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A STUDY ON INVENTORY MANAGEMENT

Mr. Manoj Katta[1], Ms. Dorati Swetha[2]
[1]*Assistant Professor, J.B. Institute of Engineering and Technology*
[2]*J.B. Institute of Engineering and Technology*

ABSTRACT
Operational efficiency, customer happiness, and profitability are all impacted by inventory management, which is a fundamental component of supply chain management. This research looks at modern methods of inventory management, specifically at tactics that strike a compromise between operational efficiency and cost-effectiveness. The research's overarching goals are to (1) determine what constitutes optimal inventory management practice, (2) examine how methods like Just-In-Time (JIT), Economic Order Quantity (EOQ), and ABC analysis affect company performance, and (3) draw attention to the ways in which technology might enhance inventory control. The research assesses the efficacy of inventory management in lowering costs, minimizing stockouts, and optimizing resource allocation through the use of case studies, data analysis, and interviews with industry experts. Automation, real-time inventory tracking, and predictive analytics are highlighted as key components of modern inventory systems. The article also delves into the difficulties that firms have when trying to incorporate these technologies.

INTRODUCTION
Inventory management is the process by which a business keeps track of its stock, including production, ordering, storage, and sales. Here, the business is responsible for managing the warehousing and processing of all materials, from raw materials to finished products.

A company's ability to maintain profitability, respond to trends, avoid supply chain management failures, and remain organized is proportional to the quality of its inventory management.

The Significance of Managing Stock
Inventory management has an impact on production, warehousing costs, and order fulfillment. Effective inventory management allows businesses to save costs while maintaining an adequate supply of commodities. Another advantage is that it helps cut down on excess stock.

Why it's beneficial to evaluate
Efficient inventory management may help a firm streamline its production and fulfillment methods. Among the many benefits of using an inventory management system are the following:
• Spend less and save more
• Minimize space requirements
• Increase cash flow by lowering losses
• Predict sales patterns
• Get your clients' orders out the door on time!

Challenges with managing inventory Inaccurate inventory tracking, having an excess of unsold merchandise, and insufficient stock to fulfill client needs are the three main issues with inventory management. Furthermore, one can find: Issues with:
• Inadequate or outdated inventory management techniques
• Demand fluctuations caused by customers' changing desires and needs
• Difficulty locating certain commodities in a warehouse

Various forms of inventory
• Depending on the company's field and employer, there are four main kinds of inventory that they may oversee: raw materials, work in progress, finished goods, and maintenance, repair, and operations (MRO/Repair) goods.

The term "raw goods" describes the materials used to make a final product. In many cases, they manifest during the embryonic phase. Products are made from raw materials, which might be anything from metal, plastic, fabric, or wood. These could be supplied by one or more suppliers.

A work-in-progress (WIP) is an item that has not yet been completed. Work in progress (WIP) is a production expenditure tracking system that is added to product cost together with other production expenses including workers, raw materials, and equipment.

Finished goods, These are products that customers may buy right now. After tasks are finished, they are added to the inventory of finished products.

"MRO" stands for "materials and equipment related to production"; these do not directly make up the final product. Items like personal protective equipment, cleaning products, and office supplies might fall under this category.

Less common types of inventory include: Safety stock; packing materials; cycle; service; transportation; theoretical; surplus;

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maintenance; and decoupling. When it comes to product sorting, every company has its own unique method.

Despite the fact that a reliable inventory management system is crucial to the success of any business, many small business owners either disregard the need of keeping track of their inventory or use outdated techniques. The scope of inventory management extends beyond the mere tracking of finished goods to include the accounting of the company's cash flow, labor, and overall assets.

Better supply chain management, more accurate inventory data collection, more efficient inventory management, and exponential growth in all areas are all possible outcomes for any company with a solid inventory management system.

Make tracking and completing purchases easier With the help of ecommerce inventory management, businesses may accomplish their dual objectives of maximising fulfillment potential and ensuring items are accessible.

