

INVENTORY MANAGEMENT SYSTEM THROUGH AUTOMATION ON THE BARRLA SYSTEM

Submitted in partial fulfillment of the requirements for the award of
MASTER OF BUSINESS ADMINISTRATION

by

HEMALATHA.G. R

REGISTER NO:42410160



**DEPARTMENT OF BUSINESS ADMINISTRATION
SCHOOL OF MANAGEMENT STUDIES**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

**Accredited with Grade "A++" by NAAC | 12B Status by UGC |
CATEGORY – 1 UNIVERSITY BY UGC | Approved by AICTE
JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI-600119**



SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
CATEGORY - 1 UNIVERSITY BY UGC**

SCHOOL OF MANAGEMENT STUDIES

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **HEMALATHA.G.R (42410160)** who carried out the Project entitled “**INVENTORY MANAGEMENT SYSTEM THROUGH AUTOMATION ON THE BARRLA SYSTEM**” under my supervision from September 2023 to October 2023.

Internal Guide

External Guide

**Dr. BHUVANESWARI .G, MBA., Ph.D
Dean – School of Management Studies**

Submitted for Viva voce Examination held on _____

Internal Examiner

External Examiner

DECLARATION

I **HEMALATHA.G.R (42410160)** here by declare that the Project Report entitled "**INVENTORY MANAGEMENT SYSTEM THROUGH AUTOMATION ON THE BARRLA SYSTEM**" done by me under the guidance of **Dr.M. DEEPA** is submitted in partial fulfillment of the requirements for the award of Master of Business Administration degree.

DATE:

PLACE:



HEMALATHA.G.R

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to the Board of Management of **SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr.Bharathi B, Director**, Centre for Distance and Online Education, **Dr.Bhuvaneswari G., Dean, School of Management Studies**, and **Dr.Palani, Head of the Department, Dept. of Management Studies** for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to my Coordinator **Dr.T.R.Kalailakshmi** for her undue support throughout my program. I express my gratitude to my Project Guide **Dr.M. DEEPA** for his/her valuable guidance, suggestions and constant encouragement paved way for the successful completion of my project work.

I wish to express my thanks to all Teaching and Non-teaching staff members of the **Department of Management Studies** who were helpful in many ways for the completion of the project.



HEMALATHA.G.R

Date: 19th Oct'2023

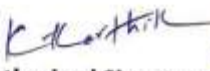
To whom it may concern

This is to certify that **Ms. Hemalatha**, MBA student from Sathyabama Institute of Science and Technology Chennai, has completed a one-month internship program in **IT Department** at our organization. The duration of internship from 20th September'2023 to 19th October'2023.

During the period of her internship program with us, she had been exposed to different processes and was found diligent, hardworking and inquisitive.

We wish her every success in her life and career.

For BARRLA SYSTEMS PVT LTD


Authorised Signatory



Barrla Systems Private Limited

CIN: U30006TN1998PTC041408 | GST: 33AABCT7063L1Z5

info@barrlasystems.com | www.barrlasystems.com

Head Office: No. 2, 3rd Floor, P.S. Sivaswamy Salai, Mylapore, Chennai - 600004, Tamil Nadu, India | Ph: 044 - 2498 1112.

Factory: Plot No. 8, Thirukatchiyur, Sengundram Village, Melrosapuram Road, Maraimalai Nagar, Chennai - 603204, Tamil Nadu, India | Ph: 044-4740 5858.

ABSTRACT

This project aims to develop a web-based application named Inventory Management System for managing the inventory system of any organization. The Inventory Management System (IMS) refers to the system and processes to manage the stock in an organization with the involvement of a technology system. This system can be used to store the details of the inventory, stock maintenance, update the inventory based on the purchase details, and sales details, and generate sales and inventory reports daily, weekly or monthly. This project categorizes individual aspects of the sales and inventory management system. In this system, we are solving different problems affecting direct sales management and purchase management. Without proper inventory control, a large retail store may run out of stock on an important item. A good inventory management system will alert the wholesaler when it is time to stock products. An automated management system helps to minimize the errors while recording the stock.

TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
	Abstract	(iii)
	List of abbreviations	(iv)
	List of charts	(v)
	List of tables	(vi)
1	INTRODUCTION	1
	1.1 Introduction	1
	1.2 Theoretical Background	1
	1.3 Application Background	10
	1.4 Company profile	18
	1.5 Problem Identification	29
	1.6 Need for the study	29
	1.7 Objectives for the study	30
	1.8 Scope of the study	30
2	REVIEW OF LITERATURE	31
3	RESEARCH METHODOLOGY	39
	3.1 Sources of data	39

	3.2 Research Design	39
	3.3 Sampling method	39
	3.4 Structure of the Questionnaire	39
	3.5 Sample size	40
	3.6 Period of study	40
	3.7 Area of the study	40
	3.8 Hypothesis	40
	3.9 Analytical Tools	41
4	DATA ANALYSIS AND INTERPRETATION	42
	4.1 Percentage Analysis	42
	4.2 Anova	54
5	FINDINGS, SUGGESTIONS AND CONCLUSION	56
	5.1 Findings of the study	56
	5.2 Suggestions	56
	5.3 Limitations	57
	5.4 Conclusion	57
	References	58

LIST OF ABBREVIATION (IF REQUIRED)

S.NO	ABBREVIATION	EXPANSION
1.	IMS	Inventory Management System
2.	IT	Information Technology
3.	ERP	Enterprise Resource Planning
4.	SAAS	Software As A Service
5.	RFID	Radio Frequency IDentification
6.	JIT	Just-In-Time
7.	MRP	Material Requirements Planning
8.	DRP	Distribution Requirements Planning
9.	APS	Advanced Planning and Scheduling
10.	POS	Point Of Sale
11.	OTP	Online Transaction Processing
12.	KTM	Kiosks Terminals Management
13.	IOT	Internet Of Things
14.	SPSS	Statistical Package for Social Sciences
15.	ANOVA	ANalysis Of VAriance
16.	DBMS	Data Base Management systems

LIST OF CHARTS

CHARTS.NO	PARTICULARS	PAGE.NO
5.1.1	GENDER OF RESPONDENTS	42
5.1.2	AGE OF THE RESPONDENTS	43
5.1.3	METHODS OF THE RESPONDENTS	44
5.1.4	EXPERIENCE OF THE RESPONDENTS	44
5.1.5	PHYSICAL MODE OF THE RESPONDENTS	45
5.1.6	SYSTEM TO SUPPORT INVENTORY MANAGEMENT	46
5.1.7	COMFORT WITH WEB- -BASED APPLICATION	47
5.1.8	TRACK EXPIRY DATES	48
5.1.9	BASED ON HANDLING	49
5.1.10	SEEK THE STOCK OF RESPONDENTS	50
5.1.11	AUTOMATED IMS	51
5.1.12	RATING OF AUTOMATION SYSTEM	52
5.1.13	USE ANY SIMILAR SOFTWARE	53
5.1.14	FAMILIAR WITH AUTOMATION IMS	53

LIST OF TABLES

TABLE.NO	PARTICULARS	PAGE.NO
5.1.1	GENDER OF RESPONDENTS	42
5.1.2	AGE OF THE RESPONDENTS	43
5.1.3	METHODS OF THE RESPONDENTS	43
5.1.4	EXPERIENCE OF THE RESPONDENTS	44
5.1.5	PHYSICAL MODE OF THE RESPONDENTS	45
5.1.6	SYSTEM TO SUPPORT INVENTORY MANAGEMENT	46
5.1.7	COMFORT WITH WEB-BASED APPLICATION	46
5.1.8	TRACK EXPIRY DATES	47
5.1.9	BASED ON HANDLING	48
5.1.10	SEEK THE STOCK OF RESPONDENTS	49
5.1.11	AUTOMATED IMS	50
5.1.12	RATING OF AUTOMATION SYSTEM	51
5.1.13	USE ANY SIMILAR SOFTWARE	52
5.1.14	FAMILIAR WITH AUTOMATION IMS	53

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION:

Systems management is the administration of the information technology (IT) systems in an enterprise network or data center. An effective systems management plan facilitates the delivery of IT as a service and allows an organization's employees to respond quickly to changing business requirements and system activity. In a hybrid IT environment, this involves overseeing the design and day-to-day operations of the data center. The department responsible for architecting and managing the systems is sometimes known as management information systems, information systems, or IT infrastructure and operations.

1.2 THEORETICAL BACKGROUND

INVENTORY MANAGEMENT

Inventory management tracks how much physical inventory you have in your organization. It monitors stock at other locations, such as distributors or subcontractors. When you have clear visibility into your inventory, you know when to order, where to store it, and when you need to stop selling. Inventory management is vital to a company's health because it helps ensure there is rarely too much or too little stock on hand, limiting the risk of stockouts and inaccurate records.

BENEFITS OF INVENTORY MANAGEMENT

A company's inventory is one of its most valuable assets. In retail, manufacturing, food services, and other inventory-intensive sectors, a company's inputs and finished products are the core of its business. A shortage of inventory when and where it's needed can be extremely detrimental.

At the same time, inventory can be thought of as a liability (if not in an accounting sense). A large inventory carries the risk of spoilage, theft, damage, or shifts in demand. Inventory must be insured, and if it is not sold in time it may have to be disposed of at clearance prices or simply destroyed.

For these reasons, inventory management is important for businesses of any size. Knowing when to restock inventory, what amounts to purchase or produce, what price to pay—as well as when to sell and at what price—can easily become complex decisions. Small businesses will often keep track of stock manually and determine the reorder points and quantities using spreadsheet (Excel) formulas. Larger businesses will use specialized enterprise resource planning (ERP) software. The largest corporations use highly customized software as a service (SaaS) applications.

INVENTORY MANAGEMENT SYSTEM

Managing inventory is an important part of business administration. If you have excess inventory, money is being wasted. If you don't have enough, it delays deliveries. Neither one is a good scenario. An inventory management system (or inventory system) is the process by which you track your goods throughout your entire supply chain, from purchasing to production to end sales. It governs how you approach inventory management for your business.

Why do businesses need inventory management software?

Inventory management software is an essential tool for businesses seeking to accelerate their growth, enhance customer service, and boost sales through streamlined inventory operations. Powerful free inventory software provides a comprehensive overview of inventory status, enabling businesses to manage fast-moving items while identifying and liquidating stagnant stock. Gofrugal's free inventory management software helps businesses confidently run their operations while catering to customer demands effectively.

TYPES OF INVENTORY MANAGEMENT SYSTEMS

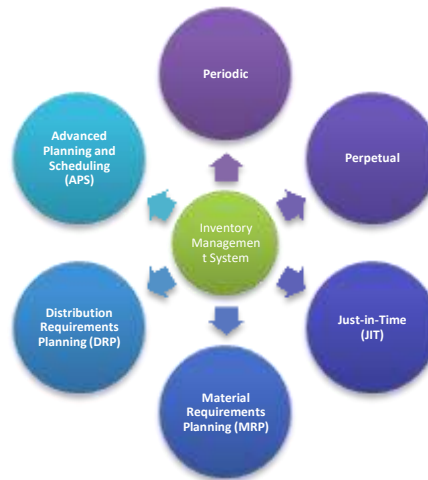


Fig:1.1: Types of IMS

- ***PERIODIC INVENTORY MANAGEMENT SYSTEM:***

This type of system involves manual counting of inventory at specific intervals, such as weekly, monthly, or quarterly. This system is typically used by smaller businesses with a limited number of products.

