St. XAVIER'S
CATHOLIC COLLEGE OF ENGINEERING
(Autonomous)
Chunkankadai, Kanyakumari District, Tamil Nadu

RETAIL STORE STOCK INVENTORY ANALYTICS

NALAIYATHIRAN PROJECT BASED LEARNING

on

PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND ENTREPRENEURSHIP

A PROJECT REPORT

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BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

ST.XAVIER'S CATHOLIC COLLEGE OF ENGINEERING

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ABSTRACT

Inventory Management System is important to ensure quality control in businesses that handle transactions revolving around consumer goods.Without proper inventory control, a large retail store may run out of stockon an important item and it & #39;s also easy to lose its possible customer if they do not have sufficient stocks in the store.

A good Inventory Management System will alert the retailer when it is time to reorder. Inventory Management System is also an important means of automatically tracking the stocks of their product. For example, if a business orders ten pairs of socks for retail resale, but only receives nine pairs, this will be obvious upon inspecting the contents of the package, and error is not likely. On the other hand, say a wholesaler orders 100,000 pairs of socks and 10,000 are missing. Manually counting each pair of socks is likely to result in error. An automated Inventory Management System helps to minimize the risk of error. In retail stores, an Inventory Management System also helps track theft of retail merchandise, providing valuable information about store profits and the need for theft-prevention systems.
The product quantity is updated by the store operator every time a product is bought/received. This information is then tracked by a central computer system. The Inventory Management System can serve a variety of functions in this case. It can help in identifying the overstock and understock products prior. It also provides sales insights and stock reports in the form of graphs/ charts which will be useful for easier visualization.All of this data works in tandem to provide businesses with real-time inventory tracking information. Inventory Management Systems make it simple to locate and analyze inventory information in real-time with a simple database search.

INTRODUCTION

It is important for retail stock store inventory analysis to be conducted on aregular basis in order to ensure that thecorrect level of stock is maintained. This willhelp to avoid overstocking or under stockingof items, which can lead to lost sales or excess inventory costs. The analysis can be used to identify trends in customer demand and to predict future stock needs.

Analytics is the discovery and communication of meaningful patterns indata. As a topic, analytics has found its way from being discussed at thesidelines of industry and technology conferences, to the top of the corporateagenda. With the existing promise of delivering performance improvementsnot seen since the redesign of core processes in the 1990s, these tools are likely to change the competitively and scope in many industries in they are to come.

Big Data is all about the non-traditional ways of dealing with the moderndigital data. We exist in an ocean of digital data. It includes data stored inpiles of well-structured databases residing with organizations, streams ofdata generated from the dynamic social networks, various understandableand intangible signals generated by all kinds of digital equipment all overthe place. For an organizational, Big Data can be about identifying the rightdatasets from large amount of data commonly defined by the three Vs. -Volume, Velocity and Variety; transforming them into readily consumablemodels; and then extracting meaningful insights for devising business strategies. These insights can be used to improve different aspects of thebusiness - from marketing and sales, to research and operations, andcustomerservices.

Big Data enables clients in the retail Industry to track and better understanda variety of information from many different sources like CRM,AdWord/AdSense analytics, inventory management system, emails,transactional data, sensors data etc. Industry can identify the current trends,re-ordersuppliesforhot-sellingitems,adjustthepricesinrealtimeandalso manage and control product distribution across different stores tochannelize their sales in more effective manner. This provides retailindustry with entirely different perspectives of looking towards the datasetsavailable at their disposal. By collating these organizational datasets withsocial media data streams, they can also use it for better sales predictions,designing relevant campaigns to suit their profitable customers and there by ensuring customer satisfaction.

Retail inventory management is the process of ensuring you carry products that shoppers want, with neither too little nor too much on hand. Bymanaging inventory, retailers meet customer demand without running outof stock or carrying excess supply. Inventory management is vital forretailers because the practice helps them increase profits.

They are more likely to have enough inventory to capture every possiblesale while avoiding overstock because too much inventory means workingcapitalcosts,operationalcosts, andacomplex operation.Based on the inventory management analysis we can manage how muchinventory is required for selling the product based on which they cancalculatetheprofitand losses.

Our data set contains a lot of historical sales data of a Brazilian Top retailer.

Basic Questions of every retailer: How much inventory should I carry? Toomuch inventory means working capital costs, operational costs and acomplex operation, lack of inventory leads to lost sales, unhappy customersandadamaged brand.

This is why short-term forecasting is so important in the retail and consumer goods industry.

OBJECTIVE

By the end of this Project,you will:

Know fundamental concepts and can work on IBM Congo's Analytics.Gain a broad understanding of plotting different visualization to providesuitable solution,Able to create meaningful Visualization and Dashboard(s).

Primary objective:

1.To Achieve cost-efficient operations:

Inventories allow a retail store to sell the variety goods in normal course of business. Secondly, it maintains a safe level of items throughout the year even when there is seasonal demand for the retail's output. Thirdly, having large stock of items in stores enable the stores to spread some fixed costs like transportation, electricity, maintenance & supervision cost over a larger number of items, thereby decreasing the selling cost per unit. Finally, suppliers often offer extra discount for bulk purchases. To take advantage of extra discount, normally stores go for bulk buying. In this way the selling price per unit comes down resulting in enabling the store to adopt low pricing policy.

2.To Minimize inventory investment:

When a retailer is able to maintain its inventory to the lower amounts, can use this saved money in other productive areas where comparatively return is very high. In order to know how well a retail store/outlet is managing its inventory, inventory turnover ratio can be used. Inventory turnover is a ratio of the total cost of

goods sold in a year to the average inventory level in rupees. The benefit of using this ratio is to know how quickly the retail store is getting its inventories and how quickly customers get the order placed to the stores.