In order to avoid missing out on sales or disappointing consumers due to unfulfilled orders, it is crucial for companies to maintain track of their inventory. Companies may also build up a buffer stock in many inventory management apps and systems. This stock can be used for fulfillment in the time between shipments. As we discussed in our piece on out of stock vs. back to stock inventory, stockouts aren't always horrible. However, this buffer stock will greatly assist the firm in avoiding running out of stock. Furthermore, Extensive gives the firm team visibility into incoming stock, allowing them to create the greatest possible customer experience, and it gives them unrivaled management over inventory with rules for allocating it to each sales channel. In addition, by ensuring timely order fulfilment, order management helps meet client needs. As a result, sales are up overall and customers are happy. Inventory management results in financial savings.The company's inventory is its lifeblood, but if it isn't closely monitored, it runs the risk of having too much of it and wasting money.

STATEMENT OF THE PROBLEM

The inventory of a company is among its most valuable assets. A well-managed inventory may lead to operational cost savings, improved cash flow, and increased profitability. The two main outcomes of inefficient inventory management are overstocking (which causes capital to be tied up in excess items and storage expenditures to rise) and stockouts (which cause sales to be missed and customers to be angry). Demand swings make it difficult for many businesses to maintain optimal stock levels. Having a method to manage inventory is crucial for keeping up with client demand. Research into inventory management has the potential to reveal how companies are enhancing inventory control and reducing errors via the use of cutting-edge technologies like RFID, AI, and automated systems. The study's results will provide light on how to improve operational efficiency and supply chain management generally, and researchers and organizations may use them to address these important concerns.

OBJECTIVES OF THE STUDY

- To study about the Inventory Management
- To identify factors contributing to inefficient Inventory levels
- To Analyse the Inventory Practices made in the company
- To examine the effectiveness of safety stock
- To make suggestions according to the findings made in the study

RESEARCH METHODOLOGY

The term "research methodology" describes the steps taken to ensure that studies are carried out in an organized and rational fashion. It encompasses all the strategies, instruments, and processes used to gather, process, and understand data so that the study's aims may be realized. The research technique plays a crucial role in an inventory management study to guarantee accurate and trustworthy outcomes that may guide improved decision-making.
Source of Data Collection

The data for the study is taken from the Primary Source and Secondary Source

Primary Source: The data is gathered from the observations and interactions from the company officials and workers in the manufacturing departments
Secondary Source: The data which is collected from the secondary source which is already available in the market like Textbooks, Journals, Websites, Newspapers etc. This study is based on secondary source of data.
Research Design: Descriptive Design
Analytical Tool: Balance Sheets and Inventory of the Company

LIMITATIONS OF THE STUDY

- The data collected for the analysis may or may not be the right time for the analysis
- The data is limited to the selected time period of five years.
- One of the major limitations of the study is data collected has been compared with other companies
- The analyzed data may or may provide the accurate results for decision making

LITERATURE REVIEW

A Study on Inventory Management in Dora Plastics, Pvt Ltd Tirupati by K Harish Babu, Dr. N Chandrika , (Oct 2022): Examining the process of inventory management is the goal of the study. Obtaining advantages from addressing inventory control difficulties is the foundation of this research's relevance. The research strategy included analyzing yearly reports and doing on-site studies. The industrial sector relies heavily on

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inventory management. Company will fail if inventory is not properly managed. Keeping accurate stock levels is difficult for the business. Keeping a reasonable amount of inventory on hand is possible with the help of a number of inventory management strategies. This paper's overarching goal is to investigate Dora Plastics Pvt Ltd.'s (Dora Plastics) inventory management strategies and to propose changes that would enhance those strategies. There is nothing wrong with the way the business is currently handling inventory management. The business should use new inventory management strategies to enhance its current system