- ***PERPETUAL INVENTORY MANAGEMENT SYSTEM:***

This type of system uses technology, such as barcode scanning or radio frequency identification (RFID), to track inventory levels in real-time. This system is best suited for larger businesses with a higher volume of products.

- ***JUST-IN-TIME (JIT) INVENTORY MANAGEMENT SYSTEM:***

This system involves ordering and receiving inventory just in time to meet demand. It helps businesses to reduce inventory holding costs and improve cash flow but requires careful coordination and planning.

- *MATERIAL REQUIREMENTS PLANNING (MRP) INVENTORY MANAGEMENT SYSTEM:*

This system uses software to plan and control inventory levels based on the production schedule. It helps businesses ensure they have the necessary materials to meet production needs.

- *DISTRIBUTION REQUIREMENTS PLANNING (DRP) INVENTORY MANAGEMENT SYSTEM:*

This system uses software to manage inventory levels across multiple locations and distribution centers. It helps businesses to optimize inventory levels and reduce costs associated with carrying excess inventory.

- *ADVANCED PLANNING AND SCHEDULING (APS) INVENTORY MANAGEMENT SYSTEM:*

This system uses data analytics and machine learning to optimize inventory levels, production schedules, and distribution. It is typically used by larger businesses with complex supply chains.

CHALLENGES OF INVENTORY MANAGEMENT SYSTEM

Inventory management systems can have a dramatic effect on productivity and efficiency when implemented properly. Most of the challenges associated with inventory management systems arise from failing to follow best practices or relying on outdated methods, such as manual documentation and inconsistent storage layouts and processes. In these cases, a complete inventory management overhaul may be to streamline inventory management and add clarity and consistency to the process company-wide.

AUTOMATED INVENTORY SYSTEM

An automated inventory management system allows retailers and wholesalers to manage their inventory in real-time. The systems simplify workflows and save time. By configuring your retail automation with pre-built conditions, you'll be free to get on with other essential tasks safely in the knowledge that inventory is taken care

of. Retail operating systems like Pearl take things even further. They use powerful automation engines to help you optimize your entire inventory and distribution process. You can automate everything from drop shipping to backorders, partial fulfillment, order invoicing, customer tagging, inventory counts, and more.



Fig:1.2: Types of Automated IMS

1. TRACK MULTIPLE WAREHOUSES:

If you have more than one warehouse, then you need software that can keep track of them all in one place. This way, you can see at a glance which warehouse has the products you need and can make informed decisions about where to source them from.

2. SCAN BARCODES:

If you want to speed up the inventory management process, then barcode scanners are a must. This means you can scan the items as they come into the warehouse, and the ERP system will automatically update the stock levels.

3. SET REORDER POINTS:

As we mentioned before, setting reorder points is a great way to avoid stockouts. Look for software that allows you to set notifications for each item, so you can restock before you run out.

4. SEAMLESSLY INTEGRATE WITH OTHER APPS:

Most likely, you're already using certain apps to run your business.

These may include:

- Accounting tools
- E-commerce platforms
- Automation in manufacturing software

It's important to choose inventory management software that can integrate with these. Look for automation software that helps you manage all business operations. Implementing process automation helps you integrate your favorite tools to centralize your entire business into one platform.

5. FORECAST YOUR INVENTORY:

Some inventory management software can integrate with demand forecasting tools. This is useful if you want to know how much of each product you need to order based on past sales data.

6. REPORT AND ANALYZE:

Reporting is often overlooked, but data analytics is essential for effective inventory management. Look for a platform that offers proper reporting tools, so you can get invaluable insights regarding your:

- Sales
- Cost
- Inventory
- Production operations

7. ALLOW ACCESS FOR MULTIPLE USERS:

Depending on the size of your business, you may need software that supports multiple users. Even if this is something you currently don't need, it may become an important feature as your business grows. So, it's better to choose a platform that has this option available.

8. SYNCHRONIZE ACROSS MULTIPLE SALES CHANNELS:

A point of sale (POS) system allows you to track inventory at physical locations and connect with data from online sales. If you have a multichannel sales strategy, then you need POS systems that can keep track of them all. This way, you can avoid selling the same product twice and avoid stockouts. As you can see, this list can get pretty long, but it's important to have a clear idea of your requirements before you start looking for the right platform. Once you know what features you need, you can narrow down your options and find the perfect solution for your business.

THE WEB APPLICATION DEVELOPMENT PROCESS



Fig:1.3: Process of Web Application Development

Step 1 – Find a Genuine App Idea

First, you start with an idea for a web app that solves a problem. The best apps come from seeking solutions to problems you are people you know face on a regular basis. Your idea doesn't need to be path breaking or unprecedented. It can be an improvement over something that already exists. What's important is that it must be a significant improvement. You could come up with a way to perform a task better, faster, easier or cheaper than anyone currently does.

Step 2 – Market Research

Once you have an idea, it's time to understand your audience. You need to think about the potential market for your idea. Who are the people who could use your web app. Both the business perspective and technical direction of your web app depend on the people you intend to serve.

Step 3 – Define Functionality – What Does Your Web App Do

This is the step where you differentiate between aspiration and action. You need to isolate one core functionality that your app does best and which is the reason people should use your app. The job of setting aside multiple attractive feature additions and focusing on one core feature must be accomplished at this stage. Restrain the urge to make your app an all-in-one solution. With that focus feature in mind, think about the basic capabilities your app will need. For instance, you need user profiles, passwords, contacts, checkout, payments, content management system, and more.

Step 4 – Sketch Your Web App Design

A simple sketch is your first step to web application design. All you need right now is a pencil and a paper. That's it. Draw up a basic outline of your app, page by page. At this stage, it doesn't have to be intricately detailed. As long as it gives you a basic idea of the flow, you're good. Just be sure to demarcate where the buttons, text and images go. This is also the stage to map out your workflow. Basically, get your sketches in order. What comes after what. For instance, from the sign-up screen, you go to a page where users enter their essential information and create a user profile. From there, you could move on to a products page or services page

depending on the type of app. Once you have the basic layout and workflow ready, you can move on to wireframing and prototyping.

Step 5 – Wireframes and Prototypes

This is where we get on our computers and start knocking out the first working models of our web app. A wireframe is much like a sketch but on a computer and a little more structured. It tells you exactly how your app pages will look. The next step would be creating a web app prototype. When you add some interactivity to your wireframes so that they appear just the way they would on the real app, but with limited functionality, that's called a prototype.

Step 6 – Time to Start Validating

Technically, you could start validating as soon as the idea strikes you. You could ask your friends and colleagues about the potential of your idea. However, now that you have a prototype, you can actually begin the first stages of alpha and beta testing to see how users would use your app. Round up a group of potential users – usually your colleagues and other people you can contact personally. Get them to try out the web app prototype and begin gathering feedback. This feedback will help you immensely improve your app and make it more usable. This way, when you get ready to begin the all-important development phase, you have a strong foundation to build on.

Step 7 – Choose Your Technology

So far, we have been dealing with the soft skills of web app development. Once you enter the development phase though, there are larger technical decisions to be made. This is where the fun begins. You will need to choose the right framework, libraries and platforms to build your web app on. What you choose will depend on factors like the functionality of your app as well as your personal preference. Since there are a number of good web application development tools to choose from, pick a combination of what works and what you're comfortable working with.

Client-Side Programming Language

- HTML
- CSS

Step 8 – Host Your Application on the Web

You will need to choose a server to host your web-based application. Buy a domain and set up an SSL certificate. Then, choose a cloud provider like Amazon (AWS) or MS Azure. You could also choose the Google Cloud Platform.

Step 9 – Deploy Your App

Once you have the code and the host, you are ready to go live. Just deploy your app on to your hosting solution and your app is ready for your users. You have just created a web app so good job!

1.3 APPLICATION BACKGROUND:

Structured Query Language (SQL)

The Structured Query Language (SQL) is the set of instructions used to interact with a relational database. In fact, SQL is the only language that most databases actually understand. Whenever you interact with such a database, the software translates your commands into SQL statements that the database knows how to interpret.

SQL has three major components:

- Data Manipulation Language (DML)
- Data Definition Language (DDL)
- Data Control Language (DCL)

Data Base Management System (DBMS)

A database management system (DBMS) is system software for creating and managing databases. A DBMS makes it possible for end users to create, protect, read, update, and delete data in a database. The most prevalent type of data management platform, the DBMS essentially serves as an interface between

databases and users or application programs, ensuring that data is consistently organized and remains easily accessible.

JavaScript (JS)

JavaScript is a scripting or programming language that allows you to implement complex features on web pages every time a web page does more than just sit there and display static information for you to look at displaying timely content updates, interactive maps, animated 2D/3D graphics, scrolling video jukeboxes, etc. you can bet that JavaScript is probably involved. It is the third layer of the layer cake of standard web technologies, two of which (HTML and CSS) we have covered in much more detail in other parts of the Learning Area.

Hyper Text Markup Language (HTML)

HTML is an acronym that stands for **Hyper Text Markup Language** which is used for creating web pages and web applications. Let's see what is meant by Hypertext Markup Language, and Web page.

Hyper Text: HyperText simply means "Text within Text." A text that has a link within it, is a hypertext. Whenever you click on a link that brings you to a new webpage, you have clicked on a hypertext. HyperText is a way to link two or more web pages (HTML documents) with each other.

Markup language: A markup language is a computer language that is used to apply layout and formatting conventions to a text document. Markup language makes text more interactive and dynamic. It can turn text into images, tables, links, etc.

Web Page: A web page is a document that is commonly written in HTML and translated by a web browser. A web page can be identified by entering a URL. A Web page can be of the static or dynamic type.

Cascading Style Sheets (CSS)

CSS stands for Cascading Style Sheets. It is a style sheet language that is used to describe the look and formatting of a document written in markup language. It provides an additional feature to HTML. It is generally used with HTML to change the style of web pages and user interfaces. It can also be used with any kind of XML document including plain XML, SVG, and XUL. CSS is used along with HTML and JavaScript in most websites to create user interfaces for web applications and user interfaces for many mobile applications.

PYTHON

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built-in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy-to-learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms and can be freely distributed.

Structured Query Language (SQL)

Structured Query Language (SQL) is a programming language for storing and processing information in a relational database. A relational database stores information in tabular form, with rows and columns representing different data attributes and the various relationships between the data values. You can use SQL statements to store, update, remove, search, and retrieve information from the database. You can also use SQL to maintain and optimize database performance.

