INVENTORY MANAGEMENT SYSTEM FOR RETAILERS

NALAIYA THIRAN PROJECT
BASED LEARNING

ON

PROFESSIONAL READINESS FOR INNOVATION,

EMPLOYABILITY AND ENTREPRENEURSHIP

A PROJECT REPORT

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INTRODUCTION

PROJECT OVERVIEW

Retail inventory management is the process of ensuring you carry merchandise that shoppers want, with neither too little nor too much on hand. By managing inventory, retailers meet customer demand without running out of stock or carrying excess supply.

In practice, effective retail inventory management results in lower costs and a better understanding of sales patterns. Retail inventory management tools and methods give retailers more information with which to run their businesses, including:

- Product locations
- Quantities of each product type
- Which stock sells well and which doesn't, by location and sales channel.
- Profit margin by style, model, product line or item
- Ideal amount of inventory to have in back stock and storage
- How many products to reorder and how often
- When to discontinue a product
- How changing seasons affect sales
- Retail inventory management works by creating systems to log products, receive them into inventory, track changes when sales occur, manage the flow of goods from purchasing to final sale and check stock counts.

PURPOSE

Your inventory management software should also allow you to create QR codes Inventory management is key to maintaining a profitable, organized, and productive business. For some companies, practicing inventory management is simple: they take inventory every week or so by walking through a storage closet and checking to see if they're low on anything. But other companies must take inventory management quite seriously, tracking every item the minute it arrives, moves, or is used up.

In this article, we'll cover the definition of inventory management, the purposes of inventory management, and a few ways the right inventory system can help you manage your business's inventory.

The main purpose of inventory management is to help businesses easily and efficiently manage the ordering, stocking, storing, and using of inventory. By effectively managing your inventory, you'll always know what items are in stock, how many of them there are, and where they are located.

Plus, [practicing strong inventory management](#) allows you to understand how you use your inventory–and how demand changes for it–over time. You can zero in on exactly what you need, what's not so important, and what's just a waste of money. That's using inventory management to practice [inventory control](#). By the way, inventory control is the balancing act of always having enough stock to meet demand, while spending as little as possible on ordering and carrying inventory. The right [inventory management software](#) offers end-to-end inventory management, including an at-a-glance look at everything you've got, the ability to scan barcodes and QR codes, super-customizable item details, and in-depth reporting. and barcodes for unlabeled stock, and enable other team members or employees to access the inventory, too.

LITERATURE SURVEY

Existing Problem

- ➤ Lack of Inventory Visibility.
- ➤ Inefficient Inventory Management Process or Software.
- ➤ Tracking Obsolete Material.
- ➤ Identifying Incorrectly Located Materials.
- ➤ Keeping up with Overstocks.
- ➤ Managing Inventory Waste & Defects.

RERFERENCES

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[3] T. Muyumba and J. Phiri, "A Web based Inventory Control System using Cloud Architecture and Barcode Technology for Zambia Air Force," vol. 8, no. 11, pp. 132–142, 2017.

[4] W. Chan, R. Tasmin, and A. H. Nor, "Enhancing Chemical Inventory Management in Laboratory through a Mobile-Based QR Code Tag Enhancing Chemical Inventory Management in Laboratory through a Mobile-Based QR Code Tag," 2017.

[5] A. Poojary, "RFID Application to Improve Inventory Management," vol. 9519, 2014.

PROBLRM STSTEMENT DEFINITION

Inventory costs have lot of impact on the profitability of the firm and its success. Inventory management and its optimized decisions are depending on the identification of key success factors and right decisions at right moment.

In a dynamic market environment, it is necessary to focus on the decision making and the factors influencing decision making in order to optimize the results of inventory function.

The survey approach can bring a light on the variables and these have lot of biased information.

Testing of the factors influence on inventory decisions by using scientific methods can help to improve the reliability of the factors taken as key variables in decision making.

Hence, the present research is focused on the dimensions namely identification of Factors influencing inventory optimization among SMEs in steel sector through a structured and unstructured questionnaire and grouping them into two sets as internal variables and external variables and optimization by grouping the information for appropriate decision.
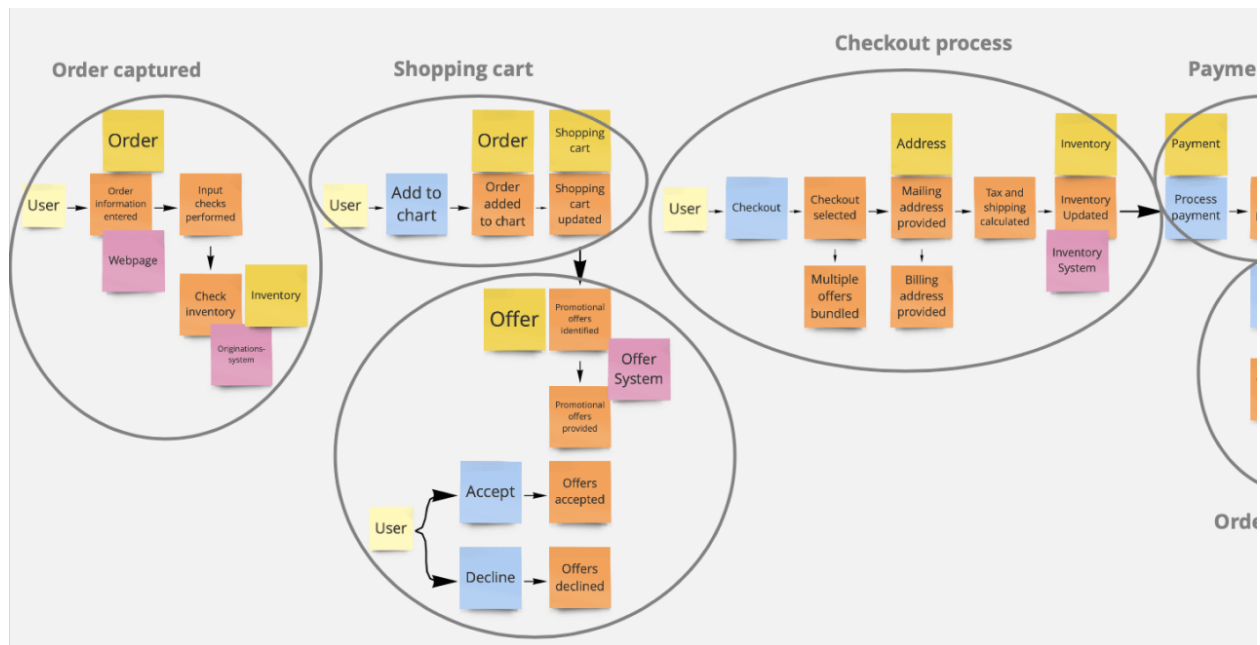
IDEATION & PROPOSED SOLUTION

