The Ciência & Engenharia - Science & Engineering Journal
ISSN: 0103-944X
Volume 10 Issue 1, 2022
pp: 154 - 159

Inventory Management for Large Scale Industries

[1]G. Preethi, [2]B. Anusha, [3]B. Hema, [4]B. Navya
[1,2,3,4] UG Student, Department of Electronics and Communication Engineering,
Dr K V Subba Reddy College Of Engineering For Women, Kurnool, Andhra Pradesh, India

Abstract
Companies can use inventory management to determine which and how much stock to order at what time. It keeps track of inventory from the time goods are bought to sold. In order to ensure that there is always sufficient stock to fulfill customer orders and that adequate notice is given in the event of a shortage, the procedure identifies and responds to trends. Inventory turnover is one indicator of effective inventory management. Inventory turnover is a accounting measure of how frequently stock is sold over a period. A company does not want more inventory than it sells. Deadstock, or stock that has not been sold, can result from low inventory turnover. A company's health depends on its inventory management because it helps ensure that there is never too much or too little stock on hand, reducing the likelihood of stockouts and inaccurate records. A useful inventory management system is one that allows shopkeepers to keep track of purchases and sales. Customers will be dissatisfied if inventory is mismanaged. This inventory will eliminate paper work, human errors, manual delays, and speed up the process. This inventory management system will be able to track sales and available inventory, telling a shopkeeper when it's time to reorder and how much to purchase. too much cash tied up in slower sales and warehouses. The inventory management system is a Windows application designed specifically for Windows operating systems that focuses on inventory control and generation. The software consists of two components: Microsoft Visual Basic 2010 is used to build the frontend, and SQL Server Database 2008 serves as the backend. Keywords: Software, public inventory, and a database

1. Introduction

Every function in any company or organization is interconnected, connected to other functions, and frequently overlapping. The business delivery function is built on a few essential components, including inventory management, logistics, and supply chain management. Therefore, marketing managers and finance controllers both rely heavily on these functions. The function of inventory management has a significant impact on the balance sheet's financial health as well as the health of the supply chain. In order to meet its needs and avoid having too much or too little inventory, which can have an effect on financial figures, every organization constantly strives to maintain optimal inventory levels.
Inventory changes all the time. Controlling inventory through planning and review necessitates constant and careful evaluation of both internal and external factors. Inventory planners, who interface with production, procurement, and finance departments and perform

The Ciência & Engenharia - Science & Engineering Journal
ISSN: 0103-944X
Volume 10 Issue 1, 2022
pp: 154 - 159

continuous inventory monitoring, control, and review, are a separate department or job function in the majority of organizations. An organization's inventory is unused physical goods that have economic value and are held in various forms in its custody in anticipation of being packed, processed, transformed, used, or sold in the future. Any business that makes, trades, sells, or services a product will always have a stock of various physical resources to help with future consumption and sales. Inventory management and supply chain management are the backbone of any business's operations. While inventory is a necessary evil for any such business, it may be noted that the organizations hold inventories for a variety of reasons, including speculative purposes, functional purposes, physical necessities, and so on. Inventory management has undergone significant transformations thanks to the availability of software applications that are process-driven and technological advancements. Manufacturers have agreed to manage and hold inventories at the end of their customers, resulting in Just-In-Time deliveries, over the course of the last ten or so years. Despite the fact that the basic idea is the same, different industries have given the models different names. The model is referred to as VMI, or Vendor Managed Industry, by computer and mobile phone manufacturers, JIT, or Just In Time, by automobile manufacturers, and ECR, or Efficient Consumer Response, by the apparel industry. The fundamental inventory management model has not changed.

