Inventory Management System

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ABSTRACT

Inventory management is a challenging problem area in suppy chain management. Companies need to have inventories in warehouse in order to fulfill customer demands. The problem with manual system is it slows the business. This ventures deposes of human issue's, executive work and manual postponement. Mismanaged inventory means disappointed customers, slower sales and too much cash tied up in warehouse. This project eliminates human faults, manual delay, paper work and many other such aspects. Inventory management system will have the ability to track sales and available inventories , tells a storeowner/ business owner when to reorder and how to much to purchase.

Keywords: Inventory management system, human faults, warehouse

INTRODUCTION:

The inventory management systems is a software and technologies for managing and controlling inventories at a warehouse. Inventory management uses various types of information and data to keep track of goods as they move through the process, including lot numbers, serial numbers, cost of goods, quantity of goods and the dates when they move through the process .

Inventory problems of too great or too small quantities on hand can cause business failures. If an organization experience stock-out of a critical inventory item, production halts. Inventory management indicates the broad framework of managing inventory. The inventory management software is more useful in determining the optimum level of inventory and finding answers to problem of safety stock and lead time. Inventory management has become highly developed to meet the rising challenges of most corporate entities and this is in response to the fact that inventory is an asset of distinct failure.

The implementation of an inventory control solution can help to simplify work processes within an organization, leading to improved efficiency and productivity. Without an inventory management system, staff may not be operating efficiently. The way information passes from one employee to another wastes valuable time, and leaves room for mistakes to occur in stocking. Employees may forget to record a batch number, order or issue the wrong goods to a customer, or move items around the warehouse store, making it difficult for other employees to find the goods they need. By incorporating an inventory control solution, a standard set of practices are created to handle every inventory transaction.

The most important benefit of an inventory management system is to save time and money. Again, without an inventory management system, countless man-hours are wasted manually recording what items are used for each transaction, delivering these forms to the office, and then manually entering the data into the accounting system. Implementation of a system that updates in real-time, process all transactions at the store or warehouse will virtually eliminate the need to manually enter data. As soon as the warehouse/store employee posts the transaction, it is automatically updated into the accounting system. This saves time both in the warehouse/store and in the office.

LITERATURE REVIEW

An inventory of Organization is place, commonly referred as warehouse, where resources of the company are stored. Inventory management refers to the process of keeping track record of ordered, stored, using, and selling an organization's inventory. This may include the management of raw materials, components, and finished products, as well as warehousing and processing of such items.

There are different types of inventory management, each with its pros and cons, depending on a company's needs.

• History of inventory management:

1) Before the industrial revolution : Inventory managment was primitive and relied on manual counting. 2)Middle ages:In the middle time merchants faced challenges in tracking inventory accurately. Regular physical counts were necessary to prevent losses.

3)Industrial revolution: It is the transformative period for inventory management Improved processes and systems emerged.

4) In the Late 1960s Universal Product Code is created, which enhnces the inventory management systems.

After that computer system plays a crucial role in unventory management systems. in overall the inventory management system evolved over the time from manual counting to the digital systems.

• Technical challenges of inventory management
• Consistency:

One of the biggest technical challenges of inventory management is keeping data consistent in real time, or as close to it as possible. Particularly with larger operations, this is vital to avoid "overselling" scenarios that can cost the company money or damage its reputation.

For example, if an item goes out of stock during a Black Friday sale and the company's inventory system doesn't reflect that immediately, it may be possible for dozens, hundreds, or thousands of customers to buy items that don't exist.

Ensuring that doesn't happen typically requires having a single source-of-truth database for inventory that can then sync with all of the various application services that require inventory data. Building and maintaining a system that is capable of selling inventory to zero but not past zero isn't easy, especially when it has to remain highly performant even under heavy loads. For example, DoorDash references this challenge in a recent engineering blog about using changefeeds to process real-time inventory changes.

• Scalability:

Retail trends aren't always predictable. But even when they are, maintaining performant infrastructure without overspending means being able to scale quickly up and down so that – for example – your system has the capacity to handle the Black Friday burst, but you're not paying for "Black Friday" capacity on a random Tuesday in January.

• Latency:

To reduce latency and improve the customer experience, it makes sense to locate data relevant to the customer on a database that's close to their geographical location. However, geographically partitioning your database can make it much harder to maintain consistency, depending on the tools you're using (more on this later), since you now also have to maintain consistency between the various regional database partitions.

• Product complexity:

Although we've mostly used retail sales as an example up to this point, inventory management isn't as simple as tracking whether an item has been sold or not. Items may move from warehouse to warehouse. Items may be lost or damaged. Some items may expire. There's also the nebulous "item in cart" period where a particular piece of inventory isn't quite sold, but also isn't necessarily available. To maintain an accurate inventory, everything has to be tracked.

• Ease of use

Solving all of the above problems is certainly possible, but many of the solutions are technically complex, requiring massive investments in engineering time, training, etc. That can create an entirely new set of problems, including delays and higher-than-expected costs.