EMPATHY MAP CANVAS

An empathy map is a collaborative tool teams can use to gain a deeper insight into their customers.Much like a user persona, an empathy map can represent a group of users, such as a customer segment. The empathy map was originally created by Dave Gray and has gained much popularity within the agile community.

Said

Manual entries for stock	Person assigned for inventory related task	Don't know which product is not selling

Does

Seeing sales once the shop is closed for the day	A person is for maintaining stock inventory	Making a notes for product discount

Mr. Jitendra

Think

How to solve these problems?	Any mobile application is there?	How to track my inventory in advance way?

Feel

Unsafe	How much cost of the software.	My data will be safe and secure.

IDEATION & BRAINSTROMING

PROPOSED SOLUTION

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	1. The problemwith the existing system is that it's a completely manualsystem that is used for managing inventory processing which leads to time wasting. 2. The collection's details are hard to record and access from a centralized database is not possible. 3. As workload has increased more employees are needed to complete work whichreduces overall profit.
2.	Idea / Solution description	1. Centralized Tracking: Consider upgrading to tracking software that provides automated features for re-ordering and procurement. 2. Stock Auditing: Frequent stock auditing processes, like dailycycle counting, reduce human error and providemore accurate, up-to-date inventory data for managing cash flow. 3. Demand Forecasting: Some inventory management platforms include demand forecasting tools.
3.	Novelty / Uniqueness	1. Forecasting the stock demandfor retailers. 2. Displaying the overall sellingandcost priceof product to the retailers.

4.	Social Impact / CustomerSatisfaction	1. Inventory Management helps you maintain customer satisfaction when it comes to product returns. 2. When product is returned becauseit is damaged on arrival, and it is still under warranty, you can arrangewith the manufacturer to do an instant swap of the product to keep the customer happy.
5.	Business Model (Revenue Model)	1. It will reduce the manpower for retail shopand increased the profitof retailers. 2. It can be help to identify stock location and also know the Centralized recordof all products.
6.	Scalability of the Solution	1. Inventory management is vital for retailers because the practice helps them increase profits 2. They are more likely to have enough inventory to capture every possible sale while avoiding overstock and minimizing expenses.

PROBLEM SOLUTION FIT

➤ Do not group inventory for analysis purposes.
➤ Invest in relations with suppliers, retailers and middlemen.
➤ Prevent surpluses and stock outs.
➤ Encourage employees to practice time management skills.
➤ Audit yourself.

Fuctional requirement

The functional requirements of the proposed solution are as follows,

FR. No.	Functional Requiremnt(Epic)	Sub Requirement (Story/Sub-Task)
FR-1	User Registration	Registration through registration form. Registration through One-Tap Google Sign-in.
FR-2	User Authentication andConfirmation	Authentication via GoogleAuthentication. Confirmation via Email.Confirmation via OTP.

FR-3	Product management	
		Quickly produce reports for single or multiple products. Track information of dead and fast-moving products. Track information of suppliers and manufacturers of the product.
FR-4	Audit Monitoring	The technique of tracking crucial data is known as audit tracking. Monitor the financial expenses carried out throughout the whole time (from receiving order of the product to delivery of the product).
FR-5	Historical Data	Data of everything should be stored for analytics and forecasting.

FR – 6	CRM (Customer Relationship Management)	Track the customer experience via ratings given by them. Get customer reviews regularly or atleast at the time of product delivery to work on customer satisfaction. User-friendly GUI to increase the customer base from only techies to normal people.

| FR - 7 | Security Policy | User data collected must be as secure aspossible. User data must not be misused. They canonly be used for userpreferred advertisingpurposes. |

