RMK ENGINEERING COLLEGE

(An Autonomous Institution)

R.S.M. Nagar, Kavaraipettai-601 206, Gummidipoondi Taluk,
Thiruvallur District.

PROJECT

Retail Store Stock Inventory Analytics

DONE BY

TEAM ID: PNT2022TMID15864

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RETAIL STORE STOCK INVENTORY ANALYTICS

Submitted by:

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ABSTRACT:

In recent years, the correct management of inventories has become a fundamental pillar for achieving success in enterprises. Unfortunately, studies suggesting the investment and adoption of advanced inventory management and control systems are not easy to find. In this context, this article aims to analyse and present an extensive literature concerning inventory management, containing multiple definitions and fundamental concepts for the retail sector. A systematic literature review was carried out to determine the main trends and indicators of inventory management in Small and Medium-sized Enterprises (SMEs). This research covers five years, between 2015 and 2019, focusing specifically on the retail sector. The primary outcomes of this study are the leading inventory management systems and models, the Key Performance Indicators (KPIs) for their correct management, and the benefits and challenges for choosing or adopting an efficient inventory control and management system. Findings indicate that SMEs do not invest resources in sophisticated systems; instead, a simple Enterprise Resource Planning (ERP) system or even programs such as Excel or manual inventories are mainly used.

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1.Introduction:

Nowadays, organizations, and especially those performing activities in the retail sector, face multiple challenges in the planning and management of their resources. For this sector, having efficient management of human, technological, or material resources refers to the performance that companies characterized by the experience gained in their management could obtain over time. Therefore, the correct inventory management has become essential, especially in organizations dedicated to retail. The determination of the optimal inventory level is a fundamental part of the life of organizations due to the high investment that it represents at the time of its acquisition, administration, and maintenance. Accordingly, "the role of inventory management is to ensure that stocks of raw material or other supplies, i.e., work-in-progress and finished goods, are kept at levels that provide maximum service levels at minimum costs". This because the realizable asset occupies a significant percentage within the total Assets. Hence, its correct ordering and administration imply being able to minimize the risk of contracting results that may put the health of the company at risk. Various technologies have been developed over time for inventory management, going from basic manual reporting to and integrated information system (IS), which can help to "decide how and where orders should be fulfilled to improve service levels while decreasing total costs". Moreover, these new functionalities can collaborate in the most effective handling of materials and better manage the cycle of purchase - reception - allocation in production. This project aims to present an extensive literature review concerning inventory control and management in the retail sector. First, the paper includes a systematic literature review regarding the Key Performance Indicators (KPIs) of inventory control and management in retail companies. Second, the main systems, methodologies, and tools used for inventory management are described. Finally, the current trends in inventory handling and management in retail companies are outlined. For this, the application of the Fink and the Population, Interventions, Controls, and Outcome(PICO) methodologies were developed, which suggests different steps and stages, to solve the problems and research questions raised. To answer these questions, a great variety of digital databases were used. Thus, conference and journal articles concerning inventory control and management in retail companies were retrieved. The articles selected were analysed through the software. Finally, a qualitative and quantitative analysis was performed to answer the research questions raised. It presents the methodology through which the work was guided. The next section encompasses results together with analysis and discussion. Ultimately, it shows the conclusion section gathering the main findings as well as proposals for future work.

1.1 Project overview:

To accomplish the goals described above, the study follows the Fink methodology. It consists of seven main tasks: (1)choosing research questions, (2) defining bibliographic or article databases, (3) selecting search terms, (4) applying practical screening criteria, (5) applying methodological screening criteria, (6) doing the review, and (7) synthesizing the results. Therefore, the systematic Literature review starts establishing the particular needs for

knowledge or research questions. For this purpose, the PICO methodology was used. In this case, Population refers to retail companies; Intervention relates to inventory control and management; Comparison refers to identifying systems, methodologies, and tools, and Outcomes refers to answer the research questions. Therefore, the research addressed in this study are the following: What are the main KPIs of inventory control and management in retail companies. What are the systems, methodologies, and tools aimed at inventory control and management in retail companies? and What are the current trends in inventory control and management in retail companies? As a second step, a relevant set of digital databases were selected. It was decided to use both specific and general digital databases, namely: Emerald, Science Direct, Scopus, and Taylor & Francis.

Preparing the Dataset:

The demo dataset is now added to the IBM Cognos on the basis of this data set the model is trained. The raw dataset is first cleaned using Google Collab. We firstly, remove all the null values and undefines columns. Every new detail filled at the time of application form acts as a test data set. After the operation of testing, based upon the inference it concludes on the basis of the training data sets. Satellite Imagery (Remote Sensing Data), has been widely used for obtaining the stock analysis Our study requires detailed store-level and customer survey data which is not publicly available. To obtain these data we worked closely with a large national retail chain under conditions of anonymity and nondisclosure. Therefore, we are unable to reveal either the name of the retailer, or provide details on its product lines and retail segment. The data comes from more than 500 stores over a period spanning 29 months. The retailer operated its stores centrally so that the headquarters planned the assortment, prices, payroll and employee training. The store manager had the authority to hire and terminate employees using a planned payroll budget for the month as a guideline. The store manager's compensation was not contingent on monthly sales at the store. The retailer did not tailor product assortments to customer demographics or store size. We obtained two types of data: financial and operational data collected by the retailer and the results of a customer survey administered by an independent company on the retailer's behalf.

Data Transformation

We conducted exploratory analyses and questioned company employees regarding exact data collection procedures and the nature of their business. Further, we conducted preliminary data analysis by calculating descriptive statistics and pair-wise correlations. Based on this exploratory analysis, we eliminated several variables from our analysis. First, we determined that TRANSACTIONS and UNITS. SOLD are highly correlated with STOCK (with pair-wise correlations more than .99). Hence, for the remainder of the paper, we focus only on STOCK as our measure of financial performance. We repeated our analysis using the two other variables as measures of financial performance, and results were qualitatively the same. Furthermore, we determined that product returns did not vary significantly by store: in fact, we found that the RETURN variable is highly correlated (correlation >.99) with STOCK, indicating that this number might be reflective of the nature of the product line itself rather than processes within the store. We therefore omit this variable from the analysis. Among customer

survey variables, we found that KNOWPRODUCTS, KNOWBRANDS and KNOWPRICES were all highly correlated (pair-wise correlations >.95), so we combine them into a single TOTKNOWLEDGE variable using equal weights (Kennedy 2003). Finally, we established that OVERALL.

Scope:

The scope of this project is to investigate a dataset of stock records for retail stores sector using data manipulation techniques. To identify stock analysis by retailer is more difficult. We try to reduce this risk factor using this project.