A Study on RFID Kanban System in Inventory Management by A Ghelichi, A Abdelgawad, (Dec 2014): Radio Frequency Identification (RFID) is a relatively new technique that has recently become popular in many various sectors, and it is just one example of how technology has grown in our modern world. RFID provides a wide range of practical uses and ongoing benefits, including the capacity to read batches, process data, store information, and withstand severe environments. Despite RFID's benefits in the supply chain, new studies are casting doubt on its capabilities. In this paper, we will examine several solutions to these problems and how they might be used to reap the benefits of RFID. We will also demonstrate the usage of RFID technology in inventory management and talk about the significance of this process to a company. In addition, we will present research on the use of RFID in the Kanban inventory method. The potential benefits of RFID-based Kanban inventory management compared to traditional two-bin Kanban are going to be the focus of this research

A Study on Inventory Management System in Modernized Business by Dr. Nivetha P , Mr. Abimanyu, (Dec 2024): Businesses cannot afford to waste money, enhance operations, or lose consumers due to ineffective inventory management. Automation, artificial intelligence (AI), and data analysis have replaced antiquated manual processes as the backbone of current commercial inventory systems. Inventory management systems have grown in significance and influence over the years, and this research delves into all of that and more. As an added bonus, it explains how these technologies help businesses remain competitive while also discussing the pros and cons of utilizing them. Management of inventory, company operations, optimization of resources, contemporary business, automation, artificial intelligence (AI), and customer happiness are all keywords.

A study on CPFR Inventory Management Technology by Pei Zhang, A Qian Yuan, (Aug 2014): It is critical for supply chain partners to enhance cooperative relationships, decrease inventory, increase forecasting accuracy, and supply chain efficiency through the use of CPFR, a collaborative method for managing inventory in the supply chain. A definition of CPFR, an explanation of the CPFR method, examples of advantages, challenges to implementation, and solutions to these problems are all included in this article. A company's success or failure is highly dependent on its inventory management. Meeting consumer demand is a critical business function, and inventory is the glue that holds the purchasing, supply, and production processes together. The advantages of having inventory, such as improved customer service and protection from supply risks, are often outweighed by the significant costs of having too much inventory. Not only that, but new research has demonstrated that ineffective inventory management has far-reaching consequences that impact the performance and market value of both firms in the long run.

Review Paper : " A Study on Effective Inventory Management and Control" by Aatif Latif Shaikh, (April 2024): The importance of inventory management and control in improving operational efficiency for companies in different industries is explored in this study. Efficient inventory management is crucial for companies that want to stay competitive and make money in today's market because of how globalization and technology are changing the dynamics of the industry. A company's success or failure is highly dependent on its inventory management. Meeting consumer demand is a critical business function, and inventory is the glue that holds the purchasing, supply, and production processes together. The advantages of having inventory, such as improved customer service and protection from supply risks, are often outweighed by the significant costs of having too much inventory. Not only that, but new research has demonstrated that ineffective inventory management has far-reaching consequences that impact the performance and market value of both firms in the long run.

Inventory Management by Janice E Carrillo, Michael A Carrilla, (Jan 2024): A company's success or failure is highly dependent on its inventory management. Meeting consumer demand is a critical business function, and inventory is the glue that holds the purchasing, supply, and production processes together. The advantages of having inventory, such as improved customer service and protection from supply risks, are often outweighed by the significant costs of having too much inventory. Not only that, but new research has demonstrated that ineffective inventory management has far-reaching consequences that impact the performance and market value of both firms in the long run. The fundamentals of efficient inventory management are laid forth in this chapter. Along with more contemporary supply chain and e-commerce strategies, we examine traditional methods of inventory management. In addition, we go over some of the technology that really make inventory management a breeze. The chapter concludes with a summary of the most important managerial issues for inventory management.