NON-FUNCTIONAL REQUIREMENT

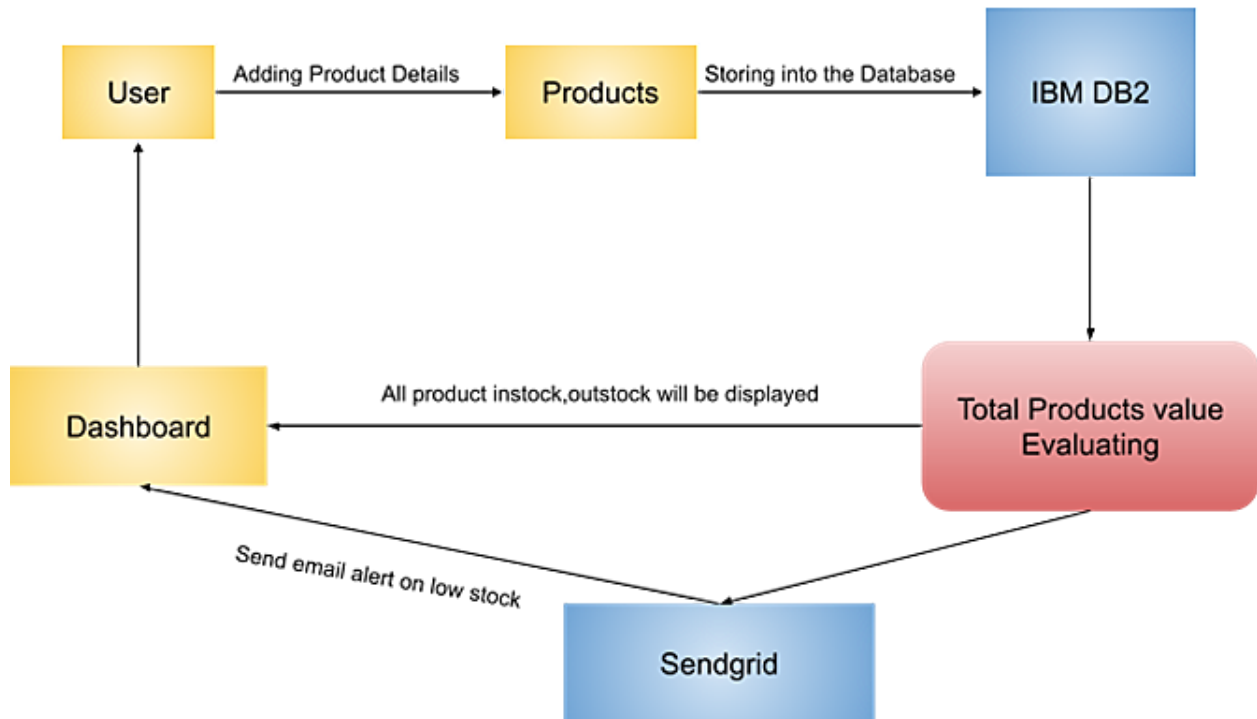The non-functional requirements of the proposed solutionare as follows,

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The UI should be accessible to everybodydespite of there diversity in languages. People with some impairments should also be able to usethe application withease. (Example,integrate google assistant so that blind people can use it). .
NFR-2	Security	The security requirements deal with the primary security. Only authorized userscan access the systemwiththeir credentials. Administrator or the concerned security team shouldbe alerted on any unauthorized access or data breaches so as to rectify it immediately.
NFR-3	Reliability	The software should be able to connect to the database in the eventof the server

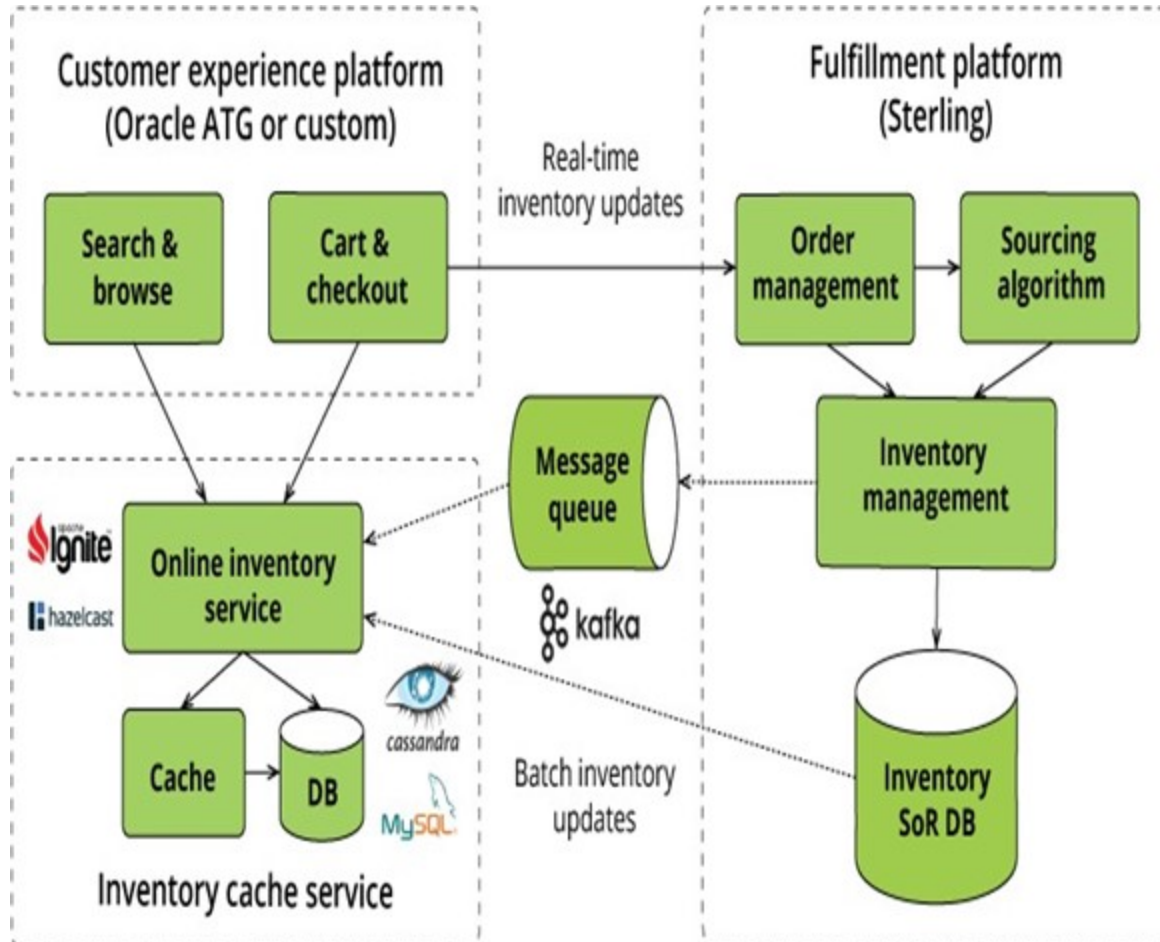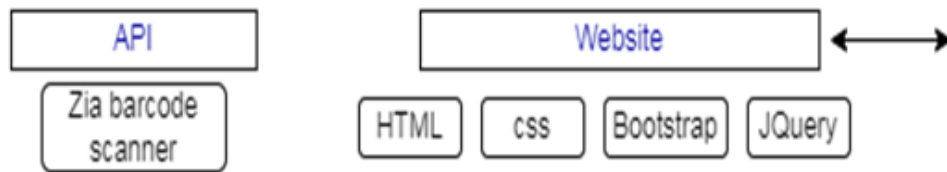|		being down due to a hardware or software failure.
		The users must me intimated by the periodic maintenance break of the server so that theywillbe aware of it.