Objectives:

- Data validation
- Data Cleaning/ Preparing
- Data Visualization
- To analyze and compare to predict more accurate stock in the inventory (Like random forest, Decision tree Logistic classification)

2. LITERATURE SURVEY

1. **Conference: 2021 Second International Conference on Information Systems and Software Technologies (ICI2ST)**
   March 2021
   DOI:10.1109/ICI2ST51859.2021.00018
   Authors:
   Cinthya Vanessa Munoz Macas
   Jorge Andres Espinoza Aguirr

   REFERENCES
   Abramovitz & Modigliani, Franco (1957), "Business Reasons for Holding Inventories and Their Macro Economic Implications", Problems of Capital Formation, Studies in Income and Wealth, Vol. 19, NBER, pp. 495-511.

   Description:

   In recent years, the correct management of inventories has become a fundamental pillar for achieving success in enterprises. Unfortunately, studies

suggesting the investment and adoption of advanced inventory management and control systems are not easy to find. In this context, this article aims to analyze and present an extensive literature concerning inventory management, containing multiple definitions and fundamental concepts for the retail sector. A systematic literature review was carried out to determine the main trends and indicators of inventory management in Small and Medium-sized Enterprises (SMEs). This research covers five years, between 2015 and 2019, focusing specifically on the retail sector. The primary outcomes of this study are the leading inventory management systems and models, the Key Performance Indicators (KPIs) for their correct management, and the benefits and challenges for choosing or adopting an efficient inventory control and management system. Findings indicate that SMEs do not invest resources in sophisticated systems; instead, a simple Enterprise Resource Planning (ERP) system or even programs such as Excel or manual inventories are mainly used.

Various technologies have been developed over time for inventory management, going from basic manual reporting to an integrated information system (IS), which can help to "decide how and where orders should be fulfilled to improve service levels while decreasing total costs".

2. A STUDY ON INVENTORY MANAGEMENT AND CONTROL

Research Scholar, Dept. of Saveetha School of Management, India.
Assistant professor, Dep of management, Saveetha School of management
Vol-3 Issue-5 2017
IJARIIE-ISSN(O)-2395-4396
Authors : Pratap Chandrakumar. R1
Gomathi Shankar

Description:

This research propose to get exposure in inventory and it is very important to the company. It is to ensure quality in business that control the transaction between the consumer goods. It is important to do proper inventory management and control in the production company. This project is to analyze the inventory control in the leading brake manufacturing company (WABCO INDIA). This study shows the analysis of ABC items in the inventory, SAP, stock policy followed. Materials are pivotal importance not less than any other M's. Problems have their root in material affects the efficiency of all men, machine, money & marketing decisions of the firms and thus become the grave concern of management at all levels. If there were too much of material problems like ideal funds lied up in excessive inventory storage and obsolesces difficulties market pressure would arise. Thus the importance of inventory management is realized. This study contains proper observation of inventory management in the company. A better inventory management can solve all the problems occur in inventory and helping the company to face the problems by following proper techniques and controlling. This will reduce the huge money investment problems and it will lead the way for avoiding such circumstances. Inventory is timely

changing physical asset which is sold or being a dead stock have by the company. It creates way for the production process if shortage occurs in the production and also it gets more even after the production. An efficient inventory management can control and make the company to grow more and if in inefficient way it will ruin the company business

2.1 Existing System:

It present a crop/weeds classification approach based on a three-steps procedure. The first step is a robust pixel-wise segmentation (i.e., soil/plant) and image patches containing plants are extracted in the second step. The third step, a deep CNN for crop/weed classification is used. The extracted blobs in the masked image containing plants information are fed to a CNN classifier based on a fine-tuned model of VGG-16 exploiting the ability of deep CNN in object classification and to reduce the limitations of CNNs in generalizing when a limited amount of data is available. The classification step can then be specialized to the types of plants needed by the application scenario. It evaluated the complete pipeline, including the first background removal phase and the subsequent classification stage. Experimental results demonstrate that can achieve good classification results on challenging data.

Precision agriculture is gaining increasing attention because of the possible reduction of agricultural inputs (e.g., fertilizers and pesticides) that can be obtained by using high-tech equipment, including robots. To focus on an agricultural robotics system that addresses the weeding problem by means of selective spraying or mechanical removal of the detected weeds. To describe a deep learning based method to allow a robot to perform an accurate weed/crop classification using a sequence of two Convolutional Neural Networks (CNNs) applied to RGB images. The first network, based on encoder-decoder segmentation architecture, performs a pixel wise, plant-type agnostic, segmentation between vegetation and soil that enables to extract a set of connected blobs representing plant instances.

Drawbacks:

- It can't determine to improve the classification accuracy of our pipeline.
- Connecting the bridge manually and some corruption are happened.
- Private sectors domination high, profit low and credits not getting concern farmer.

2.2 REFERENCES

P.Priya, U.Muthaiah M.Balamurugan . Predicting yield of the crop using machine learning algorithm. International Journal of Engineering Science Research Technology.
J.Jeong, J.Resop , N.Mueller and team . Random forests for global and regional crop

yield prediction.PLoS ONE Journal.
Narayanan Balkrishnan and Dr. Govindarajan Muthukumarasamy . Crop production Ensemble Machine Learning model for prediction. International Journal of Computer Science and Software Engineering (IJCSSE).
S.Veenadhari , Dr. Bharat Misra , Dr. CD Singh. Machine learning approach for forecasting crop yield based on climatic parameters. International Conference on Computer Communication and Informatics (ICCCI).
Shweta K Shahane , Prajakta V Tawale . Prediction On Crop Cultivation. International

2.3Problem Statement Definition

Machine Learning based on prior crop prediction, soil quality analysis to achieve high crop yield through out technology solution. The main objectives of this project is to predict crop-yield which can be extremely useful to farmers in planning for harvest and sale of grain harvest.

3.IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas
3.2 Ideation & Brainstorming
3.3 Proposed Solution
3.4 Problem Solution fit

Empathy Map Canvas

Gain insight and understanding on solving customer problems.

Build empathy and keep your focus on the user by putting yourself in their shoes.

Share your feedback


Template
Brainstorm
& idea prioritization
Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.
10 minutes to prepare
1 hour to collaborate
2-8 people recommended
Before you collaborate
Define your problem statement
Need some inspiration?

Group ideas

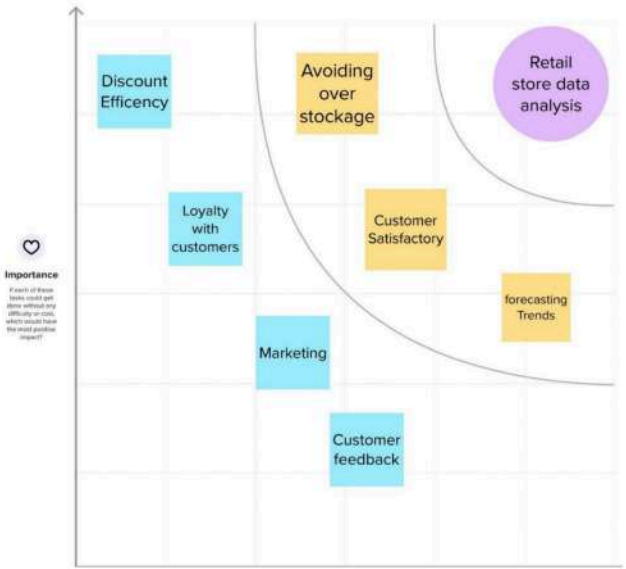
Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



Proposed System:

Problem Statement : The problem faced by the retail store is they do not have any systematic system to record and keep their inventory data. It is difficult for the admin to record the inventory data quickly and safely because they only keep it in the logbook and not properly organized.