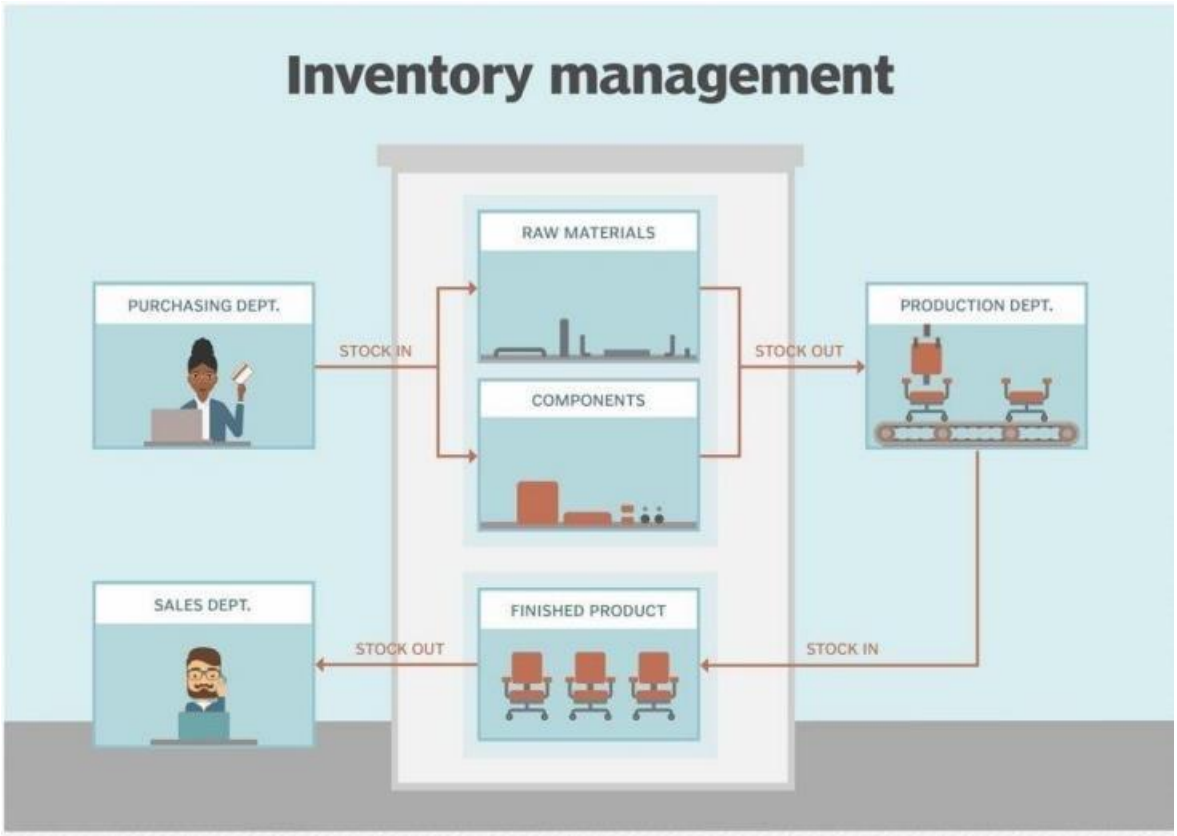

Fig.1 Inventory Management

The Ciência & Engenharia - Science & Engineering Journal
ISSN: 0103-944X
Volume 10 Issue 1, 2022
pp: 154 - 159

2. Literature Review

Norazira Abd Karim (2017) investigated the standard operating procedure (SOP) for inventory management practices, looking for any flaws in the practice, as well as its effect on the company's performance. Inventory management is important because it keeps production running smoothly and keeps sales from being lost because of a stockout or unhappy customers.

In Mukt Shabd Journal (PIEMF), T.T. Amachree (2017) examined and developed Inventory Management Strategies (IMS) that could be creatively used for Productivity Improvement in Equipment Firms. Equipment manufacturing projects suffer from declining productivity and the inability to effectively meet customized order batch quantity within schedules, budgeted cost, and quality specifications due to a lack of robust and well defined IMS and no code classification of a large number of inventory items.

Aashna Sharma and Vivek Arya (2016) investigated the role that inventory management plays in determining whether or not it is possible to reduce the amount of money invested in inventory and whether or not material is readily available when it is required.

Inventory management in a Chinese manufacturing company was the focus of Hong Shen's (2016) research. The objectives of this research are to ascertain the primary factors that have an effect on the practices of inventory management, investigate approaches to efficient and effective inventory management, and investigate the effect that supplier cooperation has on the improvement of the supply chain. The primary factors that have an impact on factory inventory management are identified using a case study approach.