PROJECT DESIGN

DATA FLOW DIAGRAM

SOLUTION & TECHNICAL ARCHITECTURE

Presentation Layer

API		Website			

Zia barcode scanner

HTML   css   Bootstrap   JQuery

Security Layer

Flask

Middle-Level Layer

Libraries

Matplotlib   flask

Data Layer

IBMdb2   IBMObjectStorage

Flask Application

USER STORIES

➤ "As an eCommerce business owner, I need a solution that automates all the repetitive tasks that come with inventory management, so I can free up my schedule and focus on more important tasks."

➤ "As a project manager at a large company, I want a platform that comes with task delegation functionality and a reporting feature, so I can track my remote team's progress more efficiently."

➤ "As a freelancer who works with clients outside my country, I need a payment solution with low transaction fees that allows me to invoice companies, so I can stop losing money on each project I complete.

PROJECT PLANNING & SCHEDULING

SPRINT PLANNING & ESTIMATION

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by using my email & password and confirming my login credentials.	3	High	SRIVARSHAN M, RAJA M, YOGESHWARAN M, HARI VIGNESH M

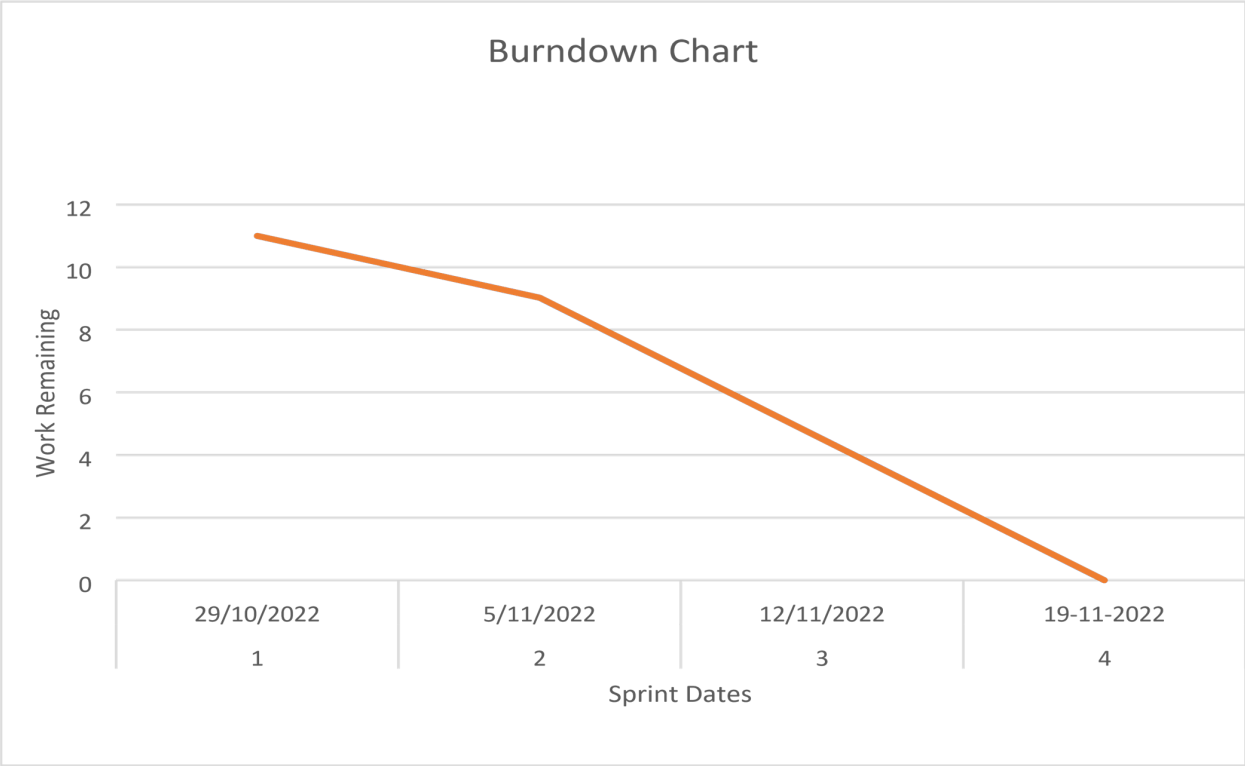| Sprint		USN	User Story / Task			
Sprint-1		USN-2	As a user, I can login through my E-mail.	3	Medium	SRIVARSHAN M, RAJA M, YOGESHWARAN M, HARI VIGNESH M
Sprint-1	Confirmation	USN-3	As a user, I can receive my confirmation email once I have registered for the application.	2	High	SRIVARSHAN M, RAJA M, YOGESHWARAN M, HARI VIGNESH M
Sprint-1	Login	USN-4	As a user, I can log in to the authorized account by entering the registered email and password.	3	Medium	SRIVARSHAN M, RAJA M, YOGESHWARAN M, HARI VIGNESH M
Sprint-2	Dashboard	USN-5	As a user, I can view the products that are available currently.	4	High	SRIVARSHAN M, RAJA M, YOGESHWARAN M, HARI VIGNESH M
Sprint-2	Stocks update	USN-6	As a user, I can add products which are not available in the inventory and restock the products.	3	Medium	SRIVARSHAN M, RAJA M, YOGESHWARAN M, HARI VIGNESH M
Sprint-3	Sales prediction	USN-7	As a user, I can get access to sales prediction tool which can help me to predict better restock management of product.	6	Medium	SRIVARSHAN M, RAJA M, YOGESHWARAN M, HARI VIGNESH M
Sprint-4	Request for customer care	USN-8	As a user, I am able to request customer care to get in touch with the administrators and enquire the doubts and problems.	4	Medium	SRIVARSHAN M, RAJA M, YOGESHWARAN M, HARI VIGNESH M
Sprint-4	Giving feedback	USN-9	As a user, I am able to send feedback forms reporting any ideas for improving or resolving any issues I am facing to get it resolved.	3	Medium	SRIVARSHAN M, RAJA M, YOGESHWARAN M, HARI VIGNESH M