Solution description : The goal is to utilize the given data set about the Retail Store Stock Inventory and store the data in the cloud ,So the retail store can use this information to easily predict the inventory easily and quickly.

Novelty / Uniqueness : Complete a thorough analysis of our store; it leads to avoiding overstock and also analysis of the competitive relevant market. Gathering customer feedback and measuring our business results.

Social Impact / Customer Satisfaction: When customers get the products they want faster with fewer mistakes or out-of-stocks, it increases customer loyalty.

Business Model : Ad based Revenue modelAwareness can be created for Optimize the use of inventory, reduce handling cost, optimize cash flow.

Scalability of the Solution : Retail store stock inventory can be predicted easily with the data's stored in the retail stores. It gives the best user experience and maintains the details.

4. REQUIREMENT ANALYSIS

General:

Requirements are the basic constrains that are required to develop a system. Requirements are collected while designing the system. The following are the requirements that are to be discussed.

1. Functional requirements
2. Non-Functional requirements
3. Environment requirements
    A. Hardware requirements
    B. software requirements

4.1 Functional requirements:

The software requirements specification is a technical specification of requirements for the software product. It is the first step in the requirements analysis process. It lists requirements of a particular software system. This project uses IBM Cognos Analalytics.

4.2 Non-Functional Requirements:

Process of functional steps,

1. Problem define
2. Preparing data
3. Evaluating algorithms
4. Improving results

Environmental Requirements:

1. Software Requirements:

Operating System : Windows

Tool : Anaconda with Jupyter Notebook

2. Hardware requirements:

Processor : Pentium IV/III

Hard disk : minimum 80 GB

RAM : minimum 2 GB

Software Description:

Anaconda is free and open-source distribution of the Python and R programming languages for scientific computing (data science, machine learning applications, large-scale data processing, predictive analytics, etc.), that aims to simplify package management and deployment. Package versions are managed by the package management system "Conda". The Anaconda distribution is used by over 12 million users and includes more than 1400 popular data-science packages suitable for Windows, Linux, and MacOS. So, Anaconda distribution comes with more than 1,400 packages as well as the Conda package and virtual environment manager called Anaconda Navigator and it eliminates the need to learn to install each library independently. The open source packages can be individually installed from the Anaconda repository with the conda install command or using the pip install command that is installed with Anaconda. Pip packages provide many of the features of conda packages and in most cases they can work together. Custom packages can be made using the conda build command, and can be shared with others by uploading them to Anaconda Cloud, PyPI or other repositories. The default installation of Anaconda2 includes Python 2.7 and Anaconda3 includes Python 3.7. However, you can create new environments that include any version of Python packaged with conda.

Anaconda Navigator:

Anaconda Navigator is a desktop graphical user interface (GUI) included in Anaconda distribution that allows users to launch applications and manage conda packages, environments and channels without using command-line commands. Navigator can search for packages on Anaconda Cloud or in a local Anaconda Repository, install them in an environment, run the packages and update them. It is available for Windows, macOS and Linux.

The following applications are available by default in Navigator:

- JupyterLab
- Jupyter Notebook
- IBM Cognos Analytics
- Google Collab
- Visual Studio Code

The Jupyter Notebook:

The Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text. Uses include: data cleaning and transformation, numerical simulation, statistical modeling, data visualization, machine learning, and much more.

Notebook document:

Notebook documents (or "notebooks", all lower case) are documents produced by the Jupyter Notebook App, which contain both computer code (e.g. python) and rich text elements (paragraph, equations, figures, links, etc…). Notebook documents are both human-readable documents containing the analysis description and the results (figures, tables, etc.) as well as executable documents which can be run to perform data analysis.

Jupyter Notebook App:

The Jupyter Notebook App is a server-client application that allows editing and running notebook documents via a web browser. The Jupyter Notebook App can be executed on a local desktop requiring no internet access (as described in this document) or can be installed on a remote server and accessed through the internet. In addition to displaying/editing/running notebook documents, the Jupyter Notebook App has a "Dashboard" (Notebook Dashboard), a "control panel" showing local files and allowing to open notebook documents or shutting down their kernels.

5.PROJECT DESIGN

5.1 Data flow Diagram

Overview of the system:

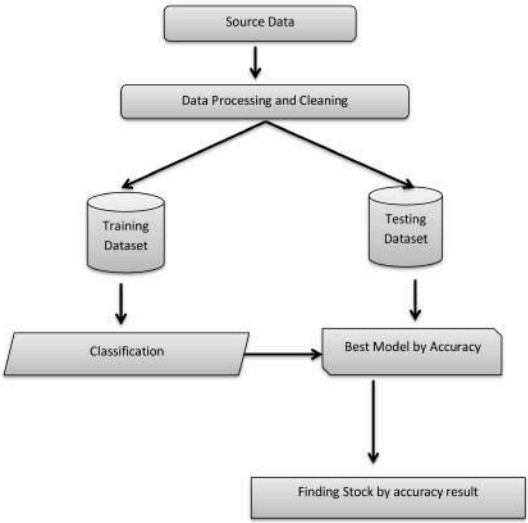
This helps all others department to carried out other formalities. It have to find Accuracy of the training dataset, Accuracy of the testing dataset, Specification, False Positive rate, precision and recall by comparing algorithm using python code. The following Involvement steps are,

- Define a problem
- Preparing data
- Evaluating algorithms
- Improving results
- Predicting results

Data collection:

The data set collected for predicting past farmer list of yield is split into Training set and Test set. Generally, 7:3 ratios are applied to split the Training set and Test set. The Data Model which was created using Random Forest , logistic , Decision tree algorithms are applied on the Training set and based on the test result accuracy, Test set prediction is done.

Work flow diagram

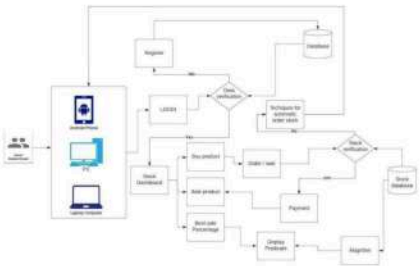


5.2 Solution & Technical Architecture

Create cells freely to explore your data and you should not perform too many operations in each cell. One option that you can take with this project is to do a lot of explorations in an initial notebook. These don't have to be organized, but make sure you use enough comments to understand the purpose of each code cell. Then, after you're done with your analysis, create a duplicate notebook where you will trim the excess and organize your steps so that you have a flowing, cohesive report and make sure that you keep your reader informed on the steps that you are taking in your investigation. Follow every code cell, or every set of related code cells, with a markdown cell to describe to the reader what was found in the preceding cell. Try to make it so that the reader can then understand what they will be seeing in the following cell.