DATA ANALYSIS & INTERPRETATION

Inventory Turnover Ratio

This ratio shows the efficiency of the firm in the producing and selling of the products

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Inventory Turn Over Ratio
= Cost of Goods Sold
Average Inventory

Inventory Turn Over Ratio
Rs. In Crores

Year	Cost of Goods Sold	Avg Inventory	Inventory Turn Over Ratio
2019 – 20	160462	40449.9	4.0
2020 – 21	198127	37185.9	5.3
2021 – 22	179535	31531.9	5.7
2022 – 23	121465	23588.9	5.1
2023 – 24	144288	20982.9	6.9

Cost of Goods Sold = Opening Stock + Purchases – Closing Stock
Avg Inventory = Opening + Closing Inventory
2

Year	2022 – 23	2023 – 24
Opening Stock	20,421.06	21,544.65
Purchases	1,27,800.87	1,43,164.25
Closing Stock	26,756.75	20,421.06
Cost of Goods Sold	1,21,465.18	1,44,287.84
Avg Inventory	23588.905	20982.855

Year	2019 – 20	2020 – 21	2021 – 22
Opning Stock	38,064.70	36,307.06	26,756.75
Purchases	1,65,232.84	1,99,884.14	1,89,085.80
Closing Stock	42,835.05	38,064.70	36,307.06
Cost of Goods Sold	1,60,462.49	1,98,126.50	1,79,535.49
Avg Inventory	40449.875	37185.88	31531.905



Interpretation

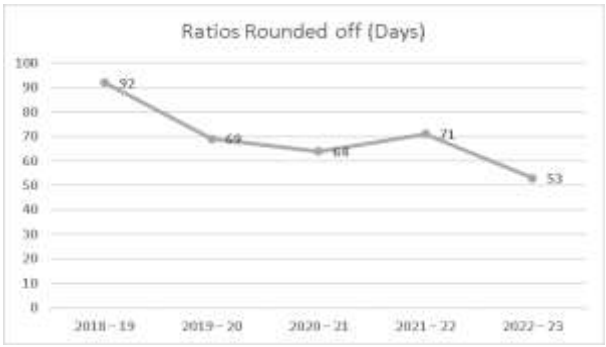
From the above data of observation, we can state that, Inventory Turn Over Ratio has increased from 2019-20 to 2021-22 year i.e., from 4.0 to 5.7, later on from 2021-2022 to 2022-2023yr the ratio was decreased to 5.1 and gradually increased in the 2023-2024 year by from 5.1 to 6. 9.

Inventory Holding Period

The amount of time that passes between the acquisition and sale of an asset is called its holding period. Generally speaking, a holding duration of one year or more is considered long term, whereas a holding period of less than a year is considered short term.

Inventory Holding Period= 365
Inventory Turnover Ratio

Year	Days	Inventory Turnover Ratio (Times)	Ratio (Days)	Ratios Rounded off (Days)
2019 – 20	365	4.0	92.010316	92
2020 – 21	365	5.3	68.505961	69
2021 – 22	365	5.7	64.105127	64
2022 – 23	365	5.1	70.884103	71
2023 – 24	365	6.9	53.079609	53



Interpretation

From the above data observations we can state that, Inventory Holding Period was highest in the year 2019-2020 i.e. 92 days and lowest Invetory Holding Period was in the year 2023-24, i.e.53 days

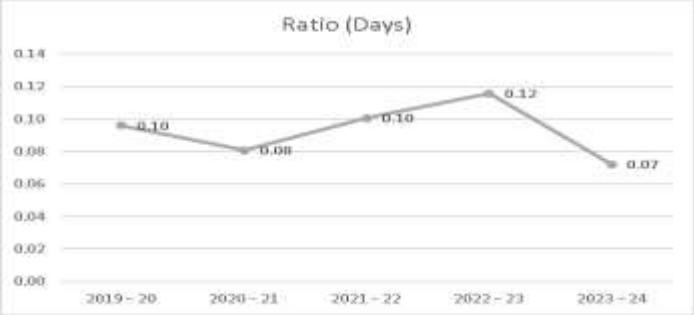
Inventory Conversion Period

This ratio illustrates the pace of revenue generation from inventory by showing the number of days it takes to turn stock into net sales.