SPRINT DELIVERY SCHEDULING

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	11	6 Days	24 Oct 2022	30 Oct 2022	11	30 Oct 2022
Sprint-2	7	6 Days	31 Oct 2022	06 Nov 2022	7	06 Nov 2022
Sprint-3	6	6 Days	07 Nov 2022	13 Nov 2022	6	13 Nov 2022
Sprint-4	7	5 Days	14 Nov 2022	19 Nov 2022	7	19 Nov 2022

Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

Our velocity should be:

$$AV = \frac{(11+7+6+7)}{24} = \frac{31}{24} = 1.29$$

Burndown Chart

REPORTS FROM JIRA

Sprints			OCT 24 25 26 27 28 29 30	NOV 31 1 2 3 4 5 6	NOV 7 8 9 10 11 12 13	NOV 14 15 16 17 18 19 20 21
MIL-5	User side process	DONE	███			
MIL-29	As a user, I can register for the a...	DONE				
MIL-30	As a user, I can receive my confi...	DONE				
MIL-31	As a user, I can log in to the auth...	DONE				
MIL-32	As a user, I can view my account...	DONE				
MIL-16	Retailer side process	DONE		███		
MIL-17	As a user, I can view the availabl...	DONE				
MIL-18	As a user, I can give the feedbac...	DONE				
MIL-19	As a user, I can register for the a...	DONE				
MIL-20	As a user, I can receive my confi...	DONE				
MIL-21	As a user, I can log in to the auth...	DONE				
MIL-22	Retailers dashboard				███	
MIL-23	As a user, I can view the product...	TO DO				
MIL-24	Admin login ,alert and update processes.					███
MIL-25	As a user, I can restore the prod...	TO DO				
MIL-26	Alerting the retailer when the sto...	TO DO				
MIL-27	As an admin, I can modify and v...	TO DO				
MIL-28	As a user, I can change the UI &...	TO DO				
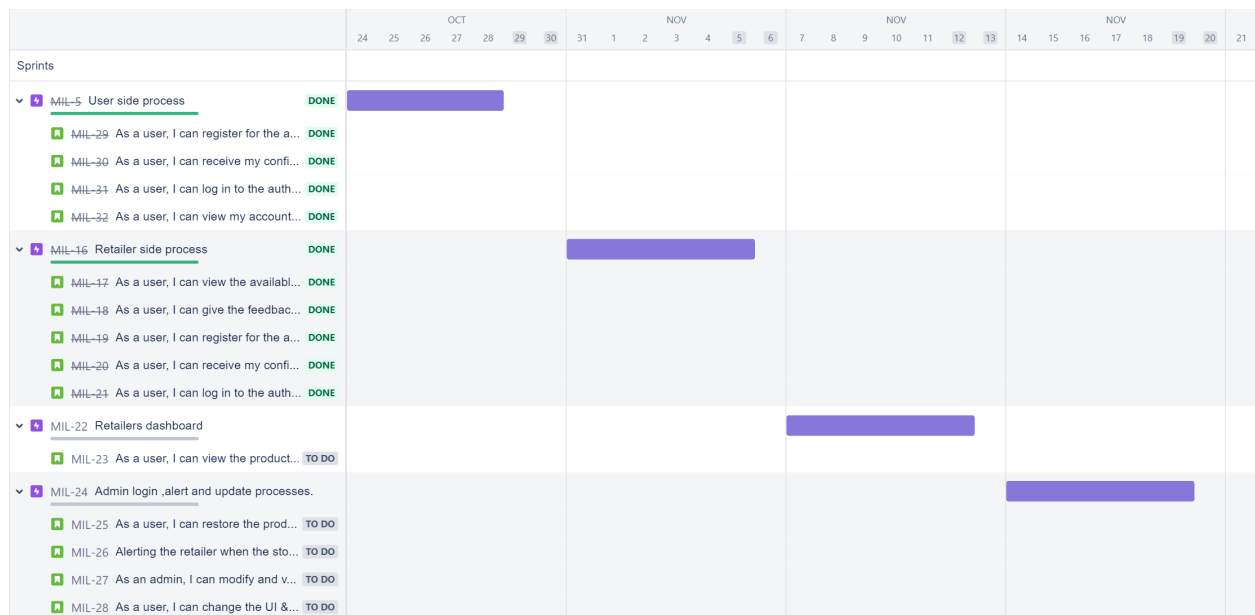
CODING & SOLUTION