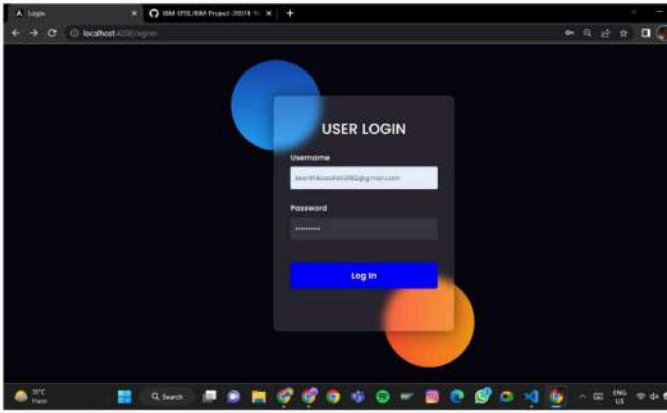
Business diagram/Solution architecture: -

Solution Architecture:

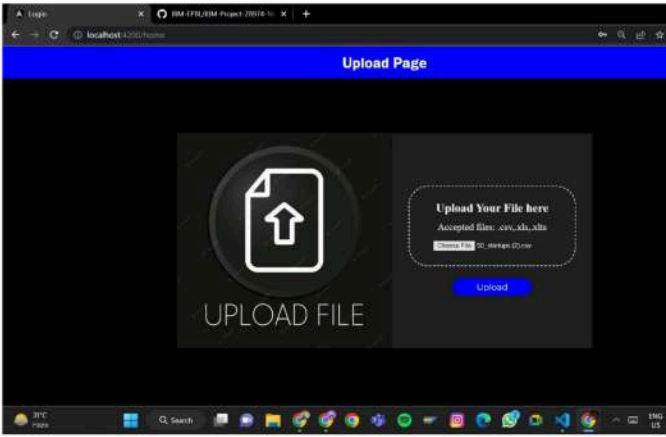


5.3 User Stories

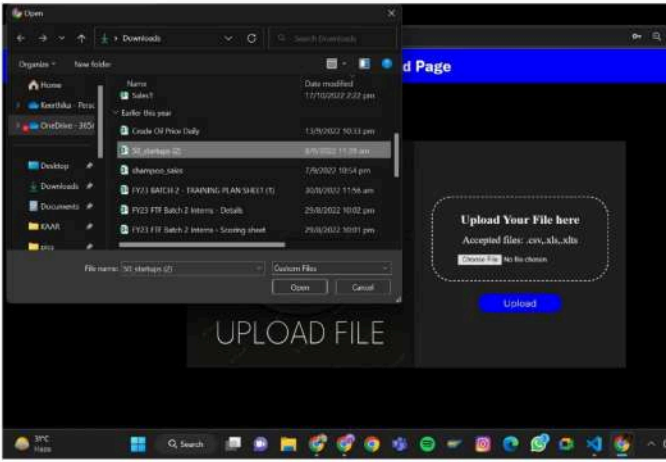
USN-1: Login Page



UPLOAD PAGE :



Upload Data Set:


Open
Downloads
Organize
New folder
Home
Keerthika - Perso
OneDrive - JKSC
Desktop
Downloads
Documents
KAAR
Name
Date modified
Sales1
11/10/2022 2:22 pm
Earlier this year
Crude Oil Price Daily
13/9/2022 10:33 pm
SIT_startups (2)
8/9/2022 11:28 am
champcc sales
7/9/2022 10:54 pm
FY23 BATCH-2 - TRAINING PLAN SHEET (1)
30/8/2022 11:56 am
FY23 FTF Batch 2 Interns - Details
29/8/2022 10:02 pm
FY23 FTF Batch 2 Interns - Scoring sheet
29/8/2022 10:01 pm
File name: SIT_startups (2)
Custom Files
Open
Cancel
UPLOAD FILE
d Page
Upload Your File here
Accepted files: .csv, .xls, .xlsx
Choose File
No file chosen
Upload
Search

RESULT PAGE :

6 PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

SPRINT	FUNCTIONAL REQUIREMENT(EPIC)	USER STORY NUMBER	USER STORY/TASK	STORY POINTS	PRIORITY	TEAM MEMBERS
Sprint -1	**Data collection**	**USN-1**	The dataset is collected and the understanding of dataset is done to present the	**2**	**High**	**S Sriya** **S Keerthika** **Shalini S**

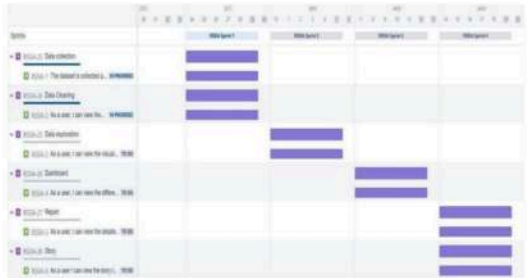
			analytics to the user			**Suvija Shri J A**
Sprint -1	**Data Preparation**	**USN-2**	As a user, I can view the accurate analytics of data by prepared data. The data preparation is done to restructure and clean the data.	**3**	**High**	**S Sriya** **S Keerthika** **Shalini S** **Suvija Shri J A**
Sprint -2	**Data Exploration**	**USN-3**	As a user, I can view the visualized data to get the better understanding about the sales, stock, revenue and price	**8**	**High**	**S Sriya** **S Keerthika** **Shalini S** **Suvija Shri J A**
Sprint -3	**Dashboard Creation**	**USN-4**	As a user, I can view the different visualization in the dashboard about the sales, stock, revenue and price	**8**	**High**	**S Sriya** **S Keerthika** **Shalini S** **Suvija Shri J A**
Sprint -4	**Report Creation**	**USN-5**	As a user, I can view the detailed	**8**	**High**	**S Sriya**

			report of the sales, stock, revenue and price. The user can get the report of the particular data.			**S Keerthika** **Shalini S** **Suvija Shri J A**

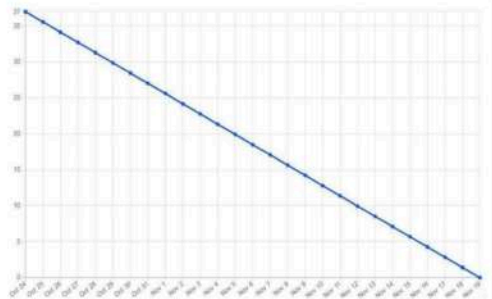
6.2 Sprint Delivery Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story P Comple on Planne Date)
Sprint-1	5	6 Days	24 Oct 2022	29 Oct 2022	5
Sprint-2	8	6 Days	31 Oct 2022	05 Nov 2022	8
Sprint-3	8	6 Days	07 Nov 2022	12 Nov 2022	8
Sprint-4	16	6 Days	14 Nov 2022	19 Nov 2022	16