Darya Plinere and Arkady Borisov (2015) presented an inventory management case study for the assembling company. It is suggested that an agent system be used to automate inventory management processes and that inventory management be used to reduce stock levels.

V. Vijaya Lakshmi (2015) argues that effective company management necessitates effective inventory management. In manufacturing businesses, inventory is a crucial component of current assets. Srinivas Rao Kasisomayajula (2014) carried out research on Inventory Management in the commercial vehicle industry in India. This was done in order to guarantee a smooth flow of production in order to meet consumer demand. Huge sums are committed to inventories. Five companies were chosen as the study's sample. The study came to the conclusion that Sales and Inventory are significantly correlated across all commercial vehicle units. A company's health must be maintained and improved through effective inventory management. The company's profitability will rise as a result of better inventory management.

Sanjiv Mittal (2014) looked into how the company's profitability was affected by how well its inventory performed. It also looks into how inventory performance is affected by gross margin, capital intensity, company size, and growth. The findings reveal a strong negative correlation between the average inventory conversion period and the company's profitability. Additionally, inventory turnover is directly related to capital intensity, company size, and growth while being inversely related to gross margin.

The Ciência & Engenharia - Science & Engineering Journal
ISSN: 0103-944X
Volume 10 Issue 1, 2022
pp: 154 - 159

3. Proposed System

We strive to keep the system's simplicity while simultaneously increasing its performance in our design. By automating the entire network that is in charge of inventory management and removing any unnecessary human intervention, we use the power of IOT to simplify and improve efficiency in this situation. The use of dedicated hardware for inventory management is the point at which the proposed design and the existing design meet. The effective use of the ultrasound transducer to measure the inventory is another innovative feature of our design that sets it apart. It can run on batteries because our design has its own hardware. When the system is put in place in businesses that don't primarily operate on electric power, this works well. An ultrasonic transducer is used in the design that has been presented to measure the stocks that are available. As can be seen in, the design is universal. The type of inventory does not necessitate any modifications. Both liquid and solid stocks can be managed with the same transducer without any modifications. The ultrasonic transducer is what is used to accomplish this. The time it takes for a pulse to travel from the top of the container to the surface of the filled container and back is measured with the transducer. This time is used to measure the distance between the top of the container and the inventory's surface. by assuming two values, max and threshold, where max is the distance to an acceptable minimum inventory and threshold is the distance to a full inventory. Due to the fact that the distance increases as stocks decrease, it is evident that max is the threshold. The threshold value should be chosen in such a way that the industry can continue to function until the new products arrive. The measurement of the stock takes place as shown in A Raspberry Pi serves as the system's heart and serves two purposes. In order to establish the time, it is first connected to the ultrasonic sensor,

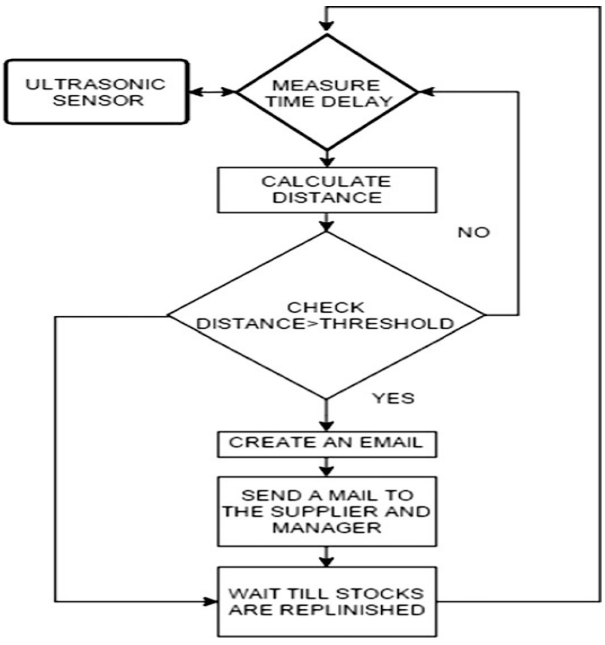

Fig 2: Flow chart of the proposed design

The Ciência & Engenharia - Science & Engineering Journal
ISSN: 0103-944X
Volume 10 Issue 1, 2022
pp: 154 - 159