FEATURE 1

import os

import base64

import io

import math

from flask import Flask, render_template, Response, redirect, request, session, abort, url_for

import mysql.connector

import hashlib

```python
import datetime

import calendar

import random

from random import randint

from urllib.request import urlopen

import webbrowser

import matplotlib.pyplot as plt

import pandas as pd

import numpy as np


from werkzeug.utils import secure_filename

from PIL import Image


import urllib.request

import urllib.parse



mydb = mysql.connector.connect(

 host="localhost",

 user="root",

 password="",

 charset="utf8",

 database="retailer_inventory"


)
app = Flask(__name__)
##session key
app.secret_key = 'abcdef'
#######
```

```python
UPLOAD_FOLDER = 'static/upload'

ALLOWED_EXTENSIONS = { 'csv'}

app.config['UPLOAD_FOLDER'] = UPLOAD_FOLDER

#####

@app.route('/', methods=['GET', 'POST'])

def index():

    msg=""



    return render_template('index.html')


@app.route('/login', methods=['GET', 'POST'])

def login():

    msg=""



    if request.method=='POST':

        uname=request.form['uname']

        pwd=request.form['pass']

        cursor = mydb.cursor()

        cursor.execute('SELECT * FROM rt_retailer WHERE uname = %s AND pass = %s AND status=1',
(uname, pwd))

        account = cursor.fetchone()

        if account:

            session['username'] = uname

            return redirect(url_for('rt_home'))

        else:

            msg = 'Incorrect username/password! or access not provided'

    return render_template('login.html',msg=msg)
```

```python
@app.route('/login_cus', methods=['GET', 'POST'])
def login_cus():
    msg=""


    if request.method=='POST':
        uname=request.form['uname']
        pwd=request.form['pass']
        cursor = mydb.cursor()
        cursor.execute('SELECT * FROM rt_customer WHERE uname = %s AND pass = %s', (uname, pwd))
        account = cursor.fetchone()
        if account:
            session['username'] = uname
            return redirect(url_for('userhome'))
        else:
            msg = 'Incorrect username/password! or access not provided'
    return render_template('login_cus.html',msg=msg)


@app.route('/login_admin', methods=['GET', 'POST'])
def login_admin():
    msg=""


    if request.method=='POST':
        uname=request.form['uname']
        pwd=request.form['pass']
        cursor = mydb.cursor()
        cursor.execute('SELECT * FROM admin WHERE username = %s AND password = %s', (uname, pwd))
```

```python
        account = cursor.fetchone()

        if account:

            session['username'] = uname

            return redirect(url_for('admin'))

        else:

            msg = 'Incorrect username/password! or access not provided'

    return render_template('login_admin.html',msg=msg)


@app.route('/register', methods=['GET', 'POST'])

def register():

    msg=""

    act=request.args.get("act")

    if request.method=='POST':

        name=request.form['name']

        address=request.form['address']

        city=request.form['city']

        mobile=request.form['mobile']

        email=request.form['email']

        uname=request.form['uname']

        pass1=request.form['pass']




        mycursor = mydb.cursor()


        now = datetime.datetime.now()

        rdate=now.strftime("%d-%m-%Y")


        mycursor.execute("SELECT count(*) from rt_customer where uname=%s",(uname,))
```

```python
        cnt = mycursor.fetchone()[0]


    if cnt==0:

        mycursor.execute("SELECT max(id)+1 FROM rt_customer")

        maxid = mycursor.fetchone()[0]

        if maxid is None:

            maxid=1


        sql = "INSERT INTO rt_customer(id,name,address,city,mobile,email,uname,pass,create_date)
VALUES (%s, %s, %s, %s, %s, %s, %s, %s, %s)"

        val = (maxid,name,address,city,mobile,email,uname,pass1,rdate)

        mycursor.execute(sql, val)

        mydb.commit()

        #print(mycursor.rowcount, "Registered Success")

        msg="sucess"

        #if mycursor.rowcount==1:

        return redirect(url_for('register',act='1'))

    else:

        msg='Already Exist'

    return render_template('register.html',msg=msg,act=act)
```