6.3 Reports from JIRA



BURNDOWN CHART



7. CODING & SOLUTIONING

Modules:

1. **SPRINT-1**
2. **SPRINT-2**
3. **SPRINT-3**
4. **SPRINT-4**

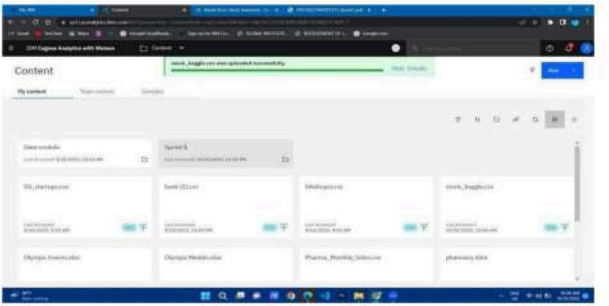
7.1 SPRINT-1:

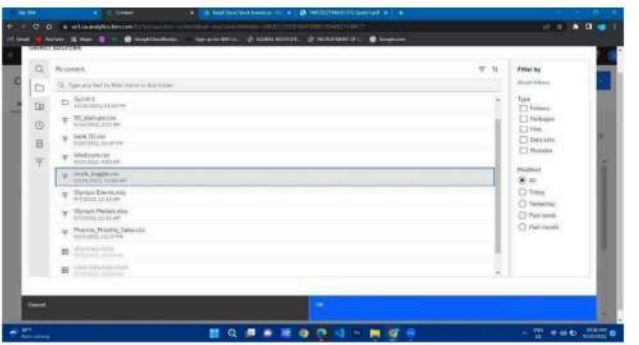
Data Collection: Download the Dataset

Dataset link - https://drive.google.com/drive/folders/1kiL5CHJmQvbk9VyFsuUs-myAupBZGN

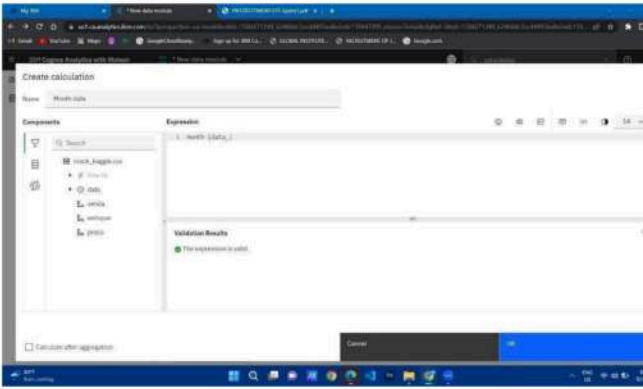
Load the Dataset:

Tool used – IBM Cognos





MONTHLY DATA :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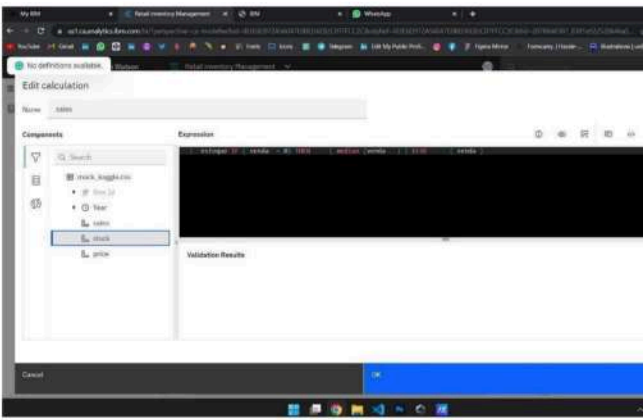
Components
Expression
Validation Results
Cancel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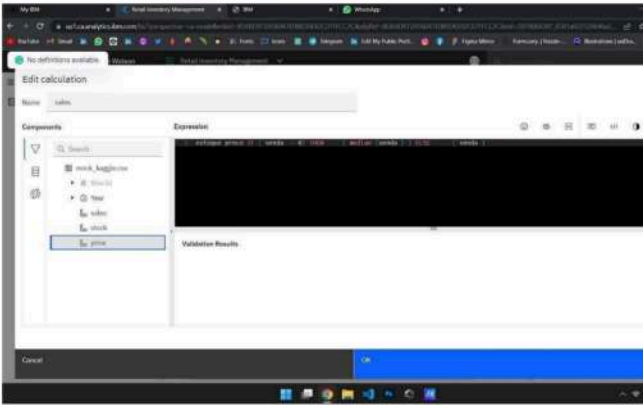
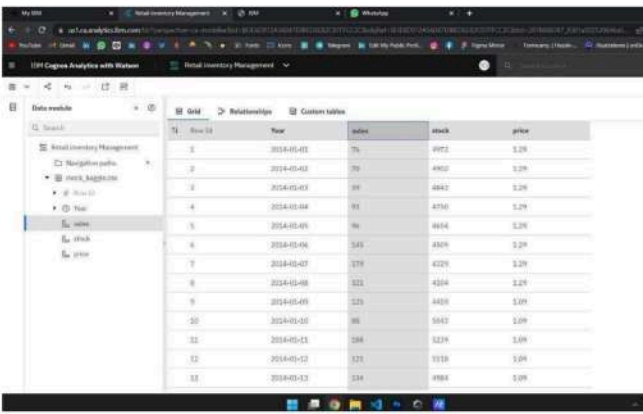
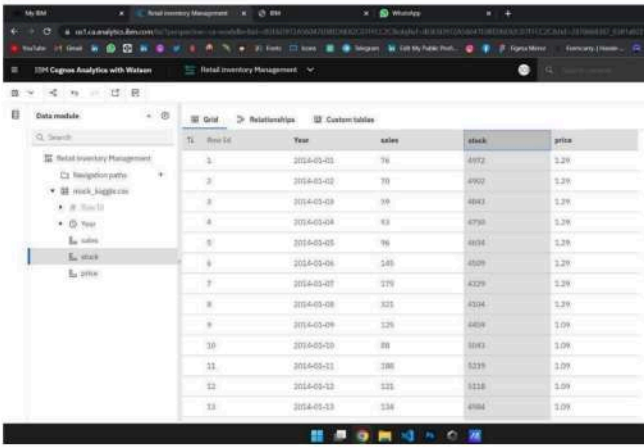
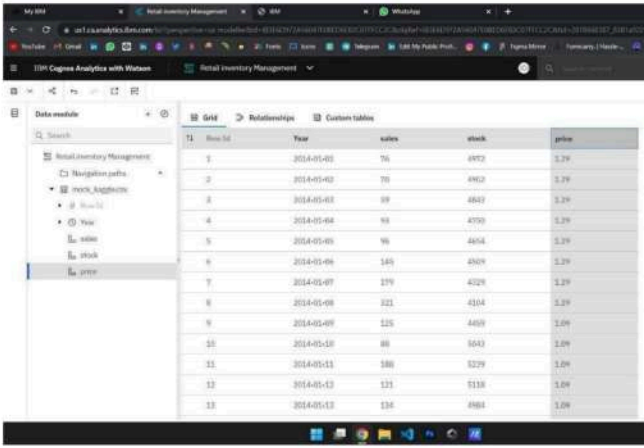
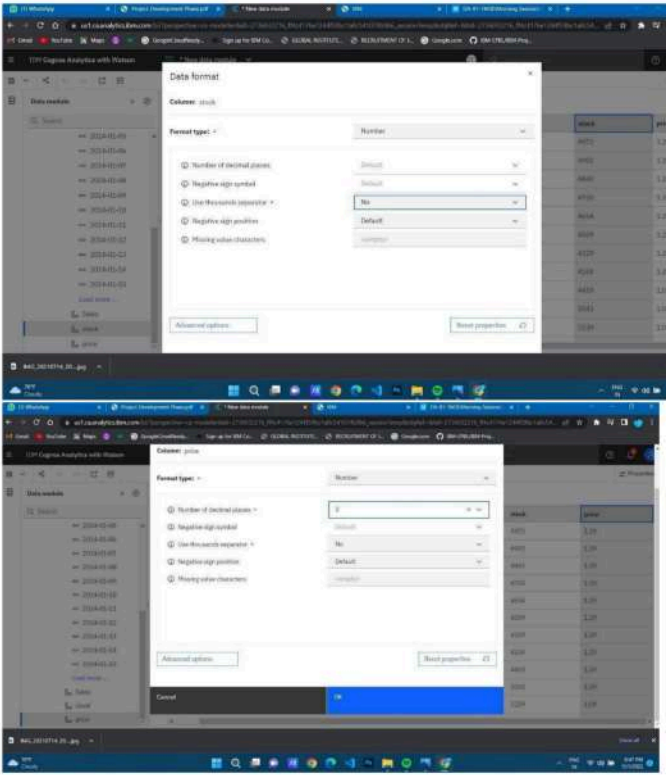