3.Measuring the gaps in customer service:

Customer service has become a necessary part of retail trade. Customer service is largely a function of perception, customer expectations, and the level of service quality provided. If the customer expects a desired level of customer service (be it after sales or otherwise), and the service provided by a retailer fails to match the customer's expectations, service provided by retailer would be termed as ineffective/poor service. Now question arises how the gap between customer services can be measured.

4.Overstocking and Under stocking:

Overstocking is when you have more inventory than you can sell. This can tie up your cash and prevent you from being able to invest in other areas of your business. Overstocking can also lead to spoilage if you have perishable items.

Under stocking includes shortfalls and out-of-stock items that cause unfulfilled orders to build up. You may not be fully aware of the impact until it's too late. Here are some of the issues the arise due to poor inventory management. Missed sales opportunities.

Retail Sales Goals:

Retail Sales measures the gross receipts of a retail store by selling durableand nondurable goods. The main components of retail sales are grocery,food & clothing and shoe retailing. In India, consumer spending roughly accounts for over 60% of GDP and is therefore, a vital element in the country's economic growth. Any change in retail sales pattern is important and is seen as the time liest indicator of wide consumption patterns. Retail sales may have short term and long term goals in nature. Short term retail sales goals are supposed to support and merge into long.

3.Ideation Phase

LITERATURE SURVEY

1.TITLE: RETAILING AND RETAILING RESEARCHING THE AGE OF BIGDATA ANALYTICS

AUTHOR:MARNIK G. DEKIMP E

YEAR:2019

PROBLEM IDENTIFICATION

Big data analytics in retail not only has the potential to improve the operating margins of companies by 60% but revolutionize all areas of retail.

2. TITLE:BERKAH SWALAYAN (SME Market)

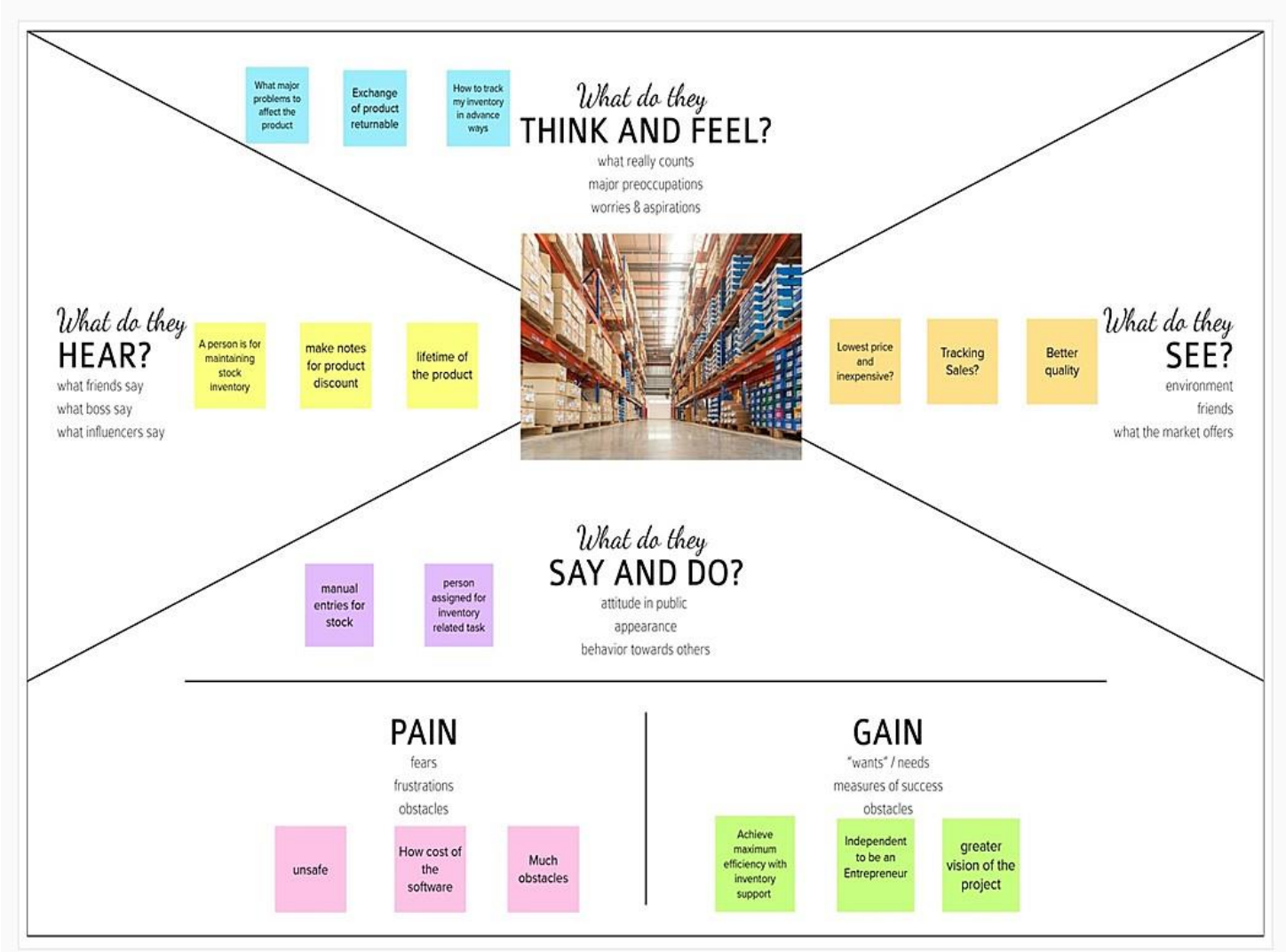
AUTHOR:Al - HUSAINIet al.