CUSTOMER LOGIN
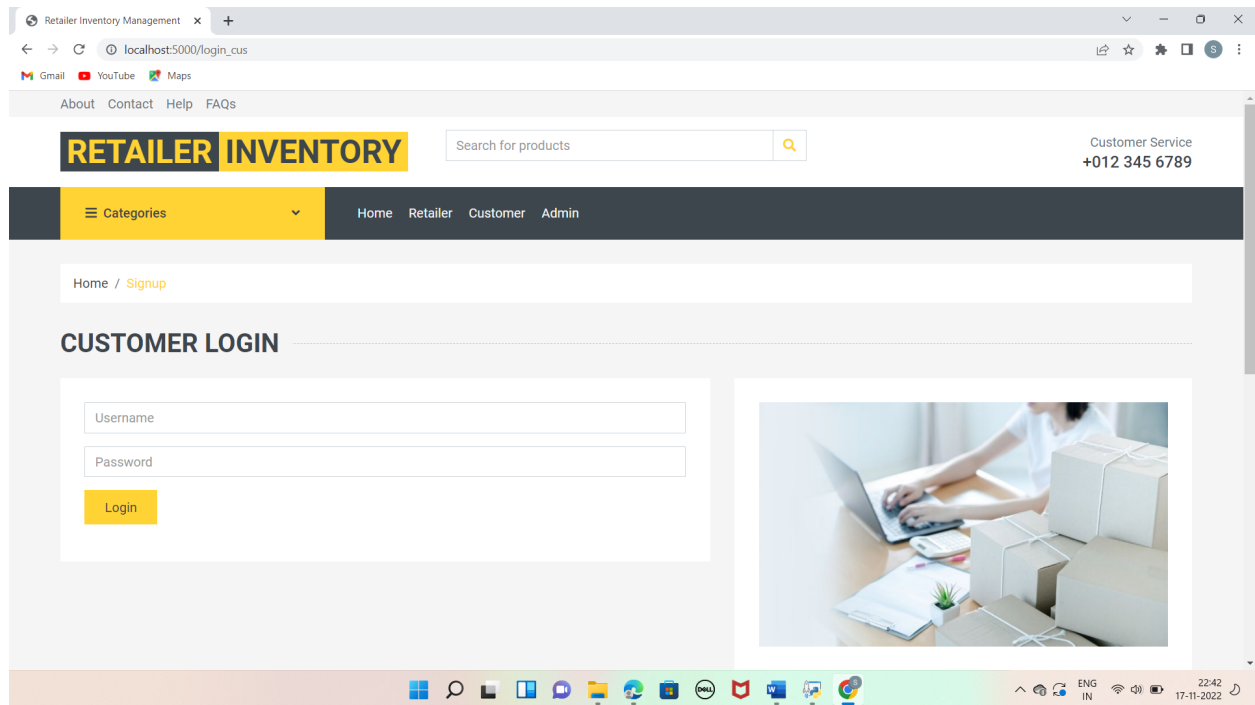
FEATURE 2

```python
@app.route('/view', methods=['GET', 'POST'])
def view():
    uname=""
    amount=0
    if 'username' in session:
        uname = session['username']

    bid = request.args.get('bid')
    cursor = mydb.cursor()
    cursor.execute('SELECT c.id,p.product,p.price,p.detail,p.photo,c.rdate FROM rt_cart c,rt_product p where c.pid=p.id and c.bill_id=%s', (bid, ))
    data = cursor.fetchall()

    return render_template('view.html', data=data)
```

```python
@app.route('/admin', methods=['GET', 'POST'])
def admin():
    msg=""
    act=request.args.get("act")
    mycursor = mydb.cursor()
    mycursor.execute("SELECT * FROM rt_retailer")
    data = mycursor.fetchall()


    if act=="yes":
        did=request.args.get("did")
        mycursor.execute("update rt_retailer set status=1 where id=%s",(did,))
        mydb.commit()
        return redirect(url_for("admin"))
    return render_template('admin.html',data=data)


#########################
@app.route('/logout')
def logout():
    # remove the username from the session if it is there
    session.pop('username', None)
    return redirect(url_for('index')
if __name__ == '__main__':
    app.run(host='0.0.0.0', debug=True)
```

RETAILER REGISTERATION

ADMIN LOGIN

TESTING

1. Purposeof Document

The purpose of this document is to briefly explain the test coverage and open issues of the[Inventory Management Sstem for Retailers] project at the time of the release to User Acceptance Testing(UAT).

1. Defect Analysis

Thisreport shows the number of resolved or closed bugs at each severity level, and howthey were resolved.

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	10	4	5	5	24
Duplicate	2	0	2	0	4
External	5	3	2	1	11

Fixed	15	5	5	10	35
Not Reproduced	0	0	0	0	0
Skipped	0	0	1	1	2
Won't Fix	0	5	2	1	8
Totals	32	17	17	18	84

2. Test Case Analysis

This report showsthe number of test cases that have passed,failed, and untested.

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	10	0	0	10
Client Application	40	0	0	40
Security	5	0	0	2

Outsource Shipping	*3*	*0*	*0*	*3*
Exception Reporting	*10*	*0*	*0*	*10*
Final Report Output	*4*	*0*	*0*	*4*
Version Control	*4*	*0*	*0*	*4*

RESULT

PERFORMANCE METRICS

Inventory Performance

Inventory Performance is a measure of how effectively and efficiently inventory is used and replenished. The goal of inventory performance metrics is to compare actual on-hand dollars versus forecasted cost of goods sold. Many Lean practitioners claim that inventory performance is the single best indicator of the overall operational performance of a facility.

Inventory performance looks at and is measured using either Inventory Days On-Hand (DOH) or Inventory Turns.

- **Inventory Days On-Hand:** The number of days it would take to consume current on-hand inventory. Always measure multiple inventory item numbers in terms of currency (i.e. COGS).
- **Inventory Turns:** The number of times inventory is replaced in a year. For example, Operations may wish to report DOH by site, value stream, or cell, while Finance may wish to report inventory turns. Fortunately, Turns and DOH can be converted from one to the other simply:
- **Turns** = Monthly Days / DOH
- **DOH** = Monthly Days / Turns

It's important to be certain when converting from one metric to the other that daily COGS is based on the same type of monthly day (i.e. calendar days or workdays). That is, if daily COGS is calculated with a denominator of 20 work days in a month, then DOH must be also only account for workdays. Best practice is to always use workdays instead of calendar days.

While some plants do work 365 days a year, most plants work 250 to 260 days annually (after subtracting weekends and holidays).

