The study also investigated the relationship between profitability and inventory conversion days. The study, using a sample of the top five cement companies of India over a period of 10 years from 2001 to 2010, concluded that a considerable inverse linear relationship existed between inventory conversion period and profitability.

6. Madishetti and Kibona (2013) Found that a well-designed and executed inventory management contributes positively to a small or medium-sized enterprises (SMEs) profitability.Regression analysis was adopted to determine the impact of inventory conversion period over gross operating profit. The results cleared out that significant negative linear relationship occurred between inventory conversion period and profitability.

7. .Srinivas Rao Kasisomayajula (2014) the study concluded that all the units in the commercial vehicle industry have significant relationship between Inventory and Sales. Proper management of inventory is important to maintain and improve the health of an organization. Efficient management of inventories will improve the profitability of the organization.

8. .Sunitha, K. V. (2012) in her thesis. inventory management is vital for keeping costs down, when meeting regulations. It is difficult to balance demand and supply and inventory management to make sure that the balance is untouched. The trained inventory management and good quality software will help make inventory management a victory. The ROI of Inventory management has seen better revenue and profits, positive employee ambiance and increase in customer satisfaction.

9. .Atnafu. D. &Balda, A. (2018) focuses on inventory management & explains the relationship between inventory management practices competitive advantage & organizational performance. The finding of the study on basis of data analysis is that there is a positive relationship between competitive advantages and inventory management performance. And better organizational performance gives a firm bigger capital to apply various inventory management techniques .

3. RESEARCH OBJECTIVES

- To study inventory management system of Wheels India Ltd
- To analyze the inventory position through various analyses like trend analysis, correlation, EOQ, Inventory level, material and production budget
- To understand the problems faced by company in handling inventory.

4. RESEARCH DESIGN

The proposed study is about a detailed outline of how an investigation Source of Data will take place. A research will typically include how data is to be collected, what instruments will be employed, how the instruments' will be used and the intended means for analyzing data collected.

5. DATA COLLECTED METHOD

This study is mainly based on Secondary data which have been collected from the ANNUAL REPORTS from the period of 2019-2023 of the company and the STORES LEDGER.

6.TOOLS AND TECHNIQUES USED FOR THE ANALYSIS

1. Trend Analysis
2. Correlation
3. Material Budget
4. Production Budget
5. Economic Order Quantity
6. Inventory Levels

7. DATA ANALYSIS
> **TREND ANALYSIS**

Trend analysis is a technique used in technical analysis that attempts to predict future stock price movements based on recently observed trend data. Trend analysis uses historical data, such as price movements and trade volume, to forecast the long-term direction of market sentiment.

COMPARISION OF INVENTORY FOR 10 YEARS

YEAR	INVENTORY
2013-2014	233.92
2014-2015	274.84
2015-2016	299.04

2016-2017	323.24
2017-2018	347.44
2018-2019	371.63
2019-2020	388.12
2020-2021	512.09
2021-2022	769.58
2022-2023	810.48

INTERPRETATION:

The Trend Analysis of Inventory indicates an increasing trend and therefore indicates a good profitable position in future.

> **CORRELATION**

i. BETWEEN SALES AND INVENTORY => r = 0.03075103206

INTREPRETATION:

Interpreting this correlation coefficient suggests that there is a minimal, almost negligible linear relationship between inventory levels and sales. In other words, changes in inventory levels do not significantly predict or coincide with changes in sales volume

ii. BETWEEN SALES AND DEBTORS => r=0.01129462921

INTREPRETATION:

Changes in sales volume do not significantly predict or coincide with changes in the level of debtors.

iii. BETWEEN SALES AND RAW MATERIAL => r=0.00696057645

INTERPRETATION:

Correlation indicates that as raw material expenses increase, sales revenue may also increase slightly, but the relationship is minimal and inconsistent.