PROJECT SCREENSHOT:

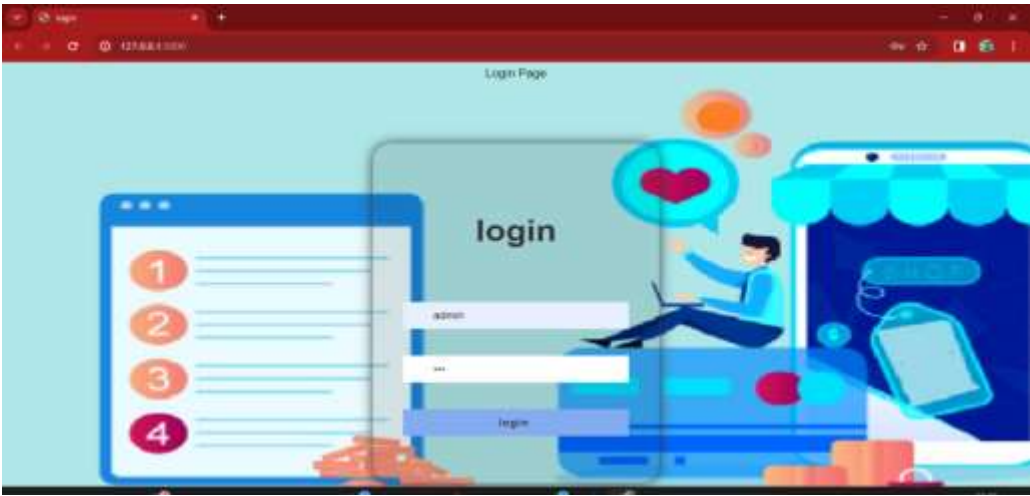


Figure 1.1: Admin or Login Page

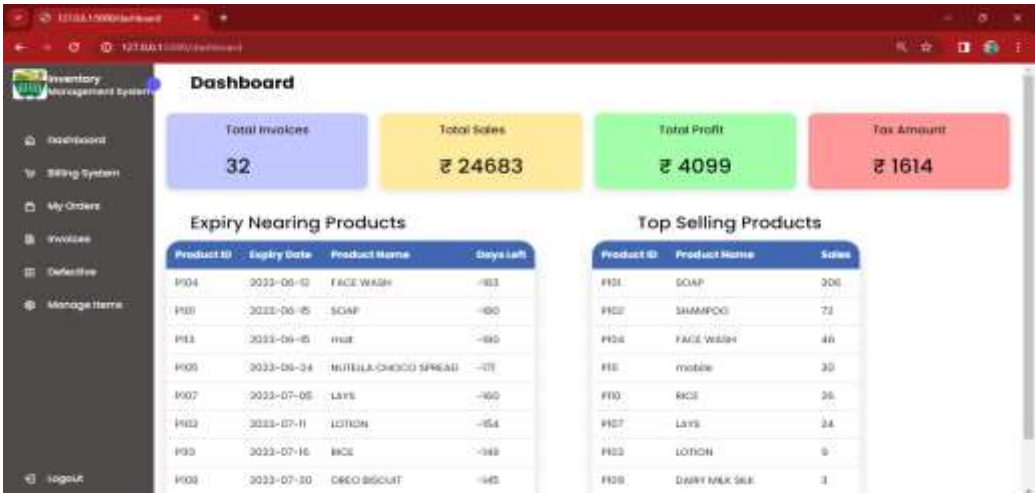


Figure 1.2: IMS dashboard



Figure 1.3: Billing Entry system

Billing System

Customer Name: hema

Customer Email: iathagr48@gmail.com

Product: face

Quantity: 2

Billing Table

Product Name	Price	Quantity	Total Price
FACE WASH	60	2	120
Subtotal:			120
Tax (7%):			8.4
Grand Total:			128.4

Buttons: Add to Billing, Clear, Generate Invoice

Figure 1.3.1: Billing Entry system

Invoice

Invoice Number: 33

Invoice Date: 2023-12-12

Invoice Time: 23:01:27

Customer Name: hema

Customer Email: iathagr48@gmail.com

Description	Quantity	Unit Price	Total
FACE WASH	2	60	120
Subtotal			120
Tax 7%			8.4
Total			128.4

Thank you for Purchasing! Please Visit again!!...

Figure 1.4: Invoice Generated

Invoices

Bill.No	Date & Time	Customer Name	Customer Mobile	Subtotal	Tax	Total	Invoice
23	2023-12-11 13:52:25	hema	gokulakrishnan722722@gmail.com	525	36.75	561.75	View
24	2023-12-11 14:46:24	hema	gokulakrishnan722722@gmail.com	1320	92.4	1412.4	View
25	2023-12-11 14:52:58	hema	gokulakrishnan722722@gmail.com	1320	92.4	1412.4	View
26	2023-12-11 22:47:38	hema	gokulakrishnan722722@gmail.com	350	24.5	374.5	View
27	2023-12-11 22:50:03	hema	gokulakrishnan722722@gmail.com	360	24.5	374.5	View
28	2023-12-11 23:50:20	hema	gokulakrishnan722722@gmail.com	350	24.5	374.5	View
29	2023-12-12 13:23:15	hema	gokulakrishnan722722@gmail.com	350	24.5	374.5	View
30	2023-12-12 13:23:42	hema	gokulakrishnan722722@gmail.com	350	24.5	374.5	View
31	2023-12-12 13:27:16	hema	gokulakrishnan722722@gmail.com	350	24.5	374.5	View
32	2023-12-12 13:45:31	hema	gokulakrishnan722722@gmail.com	70	4.9	74.9	View
33	2023-12-12 23:01:27	hema	iathagr48@gmail.com	120	8.4	128.4	View

Figure 1.4.1: Invoice Details

Defective Product Report Form

Product Name: SOAP
 Product Quantity: 1

[Add](#) [Cancel Entry](#)

Product ID	Expiry Date	Product Name	Quantity
P002	2023-09-22	SHAMPOO	1
P006	2023-07-20	BABY WALK SHIP	1
P007	2023-07-08	LAYS	20
			Usual Profit: 55
			Current Profit: 5
			Normal Price: 195
			Offer Price: 188

Figure 1.5: Defective Product Entry Form

Defective Product Report Form

Product Name: SOAP
 Product Quantity: 1

[Add](#) [Cancel Entry](#)

Product ID	Expiry Date	Product Name	Quantity
P002	2023-09-22	SHAMPOO	1
P006	2023-07-20	BABY WALK SHIP	1
P007	2023-07-08	LAYS	20
P001	2023-06-15	SOAP	2
			Usual Profit: 36
			Current Profit: 32
			Normal Price: 35
			Offer Price: 45

Figure 1.5.1: Defective Product with an offer price

Manage Products

Product Details

Product ID: P008
 Product Name: Good this Manual
 Quantity: 50

Minimum value: 15
 Maximum value: 200

Supplier (CNP146)

Buy Price: 5
 Sell Price: 15
 Expiry Date: 12-01-2024

Supplier Name: Hama
 Supplier Email: hama@hama@kibgghma.com

[Save](#) [Cancel](#) [Update](#) [Delete](#)

Figure 1.6: Creating a new product

Manage Products

Product Details

product id: Product Name: Quantity:

Minimum value: Maximum value:

Supplier Details

Buy Price: Sell Price: Supply Date:

Supplier Name: Supplier Email:

Figure 1.6.1: Search for a particular product

Manage Products

Product Details

product id: Product Name: Quantity:

Minimum value: Maximum value:

Supplier Details

Buy Price: Sell Price: Supply Date:

Supplier Name: Supplier Email:

Figure 1.6.1.1: Search for a particular product

Manage Products

Product Details

product id: Product Name: Quantity:

Minimum value: Maximum value:

Supplier Details

Buy Price: Sell Price: Supply Date:

Supplier Name: Supplier Email:

Figure 1.6.2: A product with less quantity

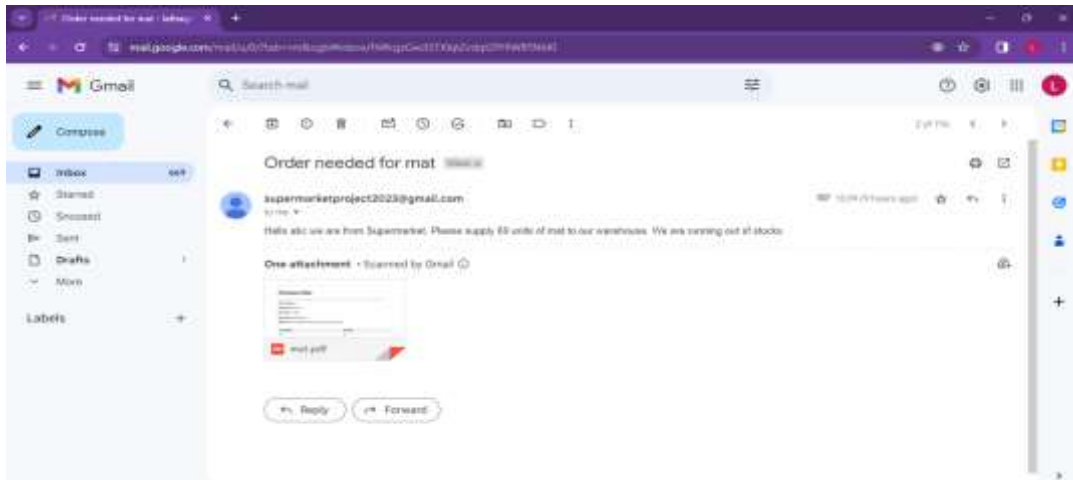


Figure 1.6.2.1: Automatically Receive a mail for a particular less product

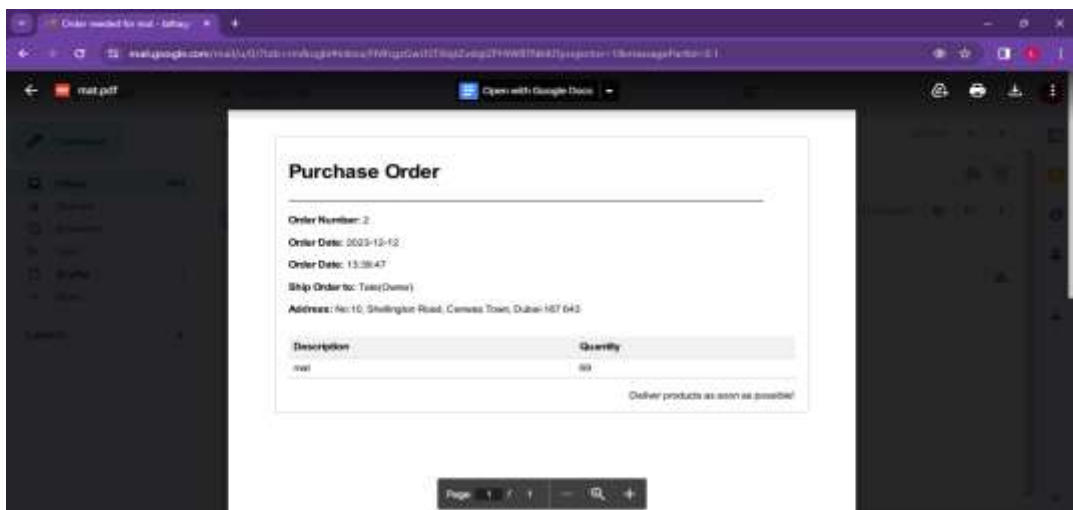


Figure 1.6.2.1: Purchase order file generated

1.4 COMPANY PROFILE

HISTORICAL BACKGROUND

BARRLA SYSTEMS



Figure 1.6.2.2: Automatically Receive a report for out-of-stock products

Fig:2.1: Company logo

Barrrla Systems provides leading self-service technology solutions and is committed to excellence in Customer Management and support. with a sound financial base and professional management, Barrrla Systems always strives to deliver state-of-the-art Quality Products that exceed customer expectations. Our employees' strengths lie in our professional marketing, sales & support teams who are well-trained & experienced.