Don't forget, just as when calculating turns, whenever you are analyzing more than one part number, be sure to measure DOH in currency.
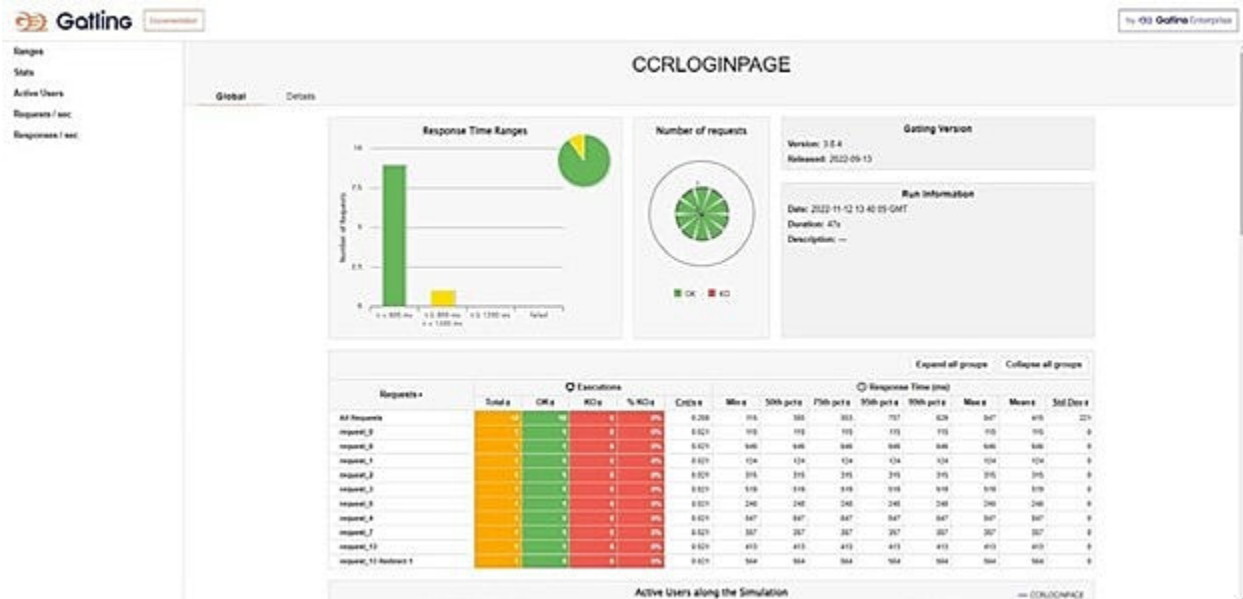
ADVANTAGES

1. Improves Accuracy

Real-time inventory tracking helps you improve inventory management and ensures that you have optimal stock available to fulfill orders. However, for most retail businesses, the inventory accuracy is merely 63%. With accurate inventory tracking, you can eliminate over-stocking, and in turn, reduce the cost and manual efforts required in holding it.

There are many ways to improve inventory efficiency. Some of the most proven methods include:

- Using modern inventory management tools that can help you improve inventory management, and streamline supply chain management by closing down warehouse locations (if your business can operate without them) and cutting on the costs associated.

- Implementing just-in-time or lean inventory strategy to reduce inventory holding costs while ensuring timely order fulfillment.

Put simply, the benefits of the inventory management techniques and investing in robust inventory management software is that it gives you agility, optimizes costs.

2. Reduces costs

Improving inventory management efficiency avoids chances of errors, and fewer errors eventually require fewer resources spent on fixing errors.

Moreover, organized inventory management avoids overstocking and reduces the money spent on holding costs. The inventory management system notifies warehouse managers to timely replenish stock and avoid stock-outs.

In short, smart inventory management eliminates the need for large working capital, improves cash flow, and provides you with the required finances to fund payroll, product development, or any other business activity.

3. Saves Time

You can automate your inventory management process to save time in inventory forecasting and optimize the pick-pack process by leveraging robotics and AI. As you automate these tasks, you provide employees with

ample time to work on more important tasks and devise strategies for business growth.

4. Improves Business Planning

Using an in-house inventory management strategy can help you get the business insights required to scale your business or improve operations further.

Implementing features like barcode scanning and using a central data warehouse enables you to easily transfer data and monitor the happenings of your business.

This will help you answer questions like:

- What is the flow of your inventory and what all customers are you serving?

- How can you make your business processes better with agile inventory?

- What do customers want and expect from your business and how to implement that in your marketing & operations?

With easy access to business insights, you can devise better marketing and outreach strategies for increasing conversions and driving business profitability.

"Look from any perspective, the benefits of inventory tracking and management are endless. They have a lot to offer a business keeping a steady growth. Finding a solution that fits your business requirements is the key.

When you do, there is no limit to what you can achieve with your resources."

5. Improves Customer Service

To sustain in today's competitive eCommerce space it is vital to provide your customers with a good shopping experience. Happy customers not only increase the chances of repeat purchases but can help you drive more conversions with good reviews and word-of-mouth publicity.

With effective inventory management, you can quickly fulfill accurate and complete customer orders.

Now to make the most out of the above-mentioned advantages of inventory management, modern businesses need to invest in an Inventory Management System (IMS).

DIS ADVANTAGES

1. **Increased space is need to hold the inventory:** in order to hold inventory, you will need to have space so unless the goods you deal in are really small in size, then you will need a warehouse to store it. In addition, you will also need to buy shelves and racks to store your goods, forklifts to move around the stock and of course staff. The optimum level of inventory for a business could still be a lot of goods and they will need space to be stored in and in some cases additional operational costs to manage the inventory. This will in turn increase cost and impact negatively on the amount of profit the business makes.
2. **Complexity:** some methods and strategies of inventory management can be relatively complex and difficult to understand on the part of the staff. This may result in the need for employees to undergo training in order to grasp how the system works.

3. Some inventory management systems such as the fixed order period system compels a periodic review of all items. This itself makes the system a bit inefficient.

CONCLUSION

Inventory management is a very complex but essential part of the supply chain. An effective inventory management system helps to reduce stock-related costs such as warehousing, carrying, and ordering costs. As you have read above, there are different techniques that businesses can utilize to simplify and optimize stock management processes and control systems.

Future Scope

Completion of the development process will result in a software package that will provide user-friendly environment, which is very easy to work with, even for people with very little knowledge of computer. Management of various tasks is incorporatedin the package and will deliver the required information in a very easy to use and easyto access manner.

This package will provide accuracy, efficiency, speed and easiness to the end user. Since the system is verified with valid as well as invalid data and is run with aninsight into the necessary modifications that may require in the future, it can be maintained sucessfully without much.

APPENDIX

GIT HUB LINK:
https://github.com/IBM-

EPBL/IBM-Project-34925-1660279792