YEAR:2019

PROBLEM IDENTIFICATION

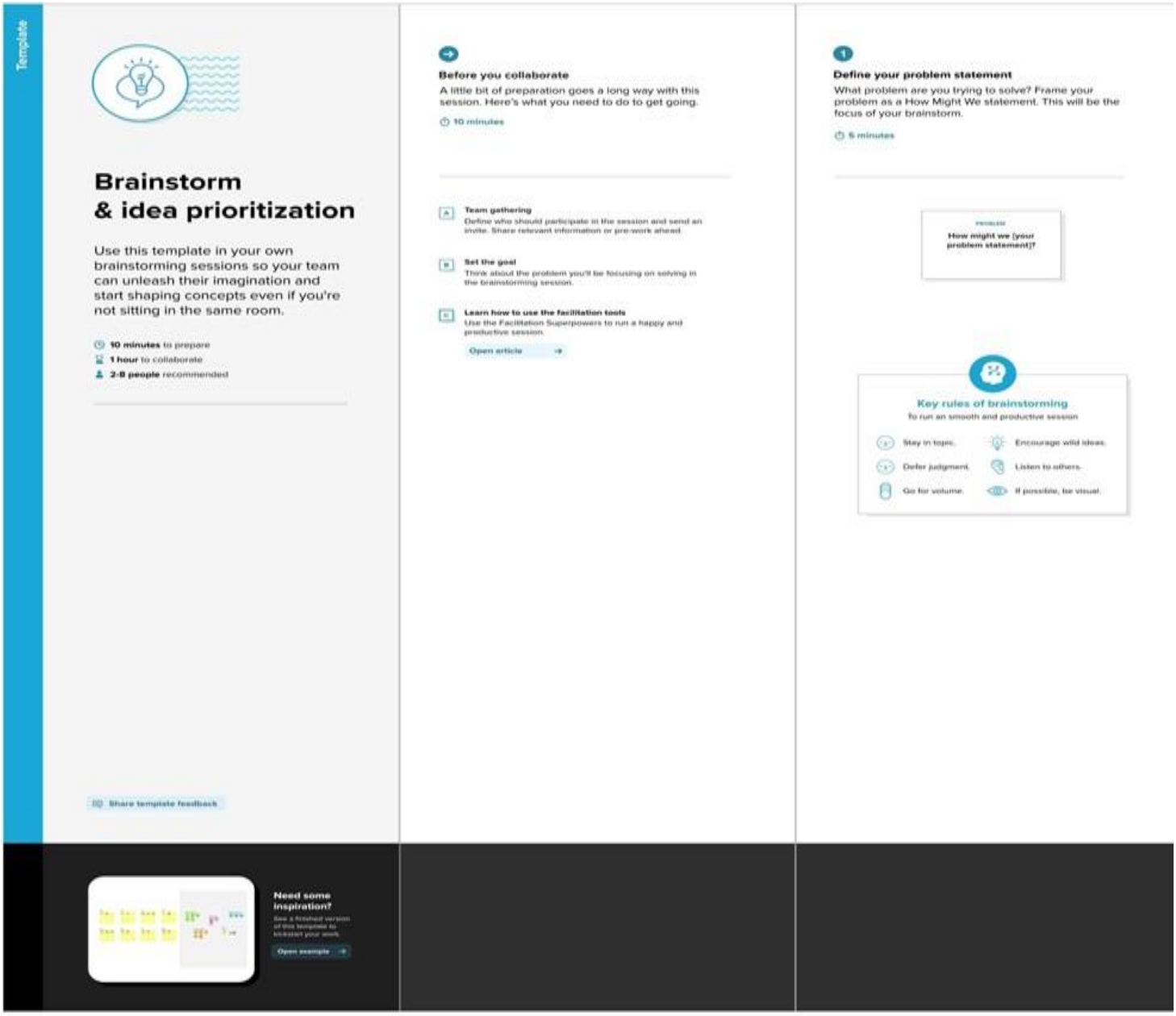
Information system of business and forecasting on sales, low –cost purchases , and minimize inventory.