With over 20 years of technological and operational expertise in self-service kiosks for indoor and outdoor environments, Barrrla Systems has developed a wide range of financial services kiosks starting from a Single Function Table Top Kiosk to a rich Featured Multi-Function Kiosks. Now Barrrla has put all this experience of dealing with banks to IoT devices and networks resulting in a highly scalable and reliable Barrrla IoT Portal.

Barrrla Systems covers a wide range of web-based, fully integrated kiosk apps that provide services for banks and financial institutions. Barrrla kiosks are enabled with one or more electronic devices, which can support a wide range of banking transactions. Barrrla Kiosks are easy to use, accessible, and cost-effective and can connect to secured networks as well as IoT networks. IoT can substantially lower

communications and infrastructural costs for banks and businesses and allow them to serve their customers across the globe.



Communicating with Terminals and Service provider Applications in a controlled and secured manner Ability to schedule application patches and terminal configuration downloads to terminals OLTP - Status monitoring with periodical heartbeat checking of terminals up to device level – with SNMP reporting Extensive trace loggings are enabled at terminal, device, service, and transaction levels Extensive reports with dynamical filter selections which are available along with Service application-level shared reports. Various kinds of dynamic alarms can be set to inform the Terminal, Device, and Service level statuses via SMS, emails, or Message boards. SSL certificates can be initiated from the Central location for each active terminal. Registering, Enabling, or disabling the terminals, devices, and services can be initiated from the central location for terminal or location-wise. Users and roles are defined centrally and can be applied to Service level management modules. Terminal-level maintenance and EOD operations can be managed centrally.

CORE VALUES

- Listen to the Customer
- Keep it Simple
- No Compromise on Quality

OUR MISSION

We deliver advanced high-quality Technologies @ prices that are competitive and well-supported on a worldwide basis.

QUALITY POLICY

Quality First, we strive to keep our solutions and products Simple and Defect.

KIOSKS

PASSBOOK PRINTING KIOSKS



Fig:2.2: Passbook printing

The new generation Self Service Passbook Printing Kiosk. is engineered to work 24x7. Built on a robust, scalable, and secure architecture, It comes with an integrated barcode reader that can read both QR code & ID/2D Barcode formats. All devices are web-enabled to support multiple services. It is less expensive. lowers operational complexity and is very user-friendly. The kiosk can be centrally managed and monitored from the Terminal Portal, where all business logics are centralized.

FEATURES:

- Passbook Printing with Inbuilt Scanner
- 15-inch Touch screen
- XFS MIB SNMP enabled terminal
- Auto device recovery management

- Multi-lingual text support (English, Hindi, Regional)
- Voice Guidance (English)
- Manual Page turning through guidance directly connects to the Bank's Core Banking System.

CHEQUE ACCEPTOR KIOSKS



Fig:2.3: Cheque Acceptor

This is a UV-CTS-enabled Self-Service Cheque Acceptor Kiosk engineered to work 24x7 built on a robust, scalable, and secure architecture. All devices are web-enabled to support multiple services. It is less expensive, lowers operational complexity, and is a very user-friendly. The Risk can be centrally managed and monitored from the Terminal Portal where all business logic is managed and designed to accept a cheque from customers without any manual intervention of the branch officer. It can capture high-quality cheque image with MICR data for online processing as per RV CTS guidelines. In addition, it offers end-to-end security needed by financial institutions to ensure safe remote deposit.

FEATURES:

- Cheque Acceptor with/ Endorsement (UV Enabled)
- 15-inch Touch screen, XFS MIB SNMP enabled terminal
- Collector box (free fall) and Mechanical locks
- Auto device recovery management Multilingual text support (English, Hindi & Regional)
- Voice Guidance (English)
- Transaction Receipt with cheque image

KIOSKS PORTAL

Barrla Kiosks are managed through the Kiosks Terminals Management Portal or KTM portal. This is a web-based, full-featured Terminal Management and Monitoring portal. The KTM provides a complete end-to-end solution with a decoupled architecture and can manage & host multi-tenancy services centrally and provides accessibility via the assisted and non-assisted terminals.

FEATURES:

The KTM Portal can integrate and centrally manage multiple services. Services can be activated or deactivated centrally and instantaneously enabled or disabled to all KTM registered Assisted and Non-Assisted terminals to serve Client's Customers within a single point of service for multiple hosts services, i.e. banks, hotels, travel, hospitality, etc. The KTM Portal is designed to support a variety of diverse business applications, treated as multiple services that can be enabled on single/multiple terminals via the management module. It is a decoupled & robust web-based Management and monitoring application, that runs on a Windows platform ensuring ease of installation, and supports various security modules like SSL, Data and message level Encryption, Authorized web request processing, etc.

The KTM Portal is trouble-free and easy to use, as its GUI is designed in the Metro UI concept. The KTM Portal provides remarkably easy access to its users.

The KTM Portal provides a cost-effective, web-based remote terminal Management and Monitoring module that is fast & secure and can be accessed anytime and anywhere within the intranet.

On the whole, the KTM portal is Scalable, Dependable, Customizable & User friendly.

BENEFITS

- Communicating with Terminals and Service provider Applications in a controlled and secure manner
- Ability to schedule application patches and terminal configuration downloads to terminals
- OLTP - Status monitoring with periodical heartbeat checking of terminals up to device level – with SNMP reporting
- Extensive trace loggings are enabled at terminal, device, service, and transaction levels
- Extensive reports with dynamical filter selections are available along with Service application-level shared reports.
- Various kinds of dynamic alarms can be set to inform the Terminal, Device, and Service level statuses via SMS, emails, or Message boards.
- SSL certificates can be initiated from the Central location for each active terminal.
- Registering, Enabling, or disabling the terminals, devices, and services can be initiated from the central location for terminal or location-wise.
- Users and roles are defined centrally and can be applied to Service level management modules.
- Terminal-level maintenance and EOD operations can be managed centrally.

MANAGE KIOSKS

Barrla Systems' Management application software allows users to register & manage all kiosk terminals, Configure Services, manage languages & deploy Advertising screens on the terminals via the Cloud. The statuses of terminals can also be changed [Shutdown / Restart / Power off & on] from the Cloud.

1. TERMINAL MANAGEMENT

Manage the terminals that are hosted under the KTM portal. Terminals can be grouped & managed location-wise.

2. DEVICE MANAGEMENT

Manage the devices and their types that are deployed in the terminals.

3. SERVICE MANAGEMENT

Manage the web-enabled services that are supported in the terminals. Easily attach & enable existing web services.

4. USER MANAGEMENT

Manage the users who can access the Portal and which portions of the Portal they have Permission to use.

5. STATUS MANAGEMENT

Manage the statuses of the created devices. These are defined based on SNMP - OID – XFS MIB standards.

6. ALARM MANAGEMENT

Manage alarms that initiate notifications based on the configuration created via SMS, email, or portal messages.

MONITOR KIOSKS

Barrla Systems' Monitoring application software has a REAL TIME REPORTING dashboard that always keeps track of all registered terminal statuses from the Kiosks Portal Cloud 24/7. Terminal / Device Statuses are reported via various notifications (like email / SMS / Dashboard etc.) based on the customized Alarms. Various reports can be configured & shared that can be viewed by respective reporting heads. The Monitoring application is scalable and can monitor other terminals that provide information via the XFS-SNMP protocol.

1. TERMINAL STATE

Efficiently monitor & maintain the terminals from a central location.

2. USER MESSAGE

View messages that are triggered based on the alert configured by the admin.

3. TERMINAL STATISTICS

To track exactly what, when, and for how long the terminals were down, what services were chosen, and what is the transaction status on completion.

4. REPORTS

Generate and view various reports graphically location-wise, and terminal-wise along with summary & details reports; allowing the management to analyze various implementation scenarios.

5.LOG VIEWING

View the logs that are available at the portal level and the terminals, terminal-wise.

BSPL Internet of Things (IoT)

The rise of the Internet and advances in telecommunication and software services led to the possibilities of connecting every object or thing. The Internet of Things is where everything is trackable, identifiable, and connected.

BSPL solutions make hosting and publishing devices on the Internet both Simple and Easy. Drawing on many years of experience gained from hosting Kiosks and financial devices for banks, BSPL can provide solutions to host the Internet of Things devices by offering secured and cost-effective systems to private and Government organizations across the Globe.

BARRLA ITMSP SOLUTIONS

SOFTWARE LICENSE

WORKSPACE

Modernize your employee's experience through a digitally connected workspace, and unlock and discover new ways of working.

FIREWALL

Security resilience enables organizations to protect the integrity of the business amidst unpredictable threats or changes.

ENDPOINT SECURITY

Immunize your WINDOWS, MAC, and LINUX workstations & protect endpoints everywhere across servers, physical or virtual, in your data center or scattered across public clouds.

PAYROLL

It's time to turn your payroll chaos into order. Automatic payroll calculations help you to systemize your pay schedule, and process and approve pay runs in a few steps.

IT INFRASTRUCTURE

SERVERS | STORAGES

Empower world-changing innovation with faster time-to-results and accelerated AI. Supercomputing solutions across the edge to the cloud. Accelerate modernization with the industry's most comprehensive solution to store and manage data across the hybrid cloud.

END-USER DEVICES

Leveraging Digital Enterprise Management capabilities to deliver a consistently excellent end-user experience. IT Device Lifecycle Management Services are optimized to extract maximum value from each employee, regardless of device.

HOSTING

Get total isolation and control with maximum flexibility and improve the performance of scalability of your applications.

ACCESS CONTROL

Simplify your admin operations with powerful features, checking employee availability and time-off using access control tools.

CLOUD COMPUTING

Barrla ITMSP provides computing services such as servers, storage, networking, software, databases, and much more, over the internet. Typically, these services can be availed on a 'pay-as-you-go' basis. As contrasted with organizations having to create and own their own data center and other computing infrastructure, the cloud model allows for hiring access to compute, storage, database, and other components from a cloud service provider.

BARRLA | PRIVATE SHARED CLOUD SOLUTIONS

We are dedicated to maintaining and controlling our servers in-house to eliminate the costs and unreliability associated with third-party maintenance. With our model of comprehensive security and maintenance, we're able to offer better coverage, 100% uptime, and faster speeds all at lower costs than other dedicated server hosts.

