

# Inventory and Delivery Management System for Warehouse

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**Abstract:** Managing product inventories efficiently and delivery tracking is one of the major challenges for businesses that come under the logistics industry. The traditional way of managing inventory which includes manual methods to track sales, available inventory, and daily updating data on excel spreadsheets is time-consuming and error-prone. Mismanaged inventory means disappointed customers, too much cash tied up in warehouses, and slower sales. This paper describes the system which eliminates the paperwork, human faults, manual delay and speed up processes of inventory management. The inventory management system is a web application aiming to manage stock supplies efficiently to provide reports to management to make decisions.

## I. INTRODUCTION

The small and medium enterprise (SME) sector has emerged as a very important sector of the Indian economy. The number of SMEs in India is estimated to be 42.50 million, registered & unregistered together and the number keeps on increasing day by day. SMEs are the key suppliers and service providers to the large corporation. These businesses include selling a wide range of goods and services from wholesalers or suppliers to the end-user. Compared to larger organizations with more physical space, in smaller companies, the goods may go directly to the stock area instead of a receiving location. The goods are then moved to production facilities where they are made into finished goods. The finished goods may be returned to stock areas where they are held before shipment, or they may be shipped directly to customers. Thus, the nature of these businesses requires good management of inventory for having continuous business activities and to meet the demand of the customers.

Material Management is an activity that includes arranging, securing, putting away, and giving the suitable material of the right amount at the correct place in the given time. Inventory management uses a variety of data to keep the track of goods as they move in and out of inventory and also includes lot numbers, serial numbers, cost of goods, the quantity of goods, and the dates when they move through the process.

Stock Management is the procedure by which an association is provided with the products and enterprises that it needs to accomplish its goals of purchasing, accumulating stocks, and developing materials. Being able to quantify stock in an opportune and exact way is for the continuously running of business activities since the stock is regularly one of the biggest resources of an organization as almost 60% of cash is allocated for the stock.

The traditional way of keeping sales and inventory details is in spreadsheets which is not an effective way anymore when the size of the organization gets bigger. This is because more items will be available in a larger quantity, thus tracking the goods would be complicated and time-consuming for the inventory team. Mismanaged inventory means disappointed customers, too much cash tied up in warehouses, and slower sales. So effective measures must be taken to avoid these errors. Thus, It is important to develop an inventory management system which is suitable to use in all kind of small and medium enterprise.

Inventory and delivery management system (DLVery) is built to handle logistics management by assisting in handling product inventory, delivery tracking, and other product customization. This software is helpful for businesses that are part of the logistics industry. This system will be used by the inventory team to store the details of incoming and outgoing goods, availability of a product, system will provide product reports based on the different categories of products available in the warehouse. A delivery list will be provided to delivery agents for the respective day. The agent will be able to upload the status of the respective products. This project eliminates the paperwork, human faults, manual delay, speed up the process, reduces the cost of the organization, and also increases their profit.

One of the most important benefits of an inventory management system is to save time and money. Without an inventory management system, countless man-hours are wasted manually recording which items are used for each transaction, and then manually entering the data into the system.

Inventory and Delivery Management System is built using JSP and Servlet. JSP is Java Server Pages which are used to create dynamic, platform independent function for web-based applications. It is a server-side technology. A servlet works within the server and it is a small Java program. Clients request to servlets and the servlets receive the request and give appropriate response, usually across HTTP.

## II. PROBLEM STATEMENT

To implement the web application that is used to manage the delivery of products to the customers. The application can be accessed by the inventory team and delivery team by respective logins. The delivery package is tracked by inventory internal team, team who are in the warehouse and delivery agent who is on the ground to deliver the consignment to the end customers.

## III. LITERATURE SURVEY

1. Web app store for inventory management and stock report in android app using centralized database.( Prof. Vishal Shinde, Ashutosh Singh, Kajal Wayal, Vishakha Vadhavinde)

This paper proposes a system for inventory tracking and stock report by establishing a shared inventory system for the various departments of the enterprise. Here the system developed will help in tracking the inventory, receiving items in the warehouse, picking and packing of items in the warehouse and keep track of product sales.

2. Research paper on inventory management system.( Punam Khobragade, Roshni Selokar, Rina Maraskolhe, Prof. Manjusha Talmale)

In this paper, a system is proposed which is helpful for the businesses operate hardware stores, where storeowner keeps the records of sales and purchase. The system is a desktop application in which the network to the immediate distribution center with the goal that information ought to be refreshed in store for the confirmation.

3. A Workflow-driven Web Inventory Management System for Reprocessing Businesses(Huanmei Wu, Jian Zhang, Sunanda Mukherjee, Miaolei Deng)

This paper describes the design and implementation of a workflow driven web application to manage the inventory and business operations for the recycling and reprocessing businesses. On the backend, the relational database is built with flexibilities and extensibilities for future organization expansion. The user management is customized to the company needs with tiered role-based data access control.