EMPATHY MAP

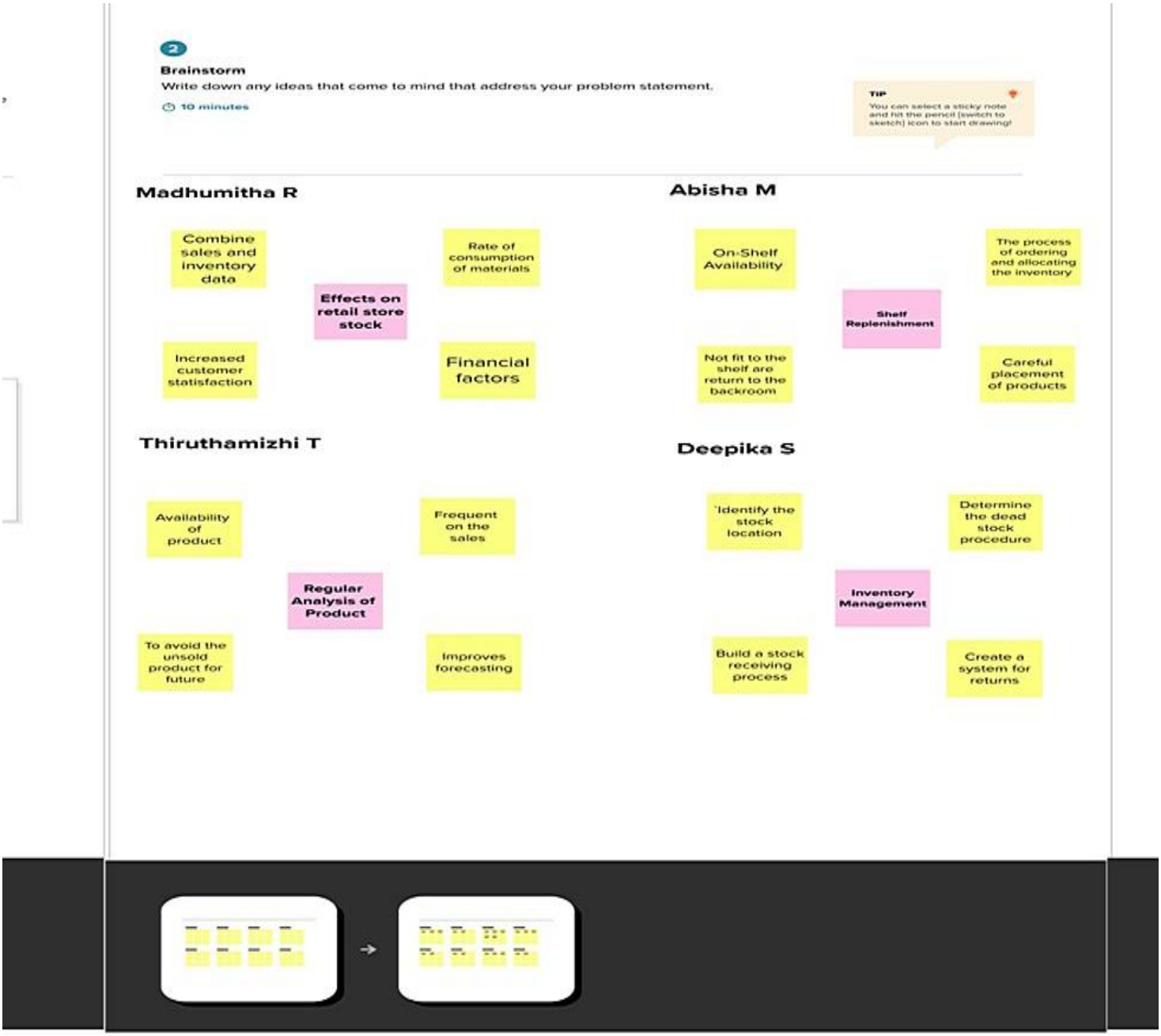

What major problems to affect the product
Exchange of product returnable
How to track my inventory in advance ways
What do they THINK AND FEEL?
what really counts
major preoccupations
worries & aspirations
What do they HEAR?
what friends say
what boss say
what influencers say
A person is for maintaining stock inventory
make notes for product discount
lifetime of the product
Lowest price and inexpensive?
Tracking Sales?
Better quality
What do they SEE?
environment
friends
what the market offers
What do they SAY AND DO?
attitude in public
appearance
behavior towards others
manual entries for stock
person assigned for inventory related task
PAIN
fears
frustrations
obstacles
unsafe
How cost of the software
Much obstacles
GAIN
"wants" / needs
measures of success
obstacles
Achieve maximum efficiency with inventory support
Independent to be an Entrepreneur
greater vision of the project

IDEATION PHASE

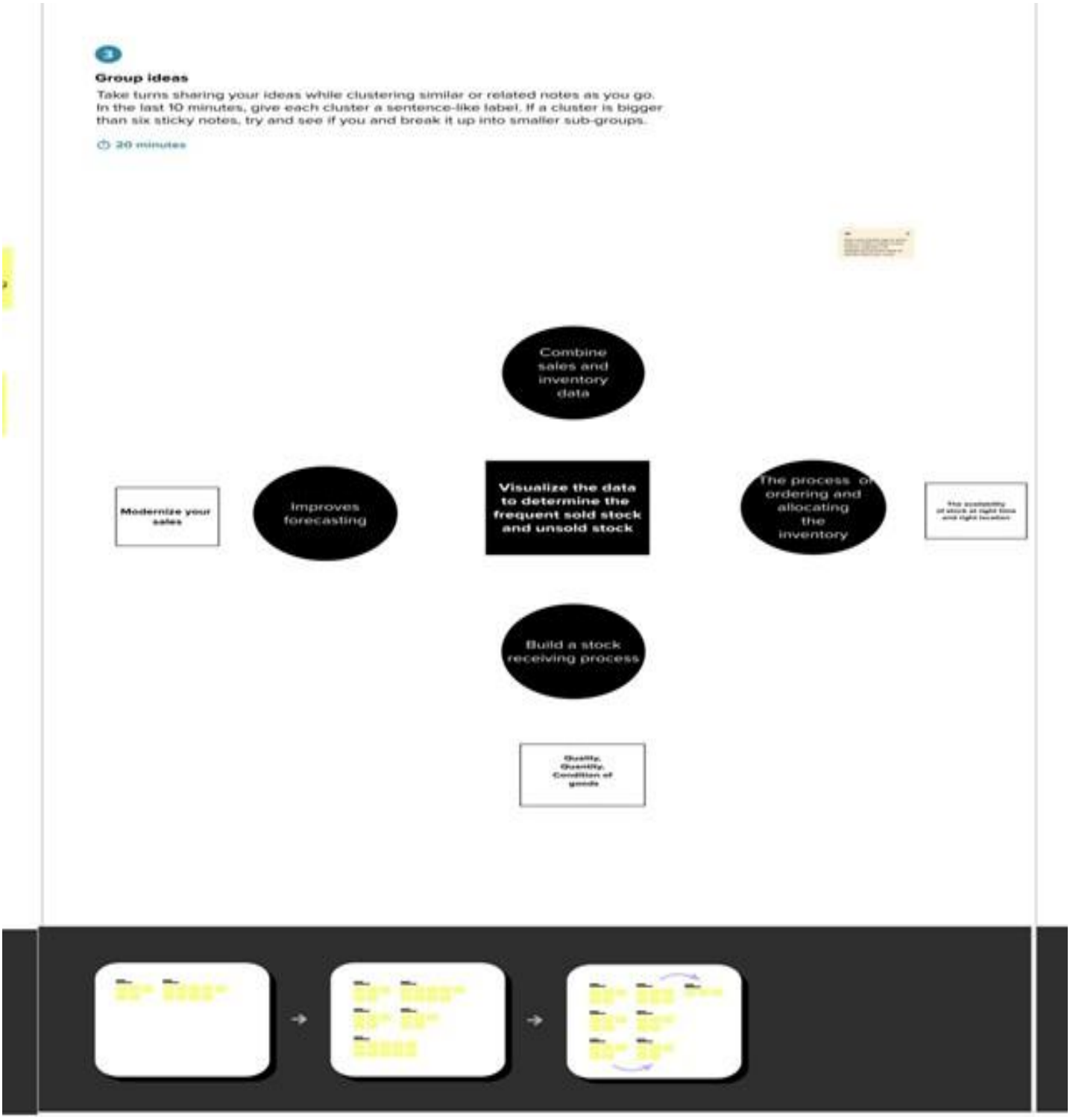
Step1:



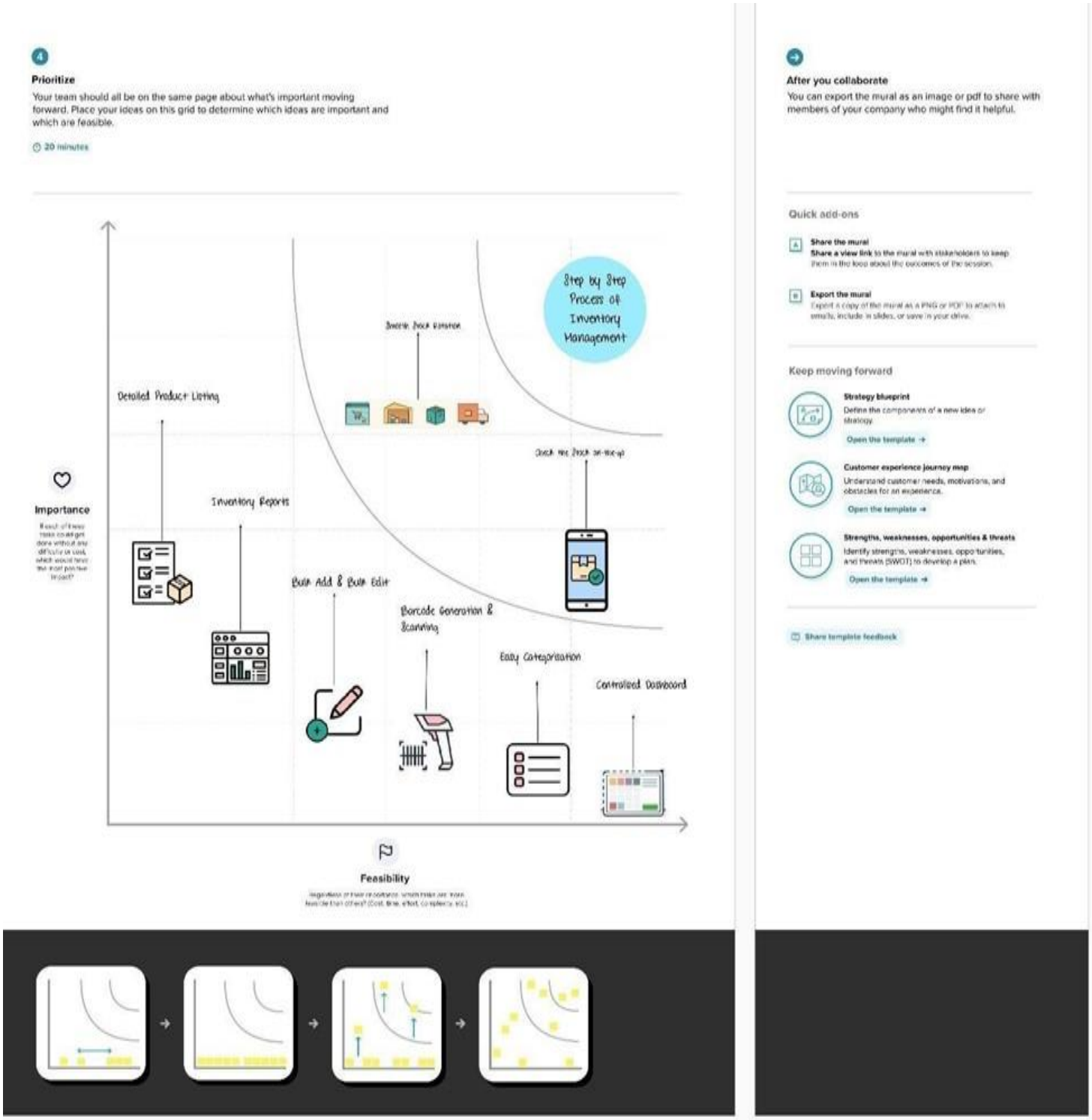
Step2:


2
Brainstorm
Write down any ideas that come to mind that address your problem statement.
10 minutes
TIP
You can select a sticky note and hit the pencil (switch to sketch) icon to start drawing!
Madhumitha R
Combine sales and inventory data
Rate of consumption of materials
Effects on retail store stock
Increased customer satisfaction
Financial factors
Abisha M
On-Shelf Availability
The process of ordering and allocating the inventory
Shelf Replenishment
Not fit to the shelf are return to the backroom
Careful placement of products
Thiruthamizhi T
Availability of product
Frequent on the sales
Regular Analysis of Product
To avoid the unsold product for future
Improves forecasting
Deepika S
'Identify the stock location
Determine the dead stock procedure
Inventory Management
Build a stock receiving process
Create a system for returns

Step3:


3
Group ideas
Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, 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
Combine sales and inventory data
Modernize your sales
Improves forecasting
Visualize the data to determine the frequent sold stock and unsold stock
The process of ordering and allocating the inventory
Build a stock receiving process