IT SERVICE AND SUPPORT

PRIVATE IT SERVICE TEAM

Barrla ITMSP offers customizable, flexible, and cost-effective services with scheduled installation of hardware and software, also supports changes to configurations, de-installation, relocation of equipment, re-installation, connectivity testing, and user orientation. Our techies work collaboratively with clients' IT teams, enabling the organization's engineers on demand, across the country, on a support event basis, for specific needs.

HIGHLIGHTS

- Service Desk
- Technical Field Support
- Spare Parts Management
- Client user co-ordination
- Fulfillment Services
- Reporting & Reviews

AMC SERVICES

One of the key expectations of organizations is the timely and stress-free provision of warranty services for their IT assets. Barrla ITMSP supports organizations to manage their enterprise IT infrastructure by providing warranty fulfillment services, ensuring high availability, manageability, and performance. Also ensures continued support for laptops, desktops, servers, storage, printers, plotters, and other devices, through properly packaged AMC services.

HIGHLIGHTS

- Customized services
- Preventive Maintenance
- Stand-by Provisioning
- Trained personnel
- Stocked Spare Parts

DATA SERVICES

Make your data connectivity in HA (High Availability) using multiple data services like MPLS, ILL, and SD-WAN technologies.

CLIENTS



Fig:2.4: Clients

Ongoing basis, and continuously monitor and evaluate their progress as they grow. All our solutions involve a cost/benefit analysis in partnership with our clients so, they can be sure that their money is always put to the best use. We are committed to building long-lasting relationships with all of our clients. We provide self-servicing

solutions for various Banks of all sizes around the world. Below are some of the Banks we take pride in calling our clients.



1.5 PROBLEM IDENTIFICATION

The current inventory management system lacks a proactive approach to monitoring product levels and expiration dates. Instead of automatically notifying and generating alerts when a product is running low and its expiration date is approaching, the system relies on reactive measures. This can lead to issues such as stockouts or expired products, potentially affecting customer satisfaction and profitability.

1.6 NEED FOR STUDY

The goal of the application is to manage the inventory management function of the organization. Once it is automated all the functions can be effectively managed and the organization can achieve a competitive advantage. Business requirements are discussed in the scope section, with the following additional details:

- Helps to search the specific product and remaining stock.
- Details information about the purchase and sales of the product.
- Helps to make an alert when the product is less and reminds expiry nearing product.
- It helps to identify the total present inventory in the company.
- To know the balance and details of purchase on a specific date.
- Only the admin can log in to the page.

1.7 OBJECTIVES OF THE STUDY

- To develop an application that deals with the day-to-day requirements of any production organization.
- To develop easy management of the inventory.
- To handle the inventory details like purchase details, sales details, billing details and balance stock details.
- To automatically make an alert when the product is less.
- To separate the expiry nearing product and to make an offer for that product.

1.8 SCOPE OF THE STUDY

Inventory Management System (IMS) is targeted to the small organization which doesn't have many godowns or warehouses i.e., only to those organization that has single power of authority. Some of the scopes are:

- Only one person is responsible for assigning the details or records.
- It is security-driven.
- Godown can be added as per the requirement.

CHAPTER 2

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Products are considered as the business resources for the organization. This includes managing the product with the appropriate way to review it at any time as per the requirement. Therefore, it is important to have a computer-based IMS that can generate reports, maintain the balance of the stock, details about the purchases and sales in the organization. Before developing this application, we came up with a two Inventory Management System existing in the market, which helps to give the knowledge for the development of our project. This application software is only used by large organizations but so we came up with an application that can be used by small companies for the management of their stock in the production houses. After analyzing the other inventory management systems, we decided to include some of the common and key features that should be included in every inventory management system. So, we decided to include those things that help the small organization in one way or another.

Madu (2022) has studied inventory management practices applied by stores officers in public tertiary educational institutions in southeast Nigeria country and found that some practices like barcode inventory management practices were moderately applied, while activity-based costing inventory management practices were lowly applied in such institutions and also they do not significantly influence in some institutions and required proper training for effectively implementing such inventory management practices.

Lastly, S Pasaribu (2021) has developed an inventory management system based on a web application that utilizes HTML, CSS, and JavaScript, for frontend, PHP, MySQL, and Apache for the backend of the system. The programming languages chosen by this researcher are very common and most used for developing a web application on any project in the market nowadays. Based on the researcher's stated tools and programming languages used, the researcher uses a legacy PHP to develop this system which can be quite inefficient compared to using a programming language framework.

Erameha and Odoh, (2021), An inventory control system is a process of managing inventory to satisfy customer demand at the lowest cost and with the least amount of investment. One of the fundamental issues facing small and medium-sized businesses is inventory management.

Lwiki et al (2021) A survey conducted on all the eight (8) sugar manufacturing firms in Kenya established that there is generally positive correlation between each of inventory management practices. Specific performance indicators were proved to depend on the level of inventory management practices. They established that Return on Equity had a strong correlation with lean inventory system and strategic supplier partnerships. As such, they concluded that the performance of sugar firms could therefore be stated as being a function of their inventory management practices.

Panigrahi (2021) Undertook an in-depth study of inventory management practices followed by Indian cement companies and their affect on working capital efficiency. The study also investigated the relationship between profitability and inventory conversion days.

According to Rickerby (2020), "No matter what your business sells, whether your products are seasonal, perishable, or customizable, an automated inventory system could be all that stands between your brand and unlimited growth." and he also stated that, "With the right automated inventory system, automation can be used cost-effective shipping rates, generate documentation for both international and domestic orders, and support replenishment by generating purchase orders once stock levels reach a minimum threshold." Mobile phones nowadays are part of every person's life,

According to Metev (2020), there are 5.11 billion unique mobile users worldwide in 2019, and 2.71 billion of them use smartphones. To accomplish higher profit margins, every business makes attempts to find the best possible ideas, estimations, and resources that result in prominent advantages for the organization. The use of Mobile phones in the business is pretty common at this time, businesses usually communicate to customers for their orders through phones Another possible use of mobile phones is for inventory management.

Autonomous Robot for Inventory Management in Libraries **R. Mehta and A. Sahu, 2020**, In order to save labor costs, improve the effectiveness of current inventory management systems, and offer a way to create an automated inventory, this study suggests an autonomous robot. Taking

care of a college library is one example of inventory management. Similar to an inventory management system, the library has issues with book availability.

Eneje et al (2020) Investigated the effects of raw materials inventory management on the profitability of brewery firms in Nigeria using cross-sectional data from 1999 to 2017 which was gathered for the analysis from the annual reports of the sampled brewery firms. Measures of profitability were examined and related to proxies for raw materials inventory management by brewers. The Ordinary Least Squares (OLS) stated in the form of a multiple regression model was applied in the analysis. The study revealed that the local variable raw materials inventory management designed to capture the effect of efficient management of raw material inventory by a company on its profitability is significantly strong and positive and influences the profitability of the brewery firms in Nigeria. They concluded that efficient management of raw material inventory is a major factor to be contained with by Nigerian brewers in enhancing or boosting their profitability Nyabwanga and Ojera (2020) They Highlighted the association between inventory management practices and business performance of small-scale enterprises (SSEs), in Kisii Municipality, Kisii County, Kenya. They used a cross-sectional survey study based on a small sample size of 79 SSEs. The study inferred that inventory comprised the maximum portion of working capital, and improper management of working capital was one of the major reasons for SSE failures. The empirical results disclosed that a positive significant relationship existed between business performance and inventory management practices with inventory budgeting having the maximum influence on business performance ensued by shelf-space management. The study suggested that by following effective inventory management practices business performance can be enhanced.

Sahari, Tinggi, and Kadri (2020) Empirically analysed the relationship between inventory management and firm performance along with capital intensity. For this purpose, they took a sample of 82 construction firms in Malaysia for the period 2006–2010. Using the regression and correlation analysis methods, they deduced that inventory management is positively correlated with firm performance. In addition, the results indicate that there is a positive link between inventory management and capital intensity.

Soni (2020) Made an in-depth study of practices followed in regard to inventory management in the engineering goods industry in Punjab. The analysis used a sample of 11 companies for a period of five years, that is, 2009–2016, and was done using panel data set. The adequate and timely flow of inventory determines the success of an industry. She concluded that size of inventory enhanced marginally over the period as compared to a hike in current assets and net working capital. Inventories constituted half of the working capital which was due to overstocking of inventory as a result of low inventory turnover especially for finished goods and raw materials. Rise in sales and favourable market conditions lead to a rise in inventory levels. It was also inferred that sales increased more as compared to inventory.

Madishetti and Kibona (2019) Found that well-designed and executed inventory management contributes positively to small or medium-sized enterprises (SMEs) profitability. They studied the association between the inventory conversion period and profitability and the impact of inventory management on SMEs profitability. Regression analysis was adopted to determine the impact of inventory conversion period over gross operating profit. The results cleared out that significant negative linear relationship occurred between inventory conversion period and profitability.

Srinivas Rao Kasisomayajula (2019) An analytical study was conducted on "Inventory Management in Commercial Vehicle Industry In India". A sample of five companies was selected for study. The study concluded that all the units in the commercial vehicle industry have significant relationship between Inventory and Sales. Proper management of inventory is important to maintain and improve the health of an organization. Efficient management of inventories will improve the profitability of the organization. Edwin Sitienei and Florence Memba(2015) Conducted a study on the Effect of Inventory Management on the profitability of Cement Manufacturing Companies in Kenya. The study concluded that Gross profit margin is negatively correlated with the inventory conversion period, An Increase in sales, which denotes the firm size enriches the firm's inventory levels, which pushes profits upwards due to optimal inventory levels. It is also noted that firm's inventory systems must maintain appropriate inventory levels to enhance profitability and reduce the inventory costs associated with holding excessive stock in warehouses.

Blauth and Ducati (2019) presented a web-based system of open-source coding for monitoring, research, and management of grape production in a particular state in Brazil by integrating spatial information from remote sensing images, GPS measurements, and inventory data. This system, as argued by the authors, would allow both monitoring of grape production and investigations either on regional land and soil cover or in other applications derived from image classification.

Zeng, Y. Et al (2019) presented a web & knowledge-based intelligent decision support system (IDSS) for spare parts inventory control in a nuclear power plant. As the study mentioned, the proposed IDSS was successful in decreasing inventory holding costs significantly by modifying the unreasonable purchase applications while maintaining the target service level.

McNeely, M. (2019) highlighted the benefits of Eye Tank as a very useful inventory management tool, practiced by Chevron Products Company. The study reported that the company's Eye Tank was an innovative online fluid monitoring system designed to efficiently and reliably maintain bulk lubricants at optimum levels.

Computerized Sales and Inventory for Ronmon Trading de Alday, Espino Ragodo (2019)
Based on the research entitled (Computerized) Sales and Inventory System for Ronmon Trading de Alday, Espino Ragodo (2019), the replacement of the manual system with the proposed system provided more efficient and accurate processing of transactions. he said the system is much more reliable, eliminated errors and inaccurate information, and provided integrity valuable reports.