> **MATERIAL BUDGET**

Material budgeting refers to the procedure of preparing material or purchase budget in terms of quantity and money value of materials to be procured in a specified time period. Not only does it helps in estimating the material prices over a period of time, but also analyses the material requirement.

PARTICULARS	2019	2020	2021	2022	2023
Total raw materials required	547.82	559.87	832.36	1126	1201.22
Raw material to be purchase	198.8	156.45	444.24	613.91	401.64

INTERPRETATION:

In material budget it is inferred that raw materials has been increased gradually in the subsequent years. This can be achieved by increasing the total number of raw materials and by efficient management of the company.

> **PRODUCTION BUDGET**

| PARTICULARS	2019	2020	2021	2022	2023
Total production	960.2	270.58	352.43	493.03	512.22
Production to be manufactured	916.21	142.95	296.57	429.08	372.15

INTERPRETATION:

The production budget has increased in the value forecasting united sales.

> **ABC ANALYSIS**

ABC analysis is a method used in inventory management to classify items based on their significance. It categorizes items into three groups: A, B, and C. Group A represents high-value items that contribute significantly to overall costs or revenue. Group B comprises moderately important items, while Group C includes low-value items with minimal impact.
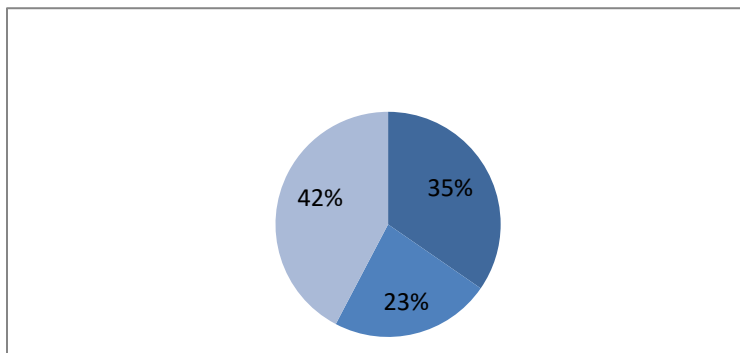
2022-2023
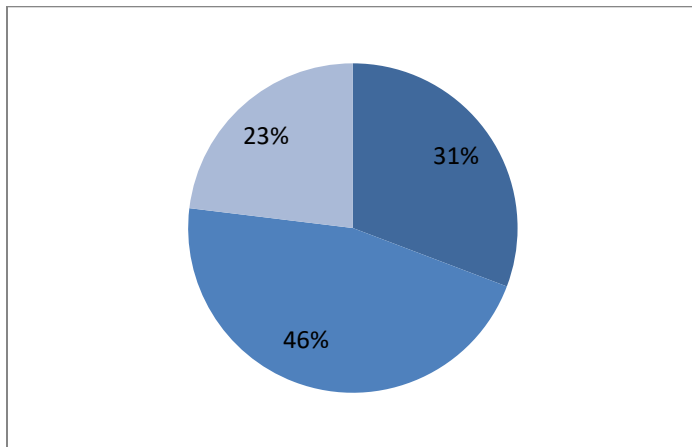
2021-2022
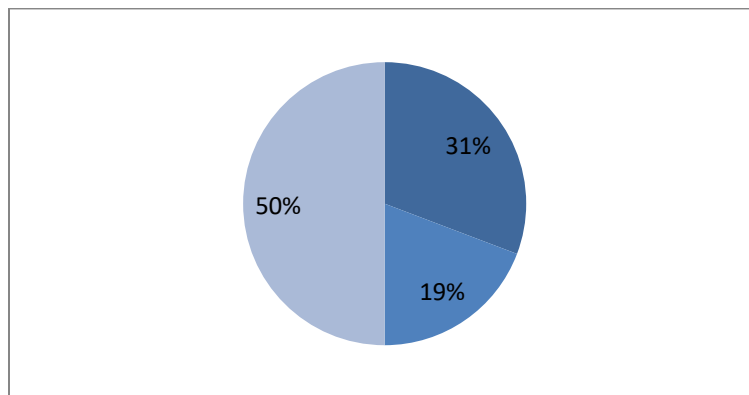
2020-2021

INTERPRETATION:

Items classified as Class C are generally of lower value or importance compared to Class A and B items. We may have lower prices and annual consumption rates, representing minor or ancillary components in the production process. Examples of Class C items include drill bits, leather pads, belts, clamps, and fan blades.