Inventory Conversion Period = Inventory x 365
Sales

Year	Inventory	Sales	Ratio (Days)
2019 – 20	42,835.05	4,46,577.52	0.10
2020 – 21	38,064.70	4,71,761.98	0.08
2021 – 22	36,307.06	3,61,128.36	0.10
2022 – 23	26,756.75	2,31,509.86	0.12
2023 – 24	20,421.06	2,83,195.63	0.07

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Interpretation

From the observation of the data we can state that, Inventory Conversion Period is highest in the year 2022-2023 i.e. 0.12 days and Lowest in the year 2023-2024 i.e. 0.07 days

FINDINGS

- Inventory Turn Over Ratio has increased from 2019-20 to 2021-22 year i.e., from 4.0 to 5.7, later on from 2021-2022 to 2022-2023yr the ratio was decreased to 5.1 and gradually increased in the 2023-2024 year by from 5.1 to 6. 9.
- Inventory Holding Period was highest in the year 2019-2020 i.e. 92 days and lowest Invetory Holding Period was in the year 2023-24, i.e.53 days
- Inventory Conversion Period is highest in the year 2022-2023 i.e. 0.12 days and Lowest in the year 2023-2024 i.e. 0.07 days
- From the above observation data we can state that, Average Days to Sell Inventory is 1 day in for all the years
- Rawmaterial Conversion Period is highest in the year 2020 – 21 i.e.641.93 and Lowest in the year 2022-2023 i.e. 194.94
- Work in progress conversion period is highest in the year 2021-2022 i.e 36.39 days and lowest in the year 2020-21 i.e. 8.72
- Finished Goods Conversion Period is Highest in the year 2019-20 i.e. 114.79 and the lowest in the year 2023-2024 i.e. 834.71
- Days Payable outstanding Ratio is highest in the year 2019-20 i.e.64.37 and lowest in the year 2023-24 i.e. 31.64
- Current Ratio for all the years showing below than the standard ratio which is 2:1. So companies Liquidity Position is weak.

SUGGESTIONS

- It has observed that company was having higher Inventory conversion period in the year 2018-19 & 2019-20 compare to other years which show that the company fund may get blocked for longer duration. So it suggested them to concentrate on this.
- As the company's current ratio is decreasing year by year and they didn't maintain accurate standard ration in the past 5 years i.e., 2:1, it shows that company liquidity position is week. So it is suggested company to maintain standard ratio to improve short term liquidity.
- Improving inventory management accuracy, efficiency, and visibility via the use of new technologies such as RFID, IoT, and AI will be examined.
- Before committing to new inventory management software, weigh the pros and cons. Assess the function of stockpiles in making supply networks more resistant to shocks, such as extreme weather or worldwide epidemics (e.g., pandemics).
- Consider ways to strike a balance between maintaining a robust supply chain and implementing lean inventory methods. Learn more about how good inventory management is related to precise demand estimates.
- It is suggested on how to make better demand forecasts and how that would affect stock levels. Look into how inventory performance, lead times, and vendor management methods are related.
- Determine whether better inventory management may be achieved via supplier cooperation. Learn how Omni channel fulfillment and the growth of online shopping affect stock management tactics.
- Take a look at the pros and cons of syncing inventories across different platforms. Go into how conventional methods of inventory management affect the environment.
- Suggested to assess environmental friendly methods of inventory management that reduce trash and your impact on the environment. It is to be determined how items in stock, the effectiveness of working capital, and company success are related.
- Find the sweet spot for inventory turnover optimization that won't sacrifice service quality for customers. Determine how businesses change their inventory tactics in times of crisis or economic slump.

CONCLUSION

A thorough examination of inventory management is crucial for companies that want to streamline their supply chain, improve their financial results, and adjust to the ever-changing market demands. The study has the potential to provide solutions that improve inventory management in terms of efficiency, resilience, and sustainability, as well as other important areas of the field. Businesses may improve their inventory management procedures and respond to changing market conditions by exploring these topics. Keeping up with the latest trends and best practices in inventory management is essential for long-term success in sectors that are always changing.

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