Marsudi (2018) reviewed on inventory management in manufacturing industry and found that the demand pattern policy help in determining the best approaches and the inventory system such as the Economic ordering quantity, Material requirement planning and Just-in-time has benefitted the industry in planning, delivering process, timely production with linking factors that is environment, technology, systems, and procedures.

Cakir and Canbolat (2018) proposed an inventory classification system based on the fuzzy analytic hierarchy process (AHP) by integrating fuzzy concepts with real inventory data. The authors designed a decision support system assisting a sensible multi-criteria inventory classification and validated the design of the proposed multi-criteria inventory classification system and its underlying fuzzy AHP model in a small electrical appliances company. An exploratory study has been conducted on the potential use of specific CKM (clinical knowledge

management) practices Sittiq, D. F. et al. The study emphasized that priority should be given to (i) the clinical content with a web-based viewer allowing anyone in the organization to review it; and (ii) an online, interactive tool to facilitate content development.

Inventory System of Best Choice Rice Dealers Bisagas, Arivada, and Tanteo (2018)

Inventory System of Best Choice Rice Dealer Bisagas, Arivada, and Tanteo (2018) The process of counting the sacks of rice is done manually, which corresponds to difficulty in tallying the number of available stocks and sold items. The manual generation of inventory reports such as daily, weekly, 4uarterly, and annual inventory lists of records remains one of their key problems since the establishment of the business. The transaction processing system for Best Choice Rice Dealer will minimize the difficulty of the owner in processing inventory. It will monitor the availability of product items for reorder to prevent understocking, overstocking, or running out of stock, the system will also generate necessary reports of inventory such as sales reports.

Korean Red Ginseng Enterprise- Sales Inventory System J. De Leon, M. Ferrer (2018)

The researchers came up with a computerized sales and inventory system. The proponents used the database to easily access files and for easier and faster processing of the selling and inventory transactions. The program was designated to generate reports such as monthly reports, inventory reports, sales invoices, and lists of items. In connection with the proposed system, the proponents proposed a new and faster way of processing business transactions. The system also helps the user to know the availability of the products. It also helped the manager to monitor the stocks and to get immediate notice for the acquisition of additional products. The proponents acquire knowledge about file processing and report generation through this study. It also gives the proponents ideas to create the proposed system reports in online sales and inventory systems. automation is mandatory, thus automated report generation for precise reports is to be included in the proponent's proposed system.

Monitoring and Inventory for Discovery Mall.com Averion, Gaela, and Libo (2018)

It will minimize the difficulty of the manager in processing inventory because the physical counting of products, and stocks, and computing inventory summary will be the system's job. It will monitor the availability of products and items to prevent understocking, overstocking, and running out of stock. The system will also simplify the transaction between dealer and supplier relationship because the updated supplier information and price list of items will correspond to collaboration with another supplier.

Mbiriri, & Moronge (2018) studied on the influence of inventory management system in public hospital related to service delivery at Nairobi in Kenya country found that there existed strong positive relationship between them. The practices studied under were Vendor Managed Inventory systems, Enterprise Resource Planning Systems, Radio Frequency Identification Systems, and JIT systems.

Osaka Sales and Inventory System Laranang, Maano and Nanola (2018)

The study states that business nowadays takes advantage of using modern technology to improve their status and ensure an efficient and newer way to make their work easier. They state that the main problem of Osaka Iridology is what modern effective tool must be used in creating and developing a sales and inventory system that will manage efficiently their transaction.) They develop a system that inclusively for the transaction such as monitoring of their medicine and their daily sales.

Chaffee, A. (2018) states that the web-based application has been essential in recent years as more organizations started to realize the importance of applying new technology to assist current inventory practices. In the last 10 years, barcode technology has been replaced with RFID (Radio Frequency Identification) technology and then evolved rapidly to be able to track any item by using a GPS-based device. The importance of implementing a web-based inventory system is thus becoming vital as most of the time the information is accessible instantly, thereby making the details of the usage of the equipment available, and improving the movement and anticipation of their demand as well as the productivity of the system as a whole. The implementation of technology-mediated learning can help institutions develop the skills to cope with their operational environments. Because of the transient nature of research personnel and projects in the university environment, academic research laboratories are sources of a large quantity of waste on campuses.

According to Levinson (2018), one of the advantages of the automated inventory management system is it increased tracking and transparency. Through this owner can monitor the strengths and weaknesses of their business. Micro and Small Business Enterprise Inventory System Inventory management plays a vital role in micro business, it can influence the performance of the business.

Siong, S. et al. (2018) reported on the development and application of a web-based, low-cost, user-friendly inventory analysis tool for stock availability optimization and enhanced delivery performance in the National Heart Center Singapore. The authors contended that by gathering all up-to-date information, the tool could effectively track the level of re-order, replenishment, and safety stock of finished goods within minutes, thereby lowering inventory cost and keeping forecasting error under control.

According to Ahmad (2018), “Inventory management represents a key success factor that shows how efficient a company is controlling its inventories” he also stated that “In terms of inventory management techniques used, ‘the rule of thumb’ is the most popular. The owner/managers’ attitude and knowledge in inventory management have significant and positive influences on inventory management practices.” In a micro-business setting, systematic and automated inventory practices are not often observed.

In the words of **Shajema (2018)**, Vendor Management inventory (VMI), Lean inventory Practices (LI), Inventory Stock taking and Strategic Supplier Management Practices (SSP) are some of the practices that have a positive and significant relationship in the retail chain store in Nairobi country in Kenya.

According to Zabri (2018), The adoption of systematic inventory management practices (IMPs) is a critical success factor for businesses in the retailing industry.

Chandra, C., & Kumar, S. (2018) made a proposal using a web-based flexible instructional module to disseminate information on research projects for introducing students and industry practitioners to enterprise systems. The study focused on the uses of the module on curricula satisfying cognitive educational goals of an enterprise system and offering live applications through the website. A hybrid data mining technique to analyze the traditional assessment tools administered to freshmen students at a university has been applied by Shih, C. et al. (2019). Such typical pen-and-paper tests would require responses to a multitude of questions, which might lead to student's resistance, fatigue, and unwillingness to complete the assessment. The authors observed that the technique helped in dynamically reducing the number of questions while the assessment proceeded.

Mbohwa (2018) reveal that businesses having high inventory percentage are more likely to face low financial results than those business having low inventory stock percentages.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. SOURCES OF DATA:

The study is based on primary data. Primary data is original data that is collected firsthand directly from its source. This information is gathered specifically for a particular research purpose or investigation. It can be obtained through methods such as surveys, interviews, observations, experiments, or any other form of direct data collection.

3.2. DESIGN OF RESEARCH:

Descriptive Research Design

Descriptive research is a study designed to depict the participants accurately. More simply put, descriptive research is all about describing people who take part in the study.

3.3. SAMPLING METHOD:

Convenience sampling method

A convenience sample is one of the main types of non-probability sampling methods. A convenience sample is made up of people who are easy to reach.

3.4. STRUCTURE OF QUESTIONNAIRE:

The questionnaire was divided into two sections. The first part was designed to know the general information about Inventory management through Automation and the second part contained the **respondent's opinions about inventory management at BARRLA SYSTEMS.**

- Basic Introduction
- Personal Details
- Research Related Questions
- Perception Questions
- Likert Scaling Questions
- Suggestion Question

3.5. SAMPLE SIZE

The sample size for this research project is 50. The respondents are employees.

3.6. PERIOD OF STUDY

The period of the study is to determine that the research process is carried out for 1 month.

3.7. AREA OF THE STUDY:

The targeted people are the employees who worked at BARRLA SYSTEMS' head office.

3.8. HYPOTHESIS:

3.8.1. *Hypothesis - 1*

- H0: There is no significant difference between the age of the employees and their familiarity with technology.
- H1: There is a significant difference between the age of the employees and their familiarity with technology.

3.8.2. *Hypothesis - 2*

- H0: There is no significant difference between manual and automatic in the IMS.
- H1: There is a significant difference between manual and automatic in the IMS.

3.9. TOOLS FOR ANALYSIS:

The questionnaire was created to receive the necessary responses required from the sample to achieve the research objective. The tools used for this are

3.9.1. *Percentage Analysis:*

It's common to use descriptive statistics like percentages or means when addressing research questions. Percentages are suitable for discrete categories, providing insights into how many participants chose a specific response. Mean values are often used for continuous data to represent the average.

3.9.2. *Analytical Tool (SPSS):*

Tool for testing the Hypothesis (SPSS)

- Anova

ANOVA TEST

One-way ANOVA ("analysis of variance") compares the means of two or more independent groups in order to determine whether there is statistical evidence that the associated population means are significantly different. One-way ANOVA is a parametric test. This test is also known as One-Factor ANOVA

CHAPTER 4

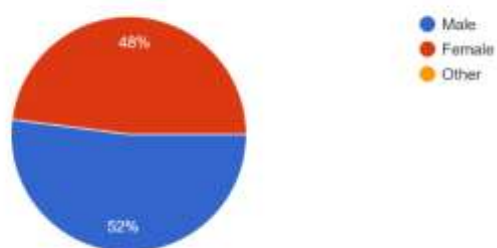
DATA ANALYSIS AND INTERPRETATION

4.1. PERCENTAGE ANALYSIS

4.1.1 Table indicating the gender of respondents

S.NO	GENDER	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Male	26	52%
2.	Female	24	48%
3.	Other	0	0%
TOTAL		50	100%

Gender
50 responses



Interpretation:

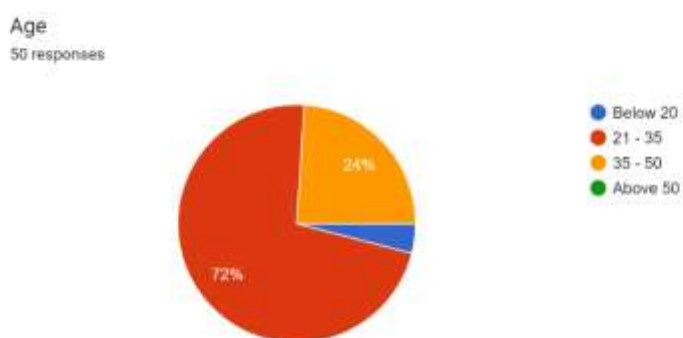
From the above table it is interpreted that the gender of the respondents is male 52% and number of respondents in female are 48%

Inference:

Majority 52% of the respondents are male.

4.1.2 Table indicating the age of respondents

S.NO	AGE	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Below 20	2	4%
2.	21 - 35	36	72%
3.	35 - 50	12	24%
4.	Above 50	0	0%
TOTAL		50	100%



Interpretation:

From the above table it is interpreted that the number of the respondents below 20 ages of respondents are 4%, between 21-35 age of respondents are 72%, and between 35-50 age of respondents are 24%.