4. The Application of Web-based Inventory Management System for Small and Medium Enterprise (SME/SMI): A Case Study for hardware and furniture industry in Malaysia(Ang Jun Chin, Chee Li Fang, Hairudin Bin Abd Majid)

In this paper, a model is proposed provided for user to choose which users are able to obtain the inventory information and help users in making decisions based on the result. This paper has been written to give a methodology of applying Periodic Review System to analysis the optimal quantity of stock should be order.

5. Algorithm for the procurement and inventory management in the distribution supply chain.( Valery F. Lukinykh, Yulia V. Lukinykh)

This paper is devoted to practical testing of the developed method of harmonized volumes of purchased products in the retail networks.

6. Research on Warehouse Management System Based on Association Rules.( Zhimin Che, Lizhen Liu, Wei Song, Chao Du)

In this paper, the authors apply the Apriori algorithm to the warehouse management system. And we use the Apriori algorithm of data mining to analyze the records of the amount of goods in the warehouse, and the association rules between the goods are obtained.

7. The design of web-based warehouse management system.(Zizhuo Yang, Jun Wang, Qianmin Su, Bocheng Zhong)

The system proposed in this paper can solve the problem such as low efficiency, information inaccuracy and high operating costs caused in the current enterprise's inventory management.

#### IV. PROPOSED SYSTEM

We have created a web application using the following technology stack: Java SDK 1.8, JSP Servlet, HTML, Boot Strap. Apache Tomcat, MySQL for Inventory Management and Delivery Tracking.

In our web application there are two different modules- inventory module for the inventory handling team and delivery module for the delivery team. The consignments are handled by the inventory team in the warehouse and handed over to the delivery team for the delivery of the consignments.

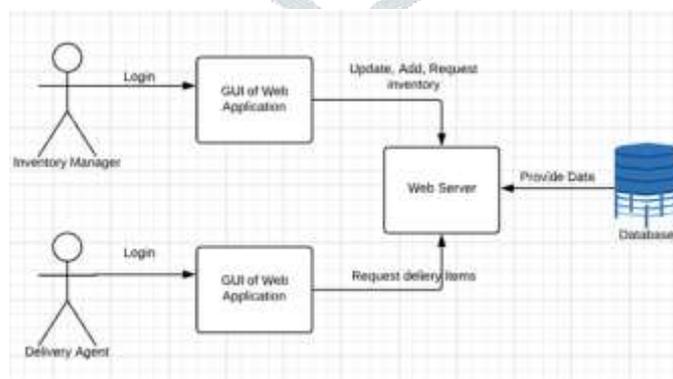


Fig. 2 System Architecture

##### A. Login System

This is a basic login system where we have created two different logins for inventory team and the delivery team. After login in the data of the two different types of users (either Inventory Manager or Delivery Agent) the data is saved in the respective database.

### B. Inventory Module

The inventory manager will access the inventory module. The inventory manager will be able to :

1. Login to the inventory module.
2. Update the inventory for available consignments and also update it after the consignment is taken out of the inventory.
3. Add new consignments to the inventory.
4. The inventory can upload the inventory file.
5. Track the delivery agent

### C. Delivery Module

The delivery agent will access the delivery module by logging in to the system. The application used by the delivery agent will work on multiple devices.

1. There is a tab for the delivery agent to see every day's delivery list and also the pending deliveries.
2. There is a feature for the delivery agent to capture the name and the signature of the customer after successful delivery of the consignment.
3. The delivery agent can upload the status of the delivery of consignment as successful or unsuccessful. Unsuccessful in the case of a door-lock situation and also if the consignment is damaged.

These are the two main modules of our system.

## V. RESULTS AND CONCLUSION

This concludes that the project undertaken is to provide the web application which will facilitate in the handling of product inventory, delivery tracking and other product customization. It will help the warehouse team as well as the delivery agents to successfully manage the consignments till they are delivered to the end customer. The application will help the inventory team to store important information regarding the incoming and outgoing consignments and reports based on the availability of goods according to the category of the products. The delivery agent will be able to manage new deliveries as well as pending deliveries based on priority.

## VI. ACKNOWLEDGMENT

We would like to express our sincere gratitude towards our college Dr. D.Y. Patil Institute of Engineering, Management and Research, Akurdi for providing us the opportunity to undertake and complete this interesting project.

We are very thankful to our respected Head of Department, Mrs. P. P. Shevatekar Madam, Computer department for motivating us to embark on this project.

We are very grateful to our respectful faculty, Mr. Nareshkumar Mustary Sir, Professor, Dr. D.Y. Patil Institute of Engineering, Management and Research, Akurdi, who has an excellent guide throughout this project. Without his guidance we would not have completed this project.

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