> **ECONOMIC ORDER QUANTITY**
> The economic order quantity (EOQ) is a company's optimal order quantity that meets demand while minimizing its total costs related to ordering, receiving, and holding inventory

MATERIALS	BOLT PW0248	NUT COLLAR PW0255	NUT FOR TRACT PW0249	BAL WEIGHT 45GMS	BAL WEIGHT 15GMS
ECONOMIC ORDER QUANTITY	313	273	930	168	277

INTERPRETATION:

The economic order quantities (EOQs) for various materials are crucial for minimizing total inventory costs. These EOQ values reflect the balance between ordering and holding costs for effective inventory management.

> **INVENTORY LEVELS (STORES CONTROL)**
> Inventory levels, also known as stores control, refer to the quantity of goods or materials held by a company at a given time. It encompasses various stages, including raw materials, work-in-progress, and finished goods.

ITEM	RE-ORDER LEVELS(UNITS)	MAXIMUM STOCK LEVEL	MINIMUM STOCK LEVEL	AVERAGE STOCK LEVEL
Euro block ASSY 46	132252	11485	67268	91060
Pipe PVC Finolex	72440	52090	28700	40395
Rotor blade KF 138	48000	37750	21750	29750
JIG saw blade	67250	53450	30587.5	42018.75
Wire buffing wheel	59200	46670	26740	36705

8. FINDINGS

- The Trend Analysis of Inventory indicates an increasing trend and therefore indicates a good profitable position in future.
- Interpreting this correlation coefficient suggests that there is a minimal, almost negligible linear relationship between inventory levels and sales. In other words, changes in inventory levels do not significantly predict or coincide with changes in sales volume do not significantly predict or coincide with changes in the level of debtors.
- Correlation indicates that as raw material expenses increase, sales revenue may also increase slightly, but the relationship is minimal and inconsistent

9. SUGGESTION

- In ABC analysis more priority should be given on class A materials by keeping a regular track in maintaining the inventory level at high when compared to other two classes The entire C category items inventory should be maintained at a very minimum level and lower control over it is recommended.
- The company has to maintain higher inventory turnover ratio, so that shows efficiency of management in moving the stock.
- Allocating resources efficiently, considering labor, materials, and overhead costs and monitor actual production against budgeted targets regularly to identify variances and making adjustments as needed ensures project success and cost-effectiveness.

10. CONCLUSION

Inventory analysis is essential for maintaining the right amount of stock to meet customer demand without excess or shortage. By analyzing historical sales data, demand forecasts, and lead times, businesses can determine optimal inventory levels for each product or SKU. This helps in avoiding stockouts, which can lead to lost sales and dissatisfied customers, as well as excess inventory, which ties up capital and incurs holding costs.

Moreover, inventory analysis enables businesses to identify slow-moving or obsolete items that may be taking up valuable warehouse space and tying up capital. By regularly reviewing inventory turnover ratios and conducting ABC analysis, companies can prioritize resources on high-demand items and implement strategies such as markdowns, promotions, or liquidation for slow-moving products. To overcome these challenges, businesses can adopt various strategies and technologies for effective inventory management. Implementing demand forecasting techniques, such as time series analysis or machine learning algorithms, can improve the accuracy of demand forecasts and help in anticipating future inventory needs. Furthermore, inventory optimization software and advanced analytics tools can provide actionable insights into inventory levels, replenishment strategies, and order policies.

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