Obviously, any IM system will have capabilities for inventory management at its core; however, consider the following advantages of these features. You can access inventory details like stock levels, product history, and other product specifications while centralizing your most essential warehouse functions. By synchronizing data and providing collaborative inventory, which enables vendors to remotely manage your inventory, you can break down data silos. For those with long-term business relationships, vendor managed inventory (VMI) is a great option. Automatic shortage reports may also be of interest to you in order to respond quickly to any issues that arise. To deal with unfortunate inventory errors, don't wait until your phone starts ringing off the hook. Alerts and reports give you the authority and time to react to these kinds of situations. The majority of vendors offer solutions to assist you in managing your sales orders. Inventory control can also help you establish a Commerce presence. Users can personalize pricing, send quotes, track orders, and manage returns with these tools. Some advanced systems automatically adjust to maintain profitability, mark items for shipment, sync orders with inventory levels, and support multichannel sales. The management of orders is an important part of getting and keeping customer satisfaction

Fig.5 Output Of The Project

5.Conclusion

In order to improve supply chain management, the focus of this study is on improving inventory management. One of the most crucial aspects of inventory management is inventory reduction. However, low inventory levels aren't always the best option in practice. It is necessary for manufacturers to keep their inventory at the appropriate level. It is abundantly clear that optimizing supply chain efficiencies is the ultimate goal of decreasing inventory levels in order to cut costs and boost profits. The primary goal of inventory management is to reduce inventory. Strategic inventories must be kept if suppliers do not guarantee the availability of a requested quantity of raw materials (such as a scarce natural

The Ciência & Engenharia - Science & Engineering Journal
ISSN: 0103-944X
Volume 10 Issue 1, 2022
pp: 154 - 159

resource) or if the price changes frequently (usually when it goes up). Even well-known manufacturers still have high inventory levels today.

References

1. S.M. Huynh, D. Parry, A. Fong, J. Tang, Home localization system for misplaced objects, in: Proc. IEEE International Conference on Consumer Electronics, 2014, pp. 462–463.
2. Son Minh Huynh, David Parry, A.C.M. Fong, Novel RFID and ontology based home localization system for misplaced objects, IEEE Trans. Consum. Electron. 60 (3) (2014).
3. Y.X. Lu, T.B. Chen, Y. Meng, Evolution guideline system and intelligent evaluation process on the Internet of things, Am. J. Eng. Technol. Res. 11 (9) (2011) 537–541.
4. A. Ramaa, K.N. Subramanya, T.M. Rangaswamy, Impact of warehouse inventory management system in a supply chain, Int. J. Comput. Appl. 54 (6) (2012) (0975-8887).
5. M. Bruccoleri, S. Cannella, G. La Porta, Inventory record inaccuracy in supply chains: the role of workers' behavior, Int. J. Phys. Distribution Logistics Manage. 44 (10) (2014) pp.
6. N. Wartha, V. Londhe, Context-aware approach for enhancing security and privacy of RFID, Int. J. Eng. Comput. Sci. 4 (2015), pp. 10,078-88.
7. Samer S. Saab, Zahi S. Nakad, A standalone RFID indoor positioning system using passive tags, IEEE Trans. Ind. Electron. 58 (5) (2011).
8. J. Gubbi, R. Buyya, S. Marusic, M. Palaniswami, Internet of things (IoT): a vision architectural elements and future directions, Future Gener. Comput. Syst. 29 (7) (Sep. 2013) 1645–1660.
9. K. Stravoskoufos et al, IoT-A and FIWARE: bridging the barriers between the cloud and IoT systems design and implementation, in: Proc. 6th Int'l Conf. Cloud Computing and Services Science (CLOSER 2016), 2016, pp. 146–153.
10. D. Bandyopadhyay, J. Sen, Internet of things: applications and challenges in technology and standardization, Wireless Pers. Commun. 58 (1) (2011) 49–69.