Step4:


4
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
Step by Step Process of Inventory Management
Detailed Product Listing
Inventory Reports
Bulk Add & Bulk Edit
Barcode Generation & Scanning
Easy Categorization
Controlled Dashboard
Importance
Feasibility
After you collaborate
You can export the mural as an image or pdf to share with members of your company who might find it helpful.
Quick add-ons
Share the mural
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.
Export the mural
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.
Keep moving forward
Strategy blueprint
Define the components of a new idea or strategy.
Open the template →
Customer experience journey map
Understand customer needs, motivations, and obstacles for an experience.
Open the template →
Strengths, weaknesses, opportunities & threats
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
Open the template →
Share template feedback

PROBLEM STATEMENT

RETAIL STORE STOCK INVENTORY ANALYSIS

By increasing inventories, retailers attempt to raise service levels, and thus increase sale. However, in addition to a positive impact on product availability and sale, higher inventory levels may cause problems in performing in-store activities. As poor backroom-to-shelf replenishment process emerges as one of the most common causes of stock-out situations, Thecomparison of store and on-shelf Fast Moving Consumer Goods product availability at Stock keeping Unit level in different stores of a single retailer. In relation to this, besides direct, we have also investigated the indirect effect of inventory level on sale, by using store and shelf out of -stocks as mediators.The results of the research showing much higher level of shelf- compared to store stock-out rate confirmed the existence of the problem in the realization of internal product flows within retail stores. However, despite the occurrence of this problem, besides direct positive effect of inventory level on sale, its indirect effect was positive as well .

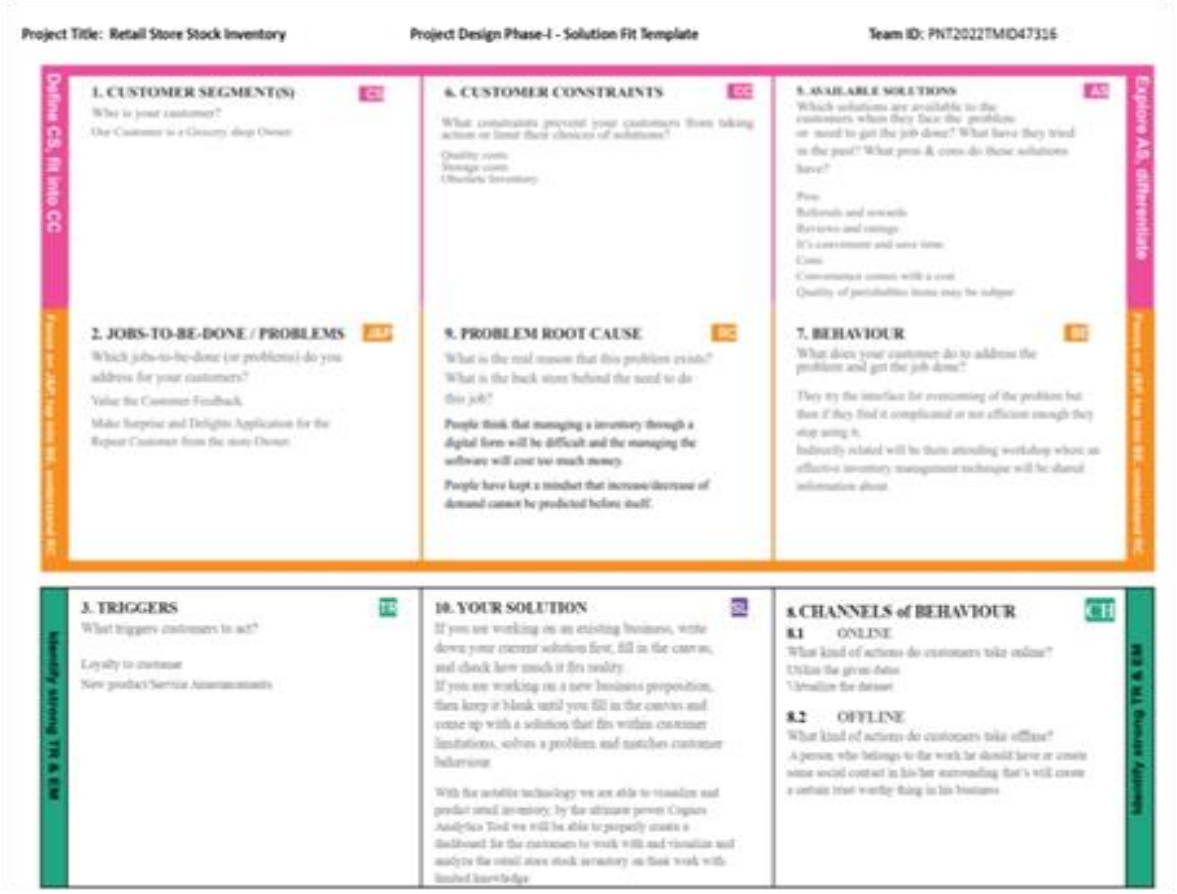
4.PROJECT DESIGN PHASE1

PROPOSED SOLUTION

S.NO	Parameter	Description
1	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 recordthe inventory data quickly and safely because they only keep it in the log book and not properly organized
2	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
3	Novelty/ Uniqueness	Complete a thorough analysis of our store; it leads toavoiding over

		stock and also analysis of th ecompetitive relevant market.Gathering customer feedback and measuring our business results.
4	Social Impact / Customer Satisfaction	When customers get the products they want faster with fewer mistakes of rout-of-stocks,it increases customer loyalty.
5	Business Model	Adbased Revenuemodel-Awareness can be created for Optimize the useof inventory,reduce handling cost,optimize cash flow
6	Scalability Of the Solution	Retail store stock inventory can be predicted easily with the data's stored in ther etail stores. It gives the best user experience and maintains the details