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• Technical requirements for a modern inventory management system

• High availability: Having the system go offline at the wrong time, even if it's only for a few minutes, can cost a company millions. Inventory management systems must be highly available, and resilient enough that data can never be lost.

• Global consistency: An inventory management system must be able to track the truth about product stock and deliver that truth to any application services that require it in real-time, either directly or via solutions such as change feeds.

• Flexible scaling: All parts of any sort of retail back end, including inventory management, must be able to scale up and down easily to handle heavy loads during peak sales periods while minimizing costs by reducing infrastructure spend during the lulls.

• Need of inventory management:

1)Continuous production: Production without halt will be possible by holding enough inventories. Otherwise, firm has to incur heavy costs for keeping the machine idle.

2)Continuous supply market: Proper inventory management will ensure finished goods without interruption and customer satisfaction could be possible.
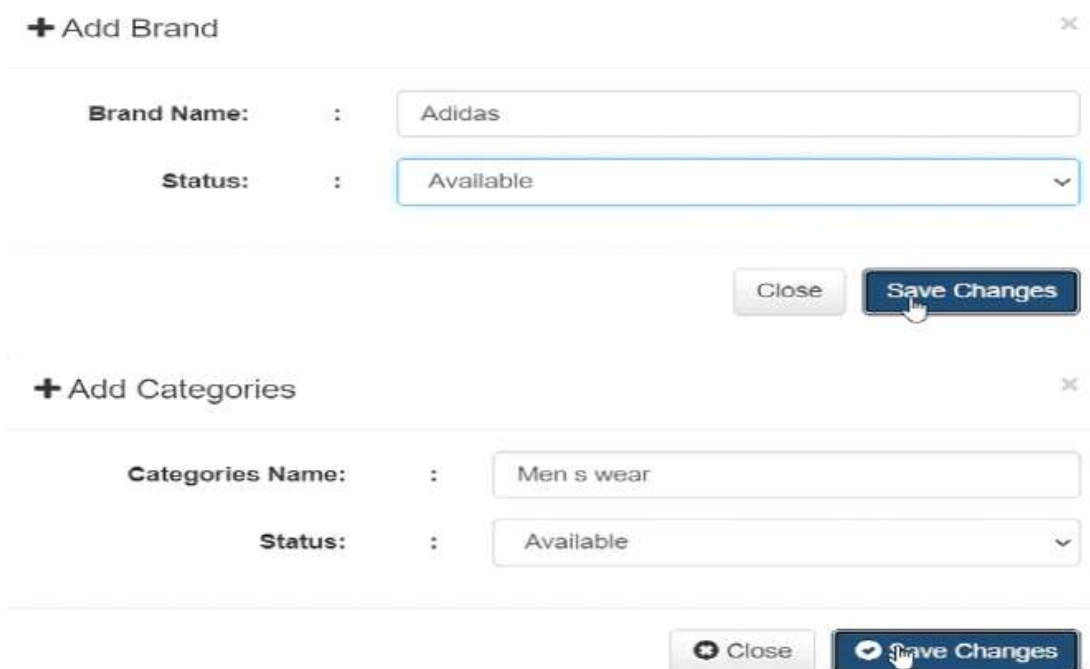
3) No stock - out problem: Shortage of inventories often cause stock - out problem, thereby consumers shift to competitors.

• Non-Functional Requirements

1. Performance - The system should respond to user actions within a reasonable time frame.
2. Security- The system should implement appropriate security measures to protect sensitive data.
3. Usability- The system should have a user-friendly interface that is easy to navigate and understand.
4. Reliability- The system should be reliable and available for use at all times.

RESULT

• Testing:

CONCLUSION

The development of the inventory management system website has been successfully completed. Through the hard work of three months, meticulous planning, robust design, efficient development, and rigorous testing, we have created a user-friendly and functional platform that meets the objective of our project. The website provides comprehensive features for managing inventory, including adding brands, categories, products, processing orders, generating reports, and managing system settings. It has been optimized for performance, security, and usability to ensure a seamless user experience. We are confident that this website will streamline inventory management processes, improve productivity, and contribute to the success of our clients' businesses. Moving forward, we will continue to monitor and maintain the website, making necessary updates and improvements to ensure its continued effectiveness and relevance in meeting the evolving needs of our users. We extend our gratitude to all team members, stakeholders, and clients for their contributions and support throughout the development process.

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REFERENCES

[1]. https://www.citycleanandsimple.com/2018/07/16/history-of-inventory-management technology/
[2]. Pressman, Roger's" Software Engineering a Practitioner' Approach"
[3]. https://en.wikipedia.org/wiki/Inventory_management_software
[4]. https://www.ibm.com/topics/inventory-management

[5].   https://www.hostitsmart.com/manage/knowledgebase/205/How-does-a-website-work.html

[6].   •

[7].   https://www.wheelhouse.com/resources/the-history-of-inventory-management-everything-to know-a11459

[8].   Javapoint.com

[9].   A Philosophy of software Design, Author John Ousterhout