Inference:

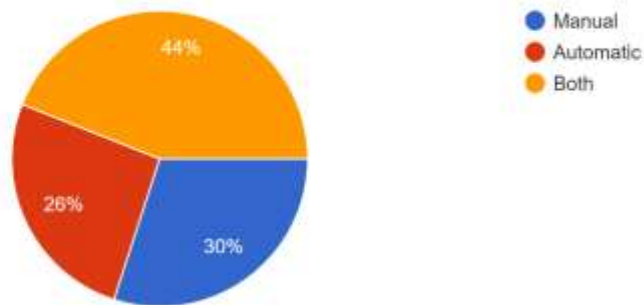
Majority 72% of the respondents belong to the age group of 21-35 category.

4.1.3 Table indicating the methods of respondents

S.NO	METHODS	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Manual	15	30%
2.	Automatic	13	26%
3.	Both	22	44%
TOTAL		50	100%

What are the methods used to take stock and verify it?

50 responses



Interpretation:

From the above table 30% of respondents are manual, 26% of respondents are automatic, and 44% of respondents are both manual and automatic.

Inference:

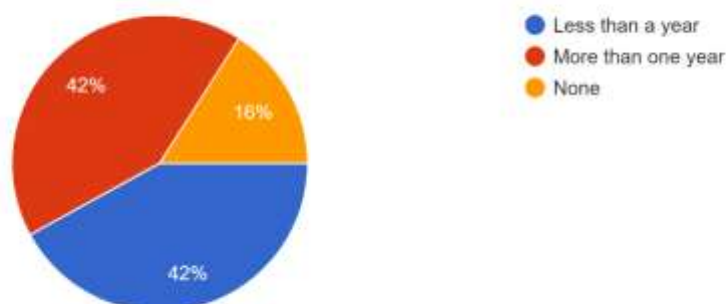
Majority 44% of the respondents are both manual and automatic.

4.1.4 Table indicating the experience of respondents

S.NO	EXPERIENCE	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Less than a year	21	42%
2.	More than one year	21	42%
3.	None	8	16%
TOTAL		50	100%

Since how long you have been following this inventory method?

50 responses



Interpretation:

From the above table it is interpreted that the number of respondents were 42% is less than a year, 42% is more than one year, 26% is none.

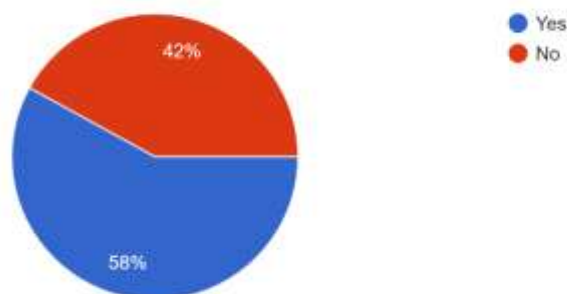
Inference:

Majority 42% of the respondents had less than and more than one year of experience.

4.1.5 Table indicating the physical mode of respondents

S.NO	PHYSICAL MODE	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Yes	29	58%
2.	No	21	42%
TOTAL		50	100%

Are you still counting the products in physical mode?
50 responses



Interpretation:

From the above table 58% of respondents are Yes and 42% of respondents are No.

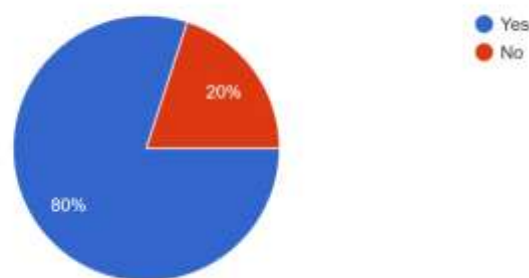
Inference:

Majority of 58% of the respondents are Yes.

4.1.6 Table indicating the agree with the need for a system to support inventory management

S.NO	AGREE	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Yes	40	80%
2.	No	10	20%
TOTAL		50	100%

Do you agree with the need for a system to support inventory management?
50 responses



Interpretation:

From the above table, 80% of respondents are Yes and 20% of respondents are No.

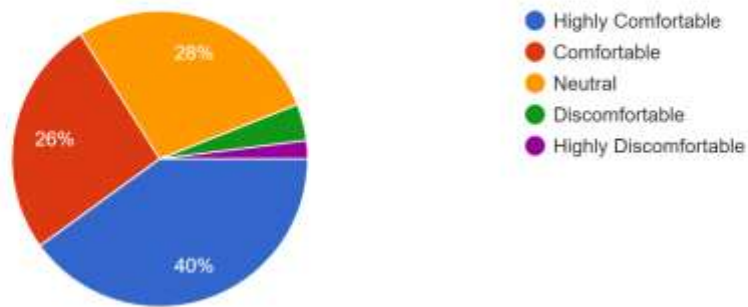
Inference:

Majority of 80% of the respondents are Yes.

4.1.7 Table indicating the comfort with web-based application

S.NO	APPLICATION	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Highly comfortable	20	40%
2.	Comfortable	13	26%
3.	Neutral	14	28%
4.	discomfortable	2	4%
5.	Highly discomfortable	1	2%
TOTAL		50	100

Are you comfortable with Web-Based Application?
50 responses



Interpretation:

From the above table it is interpreted that the number of the respondents Highly comfortable of respondents is 40%, Comfortable of respondents is 26%, Neutral of respondents is 28%, Discomfortable of respondents is 4%, and highly discomfortable of respondents is 2%

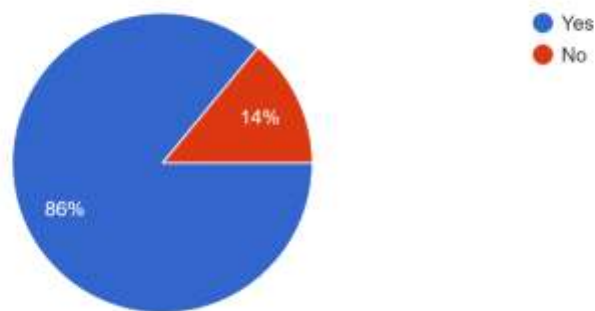
Inference:

Majority 72% of the respondents belong to the highly comfortable category.

4.1.8 Table indicating the track expiry dates of respondents

S.NO	TRACK EXPIRY DATES	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Yes	43	86%
2.	No	7	14%
TOTAL		50	100%

Do you need to track expiry dates for any of your products?
50 responses



Interpretation:

From the above table, 86% of respondents are Yes and 14% of respondents are No.

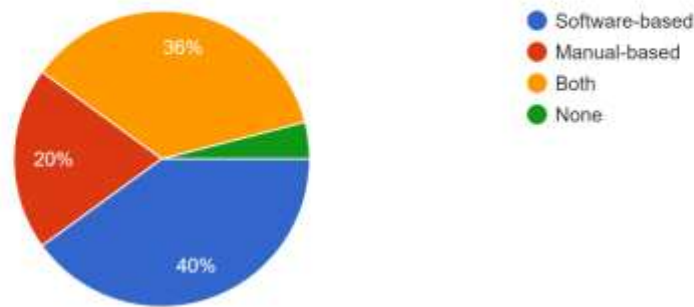
Inference:

Majority of 86% of the respondents are Yes.

4.1.9 Table indicating the based-on handling of respondents

S.NO	BASED ON HANDLING	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Software-based	20	40%
2.	Manual-based	10	20%
3.	Both	18	36%
4.	None	2	4%
TOTAL		50	100%

How do you currently handle stock-related documentation, such as purchase orders and invoices?
50 responses



Interpretation:

From the above table, it is interpreted that the number of respondents software-based respondents is 40%, manual-based respondents are 20%, and both software and manual-based respondents are 36%, and none of the respondents is 4%.

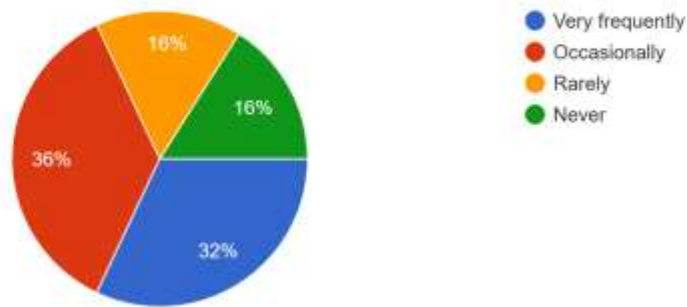
Inference:

Majority 40% of the respondents belong to the software-based category.

4.1.10 Table indicating the seek the stock of respondents

S.NO	SEEK THE STOCK	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Very frequently	16	32%
2.	Occasionally	18	36%
3.	Rarely	8	16%
4.	Never	8	16%
TOTAL		50	100%

How often do you seek when the stock is less?
50 responses



Interpretation:

From the above table, it is interpreted that the number of respondents very frequently of respondents is 32%, Occasionally of respondents is 36%, and rarely of respondents is 16%, and never of respondents is 16%.

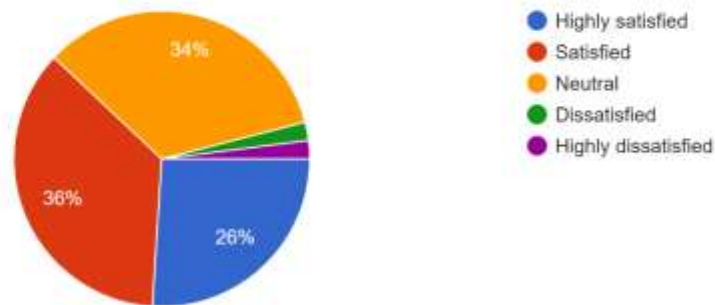
Inference:

The majority 36% of the respondents belong to the occasional category.

4.1.11 Table indicating the satisfaction with automation IMS

S.NO	VALID	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
1.	Highly satisfied	13	26%	26	26
2.	Satisfied	18	36%	36	62
3.	Neutral	17	34%	34	96
4.	Dissatisfied	1	2%	2	98
5.	Highly dissatisfied	1	2%	2	100
TOTAL		50	100%	100	

Are you satisfied with the automation inventory management system?
50 responses



Interpretation:

From the above table, it is interpreted that the number of respondents highly satisfied of respondents is 26%, satisfied of respondents is 36%, neutral of respondents is 34%, dissatisfied of respondents is 2%, and highly dissatisfied of respondents is 2%.

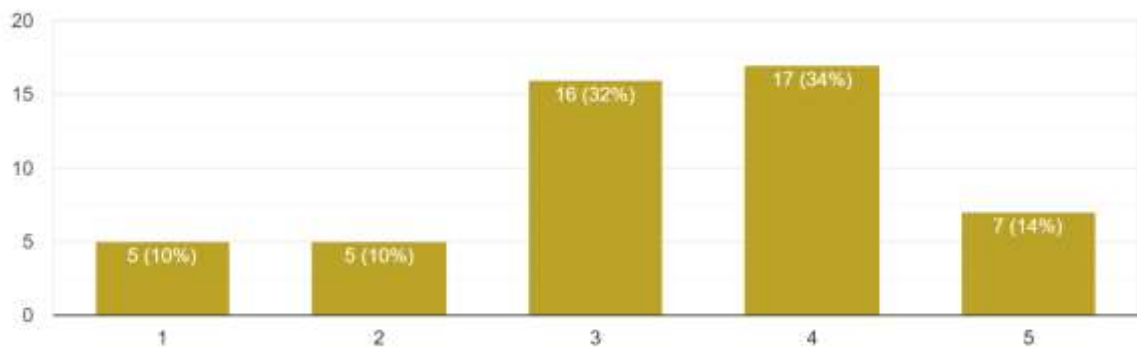
Inference:

The majority of 36% of the respondents satisfied that they were satisfied with the automation IMS.