Edit calculation
Components
Expression
Validation Results
Cancel
OK


Retail Inventory Management
Grid
Relationships
Custom tables
Row ID
Year
sales
stock
price


IBM Cognos Analytics with Watson
Retail Inventory Management
Data module
Grid
Relationships
Custom tables
Retail Inventory Management
Navigation paths
mock_baggie.csv
Row Id
Year
sales
stock
price
1 2014-03-01 76 4972 1.29
2 2014-03-02 70 4902 1.29
3 2014-03-03 59 4843 1.29
4 2014-03-04 53 4790 1.29
5 2014-03-05 96 4694 1.29
6 2014-03-06 165 4529 1.29
7 2014-03-07 179 4329 1.29
8 2014-03-08 325 4104 1.29
9 2014-03-09 125 4459 1.09
10 2014-03-10 88 4043 1.09
11 2014-03-11 188 3239 1.09
12 2014-03-12 121 3118 1.09
13 2014-03-13 134 4984 1.09



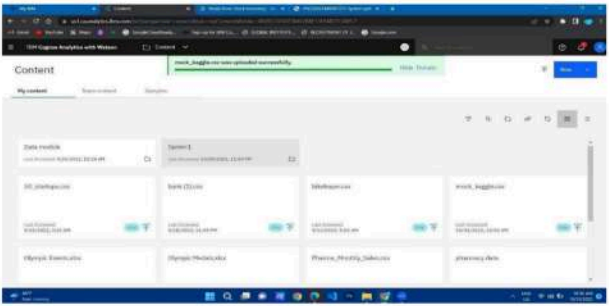
STOCK FORMAT DATA :


Data format
Column: stock
Format type: *
Number
Number of decimal places:
Negative sign symbol:
Use thousands separator: *
No
Negative sign position:
Default
Missing value characters:
Advanced options
Reset properties
Column: price
Format type: *
Number
Number of decimal places: *
2
Negative sign symbol:
Use thousands separator: *
No
Negative sign position:
Default
Missing value characters:
Advanced options
Reset properties
Cancel
OK

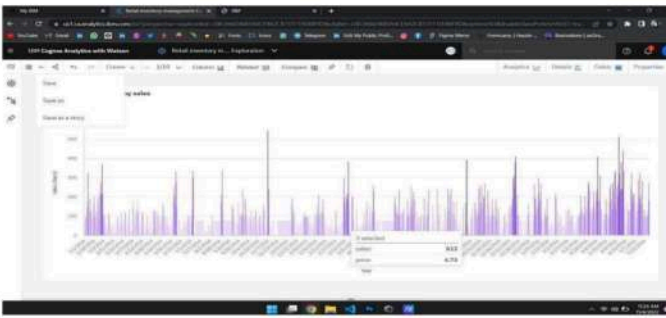
7.2 Module-02:

DATA EXPLORATION

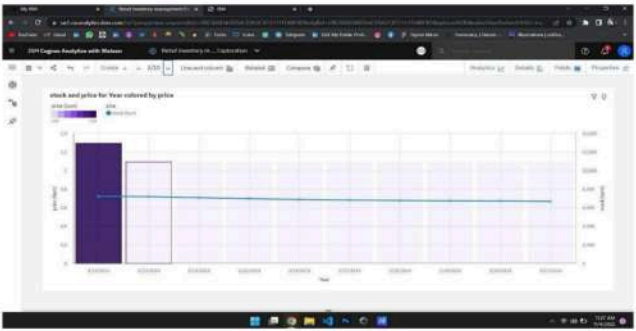
LOAD THE DATASET:



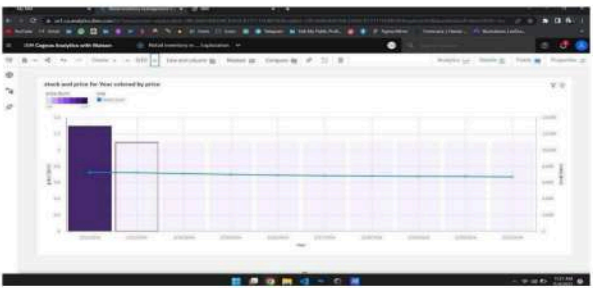
SALES ANALYSIS



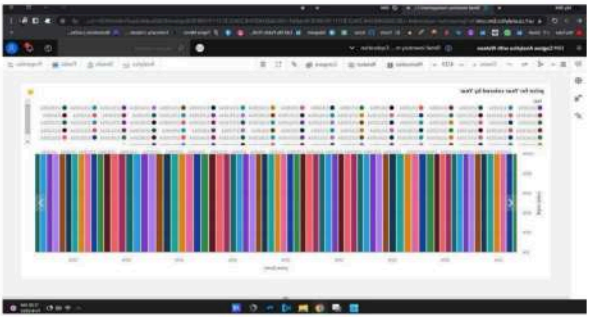
PRICE ANALYSIS



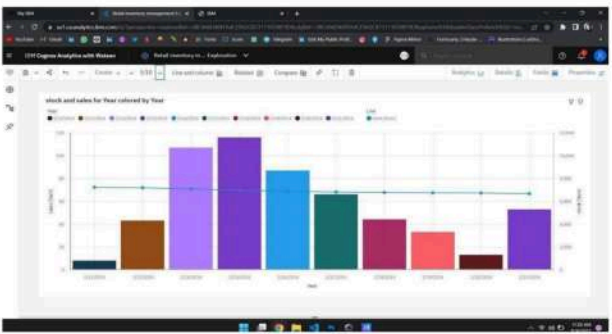
PRICE FOR YEAR COLORED BY YEAR



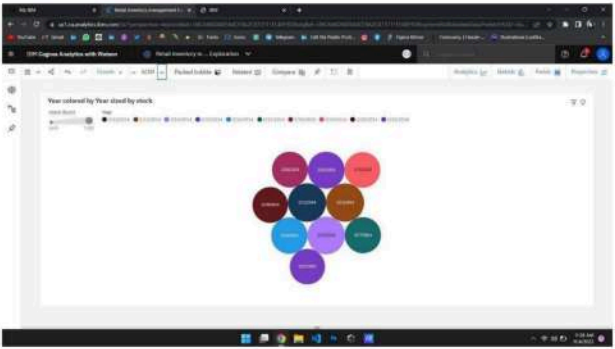
STOCK AND SALES FOR YEAR COLORED BY YEAR



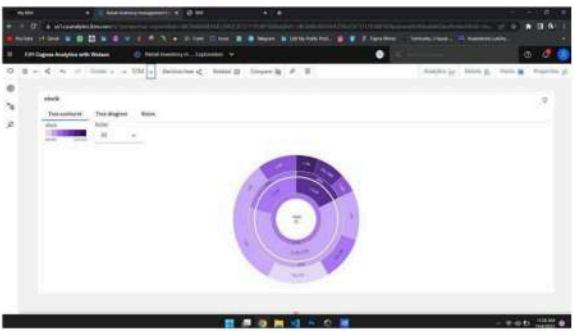
YEAR COLORED BY YEAR SIZED BY STOCK



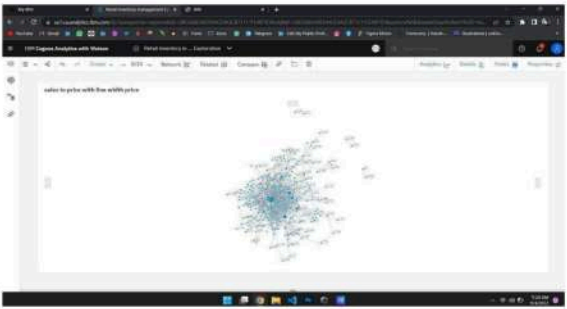
STOCK TREE SUNBURST



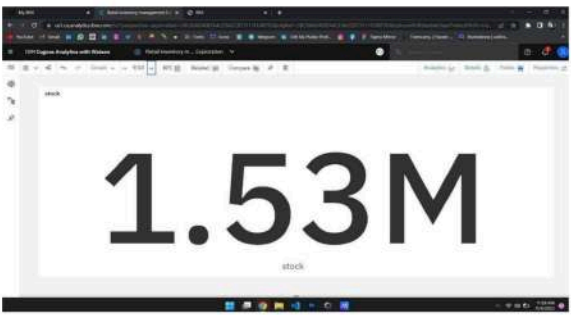
SALES TO PRICE WITH LINE WIDTH PRICE



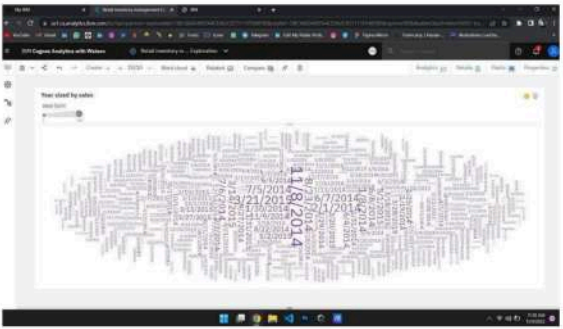
STOCK USERS



YEAR SIZED BY SALES



PREPARED DATA LINK

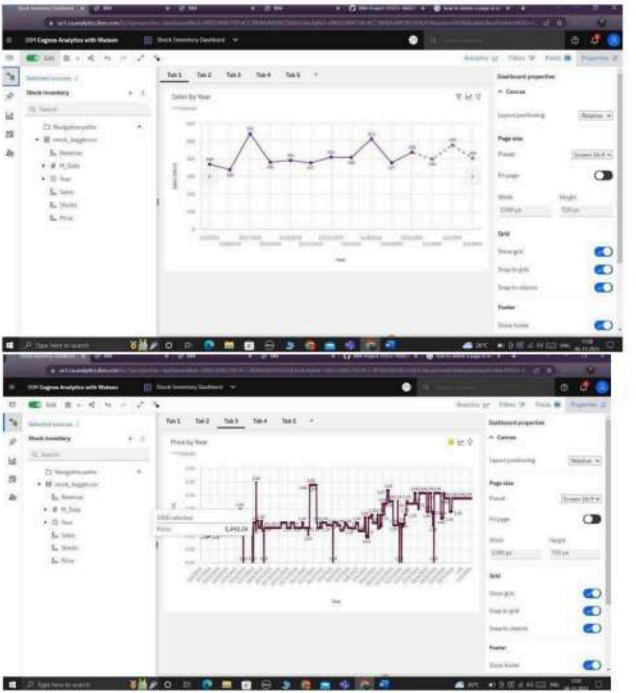


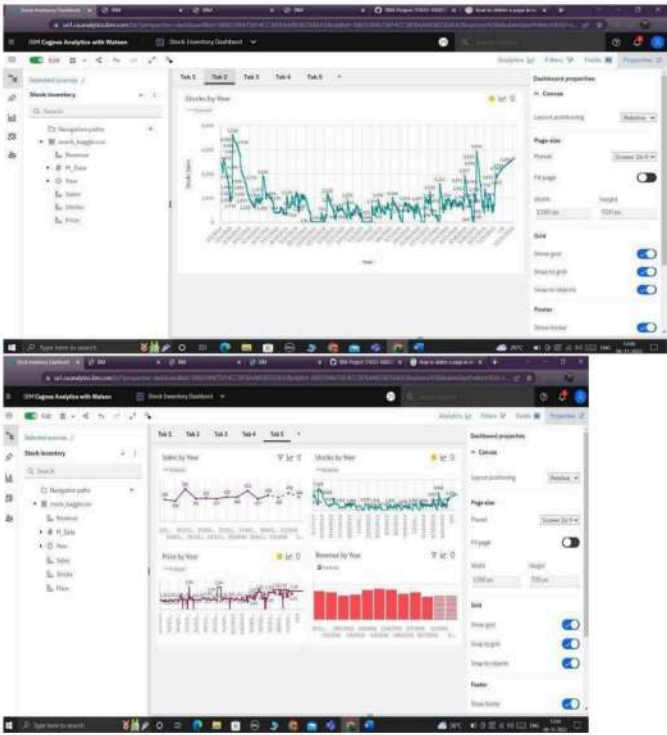
DATA COLLECTION:

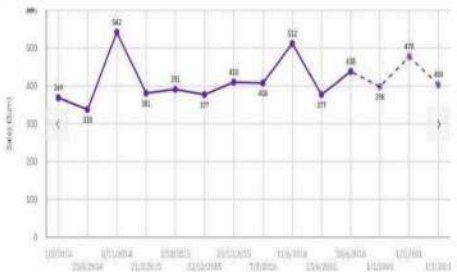
Download the Dataset Dataset link - https://drive.google.com/drive/folders/1kiL5CHJmQvbk9VyFsuUs myAupBZGNy

LOAD THE DATASET: Tool used – IBM Cognos

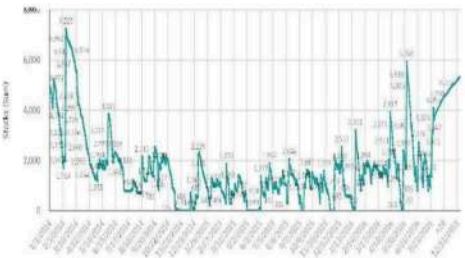
DASHBOARD CREATION

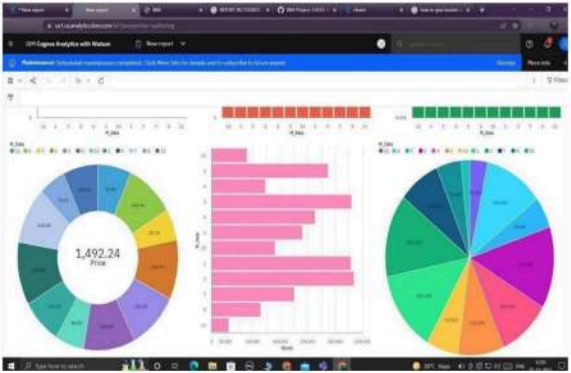






2) Stocks by years:





8. TESTING

8.1 Test Cases

Testing Levels:-

All major activities of various testing level are described below.

1.Unit Testing

2.Integration Testing

3.Functional Testing

4.System Testing

5.White box Testing

6. Black Box Testing

1. Unit Testing:-

Unit testing involves the design of test cases that validate that theinternal program logic is functioning properly, and that program inputs produce validoutputs. All decision branches internal code flow should be validated. It is the testingof individual software units of the application .it is done after the completion of anindividual unit before integration. This is a structural testing, that relies on knowledgeof its construction and is invasive.

2. Integration Testing:-

Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfaction, as shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components.

3. Functional Testing:-

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements,system documentation, and user manuals.

4. System Testing:

System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results.An example of system testing is the configuration oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

5.White Box Testing:

White Box Testing is a testing in which in which the software tester has knowledge of the inner workings, structure and language of the software, orat least its purpose. It is purpose. It is used to test areas that cannot be reached from a black box level.

8.2 User Acceptance Testing

User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.

9. RESULTS

9.1 Performance Metrics

Comparing Algorithm with prediction in the form of best accuracy result:

It is important to compare the performance of multiple different machine learning algorithms consistently and it will discover to create a test harness to compare multiple different machine learning algorithms in Python. It can use this test harness as a template on your own machine learning problems and add more and different algorithms to compare. Each model will have different performance characteristics. Using resampling methods like cross validation, you can get an estimate for how accurate each model may be on unseen data. It needs to be able to use these estimates to choose one or two best models from the suite of models that you have created. When have a new dataset, it is a good idea to visualize the data using different techniques in order to look at the data from different perspectives. The same idea applies to model selection. You should use a number of different ways of looking at the

estimated accuracy of your machine learning algorithms in order to choose the one or two to finalize. A way to do this is to use different visualization methods to show the average accuracy, variance and other properties of the distribution of model accuracies.

10. ADVANTAGES & DISADVANTAGES

Advantages:

An advantage of the retail inventory method is that it does not require a physical inventory. The retail inventory method only requires an organization to record the retail prices of inventory items. If an organization has multiple locations in different cities and states, performing a physical inventory can become a costly and time-consuming undertaking. By using retail inventory, an organization can prepare an inventory for a centralized location. The retail inventory method also allows the organization to create an inventory value report for budgeting or the preparation of financial statements.

Disadvantages:

On the other hand, the retail inventory method is only accurate if all pricing across the board is the same and all pricing changes occur at the same rate. In most cases, this is not realistic in retail because of the many variations that exist in merchandise pricing. For example, depreciation, markdowns, product damage and theft can affect the price of the retail inventory. For this reason, any calculations made using the retail inventory method should serve only as an estimate.

11. CONCLUSION:

For the success of the program, the managers of the retail stores must formulate a modern way of managing the inventory by instituting electronic systems to take care of the resources of the company. This ensures that they can be accounted for and there are proper records available all the time for reference to be made when the need arises. Besides, the retail management system is necessary for ensuring that there is accountability in the way the company handles its stock. It helps in saving time. Retail companies have acquired significant importance within several countries due to their high economic contribution. Therefore, the need to analyze their KPIs becomes highly significant, as well as their different systems, methodologies, and tools used within inventory management and optimization. From the aspects mentioned above, the main trends in inventory management within companies were defined.

12. FUTURE SCOPE:

Retail management software vendor should be continually enhancing its product, driven both by its expertise in how it sees the marketplace unfolding and by customer requests. When he does this, the result is significant advantages to its retail customers. "Future vision" is another important aspect of long-term vendor reliability – the ability to anticipate development needs in advance of their becoming critical. A good Retail management software vendor should demonstrate enough "future vision" to have already committed substantial resources to support new forms of technology such as data synchronization.

REFERENCES

[1] R. Ishfaq, C. C. Defee, B. J. Gibson, y U. Raja, "Realignment of the physical distribution process in omni-channel fulfillmen t", International Journal of Physical Distribution & Logistics Management, vol. 46, núm. 6/7, pp. 543–561, jul. 2016, doi: 10.1108/IJPDLM-022015-0032.

[2] J. Kembro y A. Norrman, "Exploring trends, implications and challenges for logistics information systems in omni-channels : Swedish retailers' perception", International Journal of Retail and Distribution Management, vol. 47, núm. 4, pp. 384–411, 2019, doi: 10.1108/IJRDM-07-2017-0141.

[3] G. Hançerlioğulları, A. Şen, y E. A. Aktunç, "Demand uncertainty and inventory turnover performance: an empirical analysis of the US retail industry", International Journal of Physical Distribution and Logistics Management, vol. 46, núm. 6–7, pp. 681–708, 2016, doi: 10.1108/IJPDLM-12-2014-0303.

GitHub Repo Link:

https://github.com/IBM-EPBL/IBM-Project-24560-1659944635