PROBLEM SOLUTION FIT



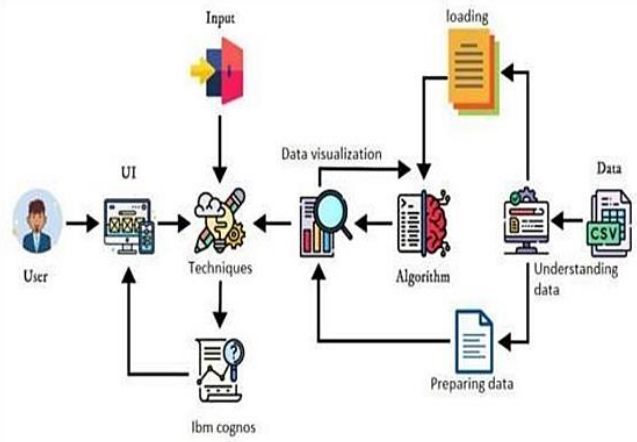
SOLUTION ARCHITECTURE

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

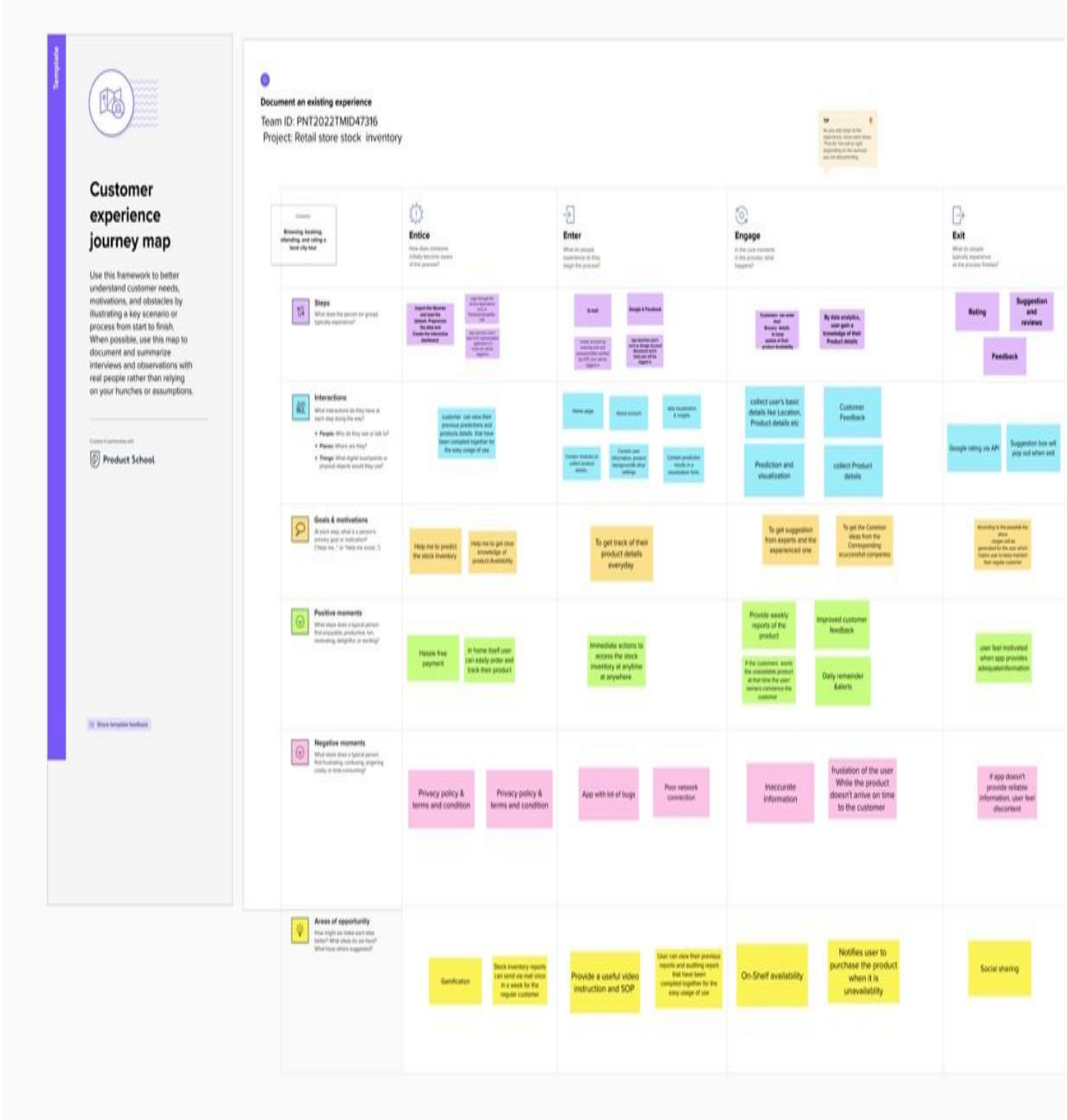
1. Find the best tech solution to solve existing business problems.
2. Describe the structure, characteristics, behavior, and other aspects of the software to project stake holders.
3. Define features, development phases, and solution requirements.
4. Provide specifications according to which the solution is defined, managed, and delivered.

Example-Solution Architecture Diagram:



5.PROJECT DESIGN PHASE2

CUSTOMER JOURNEY MAP



SOLUTION REQUIREMENTS

FRNo.	Functional Requirement (Epic)	Sub Requirement (Story/Sub-Task)
FR-1	**UserRegistration**	Registration through Form Registration through Gmail Registration through Linked IN Registration through Website
FR-2	**UserConfirmation**	Confirmation via Email Confirmation via OTP Confirmation via Mobile Number
FR-3	**UserLogin**	Login with Username Login with Password Login with Email
FR-4	**ProfileUpdate**	Update their Contact details Update their experience Update their Achievements
FR-5	**UploadingData**	Collect the Customer details Collect the Sales Count Collect the sales value This model helps to the predict the Profit/Loss count and future Sales value
FR-6	**Ratings and Reviews**	The User provide useful and constructive Feedback. User would feel free to give their reviews.