4.1.12 Table indicating the like of automation system of respondents

S.NO	LIKELY – UNLIKELY RATING	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	1	5	10%
2.	2	5	10%
3.	3	16	32%
4.	4	17	34%
5.	5	7	14%
TOTAL		50	100%

How much likely do you need automated reports and alerts about stock levels and performance?
50 responses



Interpretation:

From the above table, it is interpreted that the number of respondents 1 rating of respondents is 10%, 2 rating of respondents is 10%, 3 rating of respondents is 32%, 4 rating of respondents is 34%, and 5 rating of respondents is 14%.

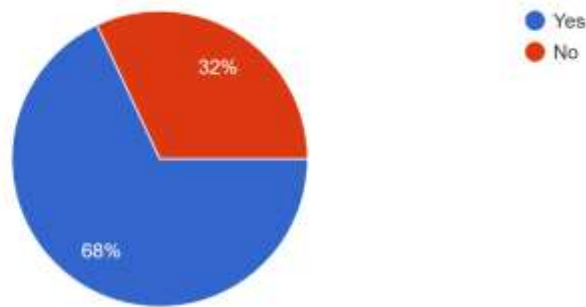
Inference:

The majority of 34% of the respondents are in 4th rating.

4.1.13 Table indicating the use of any similar software

S.NO	USE ANY SIMIALR SOFTWARE	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Yes	34	68%
2.	No	16	32%
TOTAL		50	100%

Have you ever used any similar software in the past?
50 responses



Interpretation:

From the above table, 68% of respondents are Yes and 32% of respondents are No.

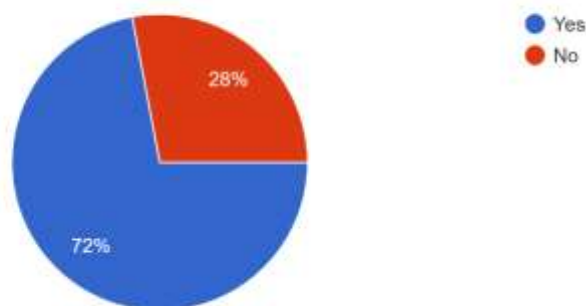
Inference:

Majority of 68% of the respondents are Yes.

4.1.14 Table indicating the familiarity with the automation IMS

S.NO	FAMILIAR WITH AUTOMATION IMS	NO.OF. RESPONDENTS	PERCENTAGE ANALYSIS
1.	Yes	36	72%
2.	No	14	28%
TOTAL		50	100%

Are you familiar with an automated inventory control system?
50 responses



Interpretation:

From the above table, 72% of respondents to track expiry dates are Yes and 28% of respondents to track expiry dates are No.

Inference:

Majority of 72% of the respondents are Yes.

HYPOTHESIS - 1

✚ **H₀:** There is no significant difference between the age of the employees and their familiarity with technology.

✚ **H₁:** There is a significant difference between the age of the employees and their familiarity with technology.

4.2

ANOVA

Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.480	1	.480	2.001	.164
Within Groups	11.520	48	.240		
Total	12.000	49			

INTERPRETATION

The p-value is 0.164 which is greater than the significance value (0.05) hence null hypothesis (**H₀**) is accepted. And **H₁** is rejected

INFERENCE

Therefore, there is no significant difference between the age of the employees and their familiarity with technology.

HYPOTHESIS - 2

- ✚ **H₀**: There is no significant difference between the method of manual and automatic in the IMS.
- ✚ **H₁**: There is a significant difference between manual and automatic in the IMS.

ANOVA

What are the methods used to take stock and verify it?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.015	1	3.015	4.385	.042
Within Groups	33.005	48	.688		
Total	36.020	49			

INTERPRETATION

The p-value is 0.042 which is lesser than the significance value (0.05) hence the Alternative hypothesis (**H₁**) is accepted and the Null hypothesis (**H₀**) is rejected.

INFERENCE

Therefore, there is a significant difference between manual and automatic in the IMS.

CHAPTER 5

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1. FINDINGS

- ✚ Majority 52% of the respondents are male.
- ✚ Majority 72% of the respondents belong to the age group of 21-35 category.
- ✚ Majority 44% of the respondents are both manual and automatic.
- ✚ Majority of 42% of the respondents had less than and more than one year of experience.
- ✚ Majority of 58% of the respondents are Yes.
- ✚ Majority of 80% of the respondents are Yes.
- ✚ Majority 72% of the respondents belong to the highly comfortable category.
- ✚ Majority of 86% of the respondents are Yes.
- ✚ Majority 40% of the respondents belong to the software-based category.
- ✚ The majority 36% of the respondents belong to the occasional category.
- ✚ Majority of 36% of the respondents satisfied that they were satisfied with the automation IMS.
- ✚ Majority of 34% of the respondents are in 4th rating.
- ✚ Majority of 68% of the respondents are Yes.
- ✚ Majority of 72% of the respondents are Yes.

5.2 SUGGESTIONS

- ✚ Data analytics and Market Analysis with Integrated AI are more powerful in the current situation.
- ✚ Get minimum level investment.
- ✚ As the technology is updating inventory management also has to update itself and go for automation.
- ✚ Manual is better than automation.
- ✚ Online inventory management is the best platform to track the asset details of any product.
- ✚ Inventory management system is a combination of hardware and software technology is a must.

- ✚ The most anticipated part of IM is to reduce human work and to give benefit to an individual. so, enhancing the product entry will be a mass gain and easy to manage.

5.3. LIMITATIONS

- ✚ This web-based application can generate only simple reports.
- ✚ Single admin panel is only made.
- ✚ It is not suitable for a large organization.

5.4. CONCLUSION

To conclude, an Inventory Management System is a simple web-based application suitable for small organizations. It has every basic item that is used for the small organization. This application is where we can update, insert, and delete the item as per the requirement. This application also provides a simple invoice report daily to know the daily purchase details. This application matches small organizations where there are small limited godowns.

Though it has some limitations, I believe that the implementation of the system will surely benefit the organization.

REFERENCES

- Aamir Khan, Aasif Ansari, MD Ghalib, H. P. (2019). IRJET- A Web Application on Inventory Management System for Server Center of AIKTC. International Research Journal of Engineering and Technology, 06(02), 2203–2205.
- Agrawa, S. (2019). USING RAPID APPLICATION DEVELOPMENT FOR SOFTWARE DEVELOPMENT PROJECTS. Faculty of Purdue University.
- Ahmad (2018), “Inventory management represents a key success factor that shows how efficient a company is controlling its inventories”.
- Alexandria, J. (2022). MariaDB vs MySQL – Key Differences, Pros and Cons, and More.
- Anisere-Hameed, R., & Bodunde, T. D. (2021). The Impact of Inventory Management on The Profitability of Manufacturing Companies in Nigeria. International Journal of Innovative Research and Advanced Studies (IJIRAS) 8(1), 9-15.
- Arina Ramlee, David Henry, B. C. (2019). Inventory Management System. Finance & Management Engineering Journal of Africa, 1(6), 22–37.
- Arrelid, D., & Backman, S. (2012). How to manage and improve inventory control.
- Ayushjoshi (2022). Difference Between CSS and Bootstrap.
- Ballon R. H., (2004), Business Logistics/Supply Chain Management. Planning. Organizing and Controlling the Supply Chain (5th ed.). Pearsons-Prentice Hall. USA.
- Baron, O., Berman, O., and Perry, D. (2010). Shelf Space Management When Demand Depends on the Inventory Level Production and Operations Management. pp. 1-13, 2010 Production and Operations Management Society
- Demirtas, E.A. and O. Ustun (2008). An integrated multiobjective decision making process for supplier selection and order allocation, Omega: The International Journal of Management Science.
- Gershwin, S.B., Y. Dallery, Ch.T. Papadopoulos and J. MacGregor Smith, Eds. (2002). Analysis and Modeling of Manufacturing Systems, Springer, New York.

- Geunes, J., H.E. Romeijn and K. Taaffe (2006). Requirements planning with pricing and order selection flexibility, *Operations Research*
- Hax, A.C. and H.C. Meal (1975). Hierarchical integration of production planning and scheduling. In M.A. Geisler, Ed., *Studies in Management Scienc, Logistics*, North Holland, Amsterdam.
- Hegedus, M.G. and W.J. Hopp (2001). Due date setting with supply constraints in systems using MRP. *Computers & Industrial Engineering*, 39, 293 –305. Ho, W., X. Xu.
- Hopp, W. and M. Spearman (1996). *Factory Physics: Foundations of Manufacturing Management*. McGraw-Hill, New York
- K.D. Prasanta (2010). Multi-criteria decision making approaches for supplier evaluation and selection: A literature review, *European Journal of Operational Research*.
- Kootanaee, A. J., & Nagendra, B. &. (2013). Just-in-Time Manufacturing System: From Introduction to Implement. *International Journal of Economics, Business, and Finance*, 1(2), 7-25.
- Monczka, R., Trent, R., and Handfield, R. (2002), *Purchasing and Supply Chain Management*, 2 Edition, South Western, Cincinnati.
- Nyabwanga, R. N., & Ojera, P. (2012). Inventory management practices and business performance for small-scale enterprises in Kenya. *Journal of Business Management*.
- R. Mehta and A. Sahu, 2020. To save labor costs, and improve the effectiveness of current inventory management systems.
- S Pasaribu (2021). An inventory management system based on a web application that utilizes HTML, CSS, and JavaScript, for frontend.
- Wallin, C., M., Rungtusanatham, M. J., and Rabinovich, E. (2006). "What is the "right" inventory management approach for a purchased item?", *International Journal of Operations & Production Management*.
- Wild. T. (2002). *Best Practice in Inventory Management* (2nd ed.). UK. Butterworth-Heinemann.
- Yuvaraj, K., Oorappan, G. M., Megavarthini, K. K., Pravin, M. C., Adharsh, R., & Ashwath Kumaran, M. (2020). Design and Development of An Application for Database Maintenance in an Inventory Management System Using the Tkinter

and Sqlite Platforms. IOP Conference Series: Materials Science and Engineering.

- Zeng, Y. Et al (2019), presented a web & knowledge-based intelligent decision support system.
- Zimmerer, W.T., & Scarborough, N.M. (2008). Essentials of Entrepreneurship and small business management (5th ed.). New Jersey: Pearson Education.
- Ziukov, S. (2016). A literature review on models of inventory management under uncertainty.