INVENTORY MANAGEMENT SYSTEM FOR RETAILERS

Ms. Akalya Devi C[1], Abishek L R[2], Kaaviya A[3], Prediksha R L[4], Yaswanth M[5]
[1]Associate Professor, Department of Information Technology, PSG College of Technology
[2,3,4,5]Final Year B.Tech Information Technology, PSG College of Technology

INTRODUCTION:

Inventory management is a challenging problem in supply chain management. A tool or system to aid the inventory management would be a beneficial tool in this area. The term inventory refers to a company's stockpile of material and the components that make up the output. Inventory management refers to managing the quantity, quality, location and transportation of various products utilised in manufacturing by various industrial organisations or in sales by various retailers.

Accurately maintaining the quantity (in numbers) of the finished goods in the inventory makes it possible to quickly asses the quantity of products needed for the upcoming sales. It also improves the communication between the entities of the supply chain like retailers, manufacturers, customers, etc.

LITERATURE SURVEY:

1. Design of a Computerized Inventory Management System for Supermarkets

Aim:

The aim of this paper is to design a Computerized Inventory Management System to ascertain stock level of a supermarket, when to order for more goods, keep status and updates of transactions, thereby helping managerial decisions, progress level and stock taking.

Scope:

This work covers stock control, management and tends to correct anomalies in business. It analyzes Opening of New Stocks, stock updates and ability to view existing ones. It provides a quick way of operation by capturing the manual process and automating them.

Implementation:

This system handles the New stock, Stock order, Stock update, Product or Item Search to check availability and Stock Report are electronically handled.

- A login page is created to ensure security.
- If it is successful, it will display the splash screen after which it will automatically display the main menu form.
- The user has the option of choosing from the onscreen menu options- New Stock, Update Stock, Search and View options.
- The user form will capture records regarding stock details. Which are stored in the database, retrieved and viewed later.

2. The inventory management system for automobile spare parts in a central warehouse

Aim:

This paper aims to develop an enhanced fuzzy neural network (EFNN) based decision support system for managing automobile spares inventory in a central warehouse.

Scope:

To get better accuracy than in Artificial Neural Network. This project integrates the knowledge of domain experts into enhanced fuzzy neural networks (EFNN), which generates connection weights based on the fuzzy analytic hierarchy process (AHP) method without painstakingly and time-consuming turning them.

Implementation:

The Proposed system is of three components.

1. Hierarchical structure development of the fuzzy AHP

   The domain experts are interviewed about the part factors, demand factors, time factors, sales factors and associated factors that affect the supply of the spare parts.

2. Weights determination

   Another questionnaire on the basis of the proposed structure is formulated. The questionnaire surveys are used to compare pairs of elements of each level with respect to each element in the next higher level. A 7-point scale is used.

3. Decision making based on EFNN.

   EFNN - a 5 layered hybrid neural network with the feature to self-organize its activation function is implemented to get better accuracy.

3. Automated Inventory Management Systems and its impact on Supply Chain Risk Management in Manufacturing firms of Pakistan

Aim:

The aim of this research is to investigate the contribution of automated inventory management systems in increasing the efficiency of inventory management.

Scope:

The scope of this study is to utilize four automated inventory management systems which includes Radio frequency Identification (RFID), Enterprise Resource Planning (ERP), Electronic Data Interchange (EDI) and Material Requirements Planning (MRP) and analyses their role as a supply chain risk mitigation strategy through implication of risk management process.

Implementation:

The previous studies about Automated Inventory Management Systems are studied and their models are reviewed. The study involves quantitative research and developed a conceptual framework to increase the understanding of interrelationships between automated inventory

management systems (AIMS), Employee training and development (ETD) and supply chain risk management (SCRM).

4. **Design of smart inventory management system for construction sector based on IoT and cloud computing.**

Aim:

A novel approach to create a model and show how this can help construction sector in managing inventory of essential form work shuttering products.

Scope:

This research reveals that there could be an opportunity to approach barcode-based designs by amalgamating such with Cloud Computing, Arduino-based wireless station nodes, IoT and a secure form channel to access data through a dedicated web portal.

Implementation:

The proposed model is a novel Aluminum Shuttering Inventory Management System (ASIMS) consist of barcodes, Arduino-based IoT devices, wireless sensor networks and Cloud Computing to track aluminum formwork shuttering components under actual field conditions.

- Upon receipt of aluminum formwork shuttering components from vendor at site, a Goods Receipt Note (GRN) entry is passed in the system.
- Physical verification of the received items and GRN process have needed to be completed.
- The barcode labels for the items are generated and printed. The printed barcode labels are then affixed on the formwork shuttering components.
- Using our proposed application, the component is labeled and then mapped with corresponding geolocational coordinates to enable tracking.
- Movement of materials within site and for intra-site stock transfers have to be tracked and recorded using our proposed model for scanning barcodes affixed to items.
- Aluminum formwork shuttering components are often cut and resized according to localized requirements. During such process of resizing, the created new items have to be checked, verified physically and logged using our proposed software. Again, new barcode labels have been generated for the new components derived from the parent item.

Conclusion:

An inventory management system is an essential replacement for a manual pen and paper system. Its intended purpose is to control the movement and storage of the products with the added benefit of enhanced security and quicker handling. The Inventory management system software is a necessary tool to keep track of the stocks of a particular retailer. It is also capable of providing valuable information to sales data and analytics. Ultimately, it is the lifeline of a company as it drives profitability by generating sales. The way a company maintains its inventory can have a significant impact on its overall success.

REFERENCE:

1. Abisoye, O. A., Boboye, F., & Abisoye, B. O. (2013). Design of a computerized inventory management system for supermarkets.

2. Li, S. G., & Kuo, X. (2008). The inventory management system for automobile spare parts in a central warehouse. Expert Systems with Applications, 34(2), 1144-1153.

3. Saleem, A. (2020). Automated inventory management systems and its impact on supply chain risk management in manufacturing firms of Pakistan. Int J Supply Chain Manag, 9, 220-231.

4. Bose, R., Mondal, H., Sarkar, I., & Roy, S. (2022). Design of smart inventory management system for construction sector based on IoT and cloud computing. e-Prime-Advances in Electrical Engineering, Electronics and Energy, 2, 100051.