Non-functional Requirements:

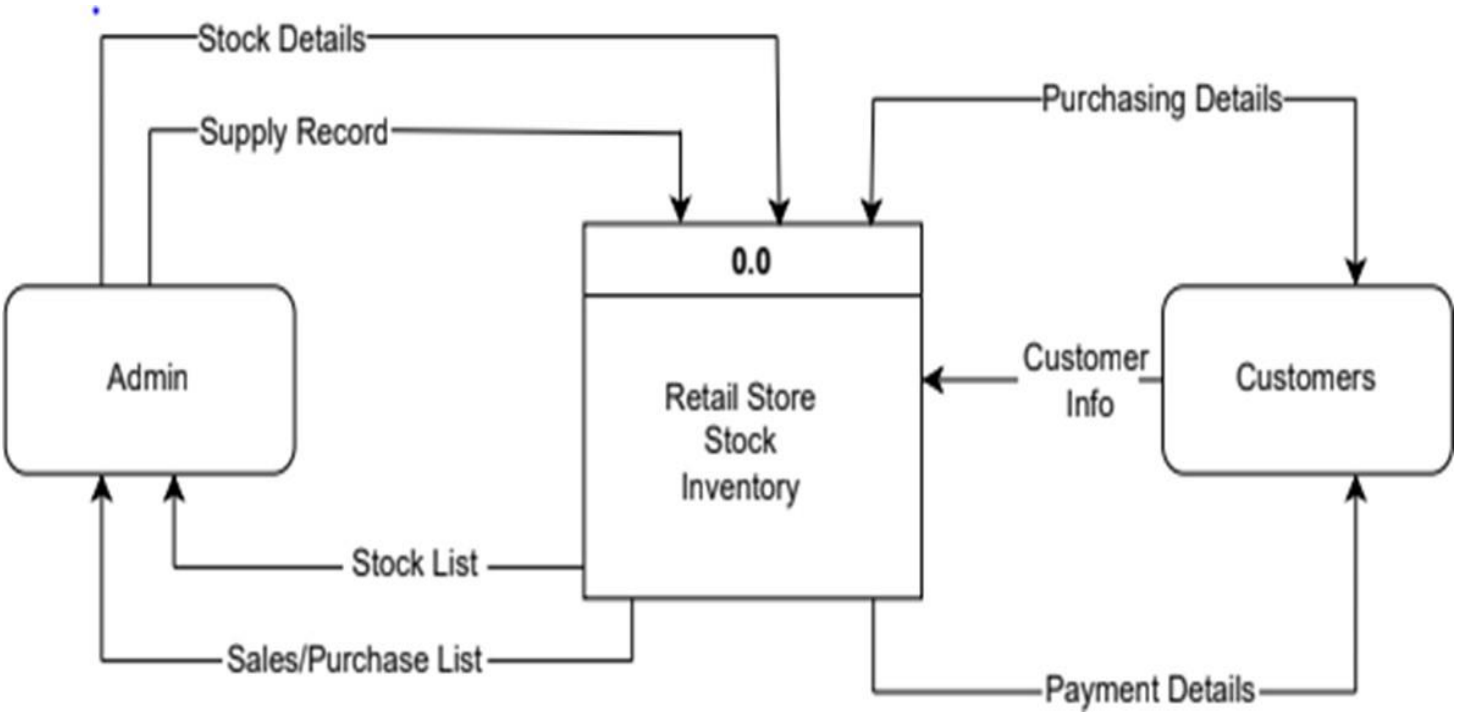
FRNo.	Non-Functional Requirement	Description
NFR-1	**Usability**	There are more likely to have enough inventory to capture very possible Scale While avoiding over stock and Minimizing expenses. This model can be supported on both Desktop and Mobile browser.
NFR-2	**Security**	The system allow to access client data , analytics and reports to only Authorized user. The rights to add or Correct data must be restricted for individual employees.
NFR-3	**Reliability**	This application we can use for low level RAM. It do not Consume more storage
NFR-4	**Performance**	The system must be capable of handling 100 employee Accounts and 10000 orders per day without affect in gets performance.
NFR-5	**Availability**	The model is suitable for all kind of retail stores. It can Give retailers real-time visibility into stock levels, avoid stock outs, keeps inventory carrying costs low and help meet customer expectations.
NFR-6	**Scalability**	The system must support implementing new features andmoduleswithoutdisruptingexistingprocesses. The system must support horizontal scaling for launching new retail Stores with multiple POS.

DATA FLOW DIAGRAM

Data Flow Diagram:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. Aneat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enter and leaves the system, what changes the information, and where data is stored.

Zero Level DFD



User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2

		USN-4	As a user, I can register for the application through Gmail	I can register & access the dashboard with Gmail login	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password after installing the web application	I can access the dashboard by login into the application	High	Sprint-1
	Dashboard	USN-6	As a user, I can view the charts and graphs representation of the dataset and the information shown in the dashboard.	I can analyse the stocks in my retail store	High	Sprint-1
Customer Care Executive		CCE-1	As a customer care executive, I will always be available for the interaction with the customer to clarify the queries.	An executive will analyse the customer complaints and rectify their problems	High	Sprint-2

Administrator		ADMIN-1	As an administrator, I will manage backup and recovery, data modelling and design, distributed computing, database system, and a data security	Administrator can evaluate, design, review and implementing a data and they are also responsible for updating and maintaining the data	High	Sprint-2

TECHNOLOGY STACK

Technical Architecture:

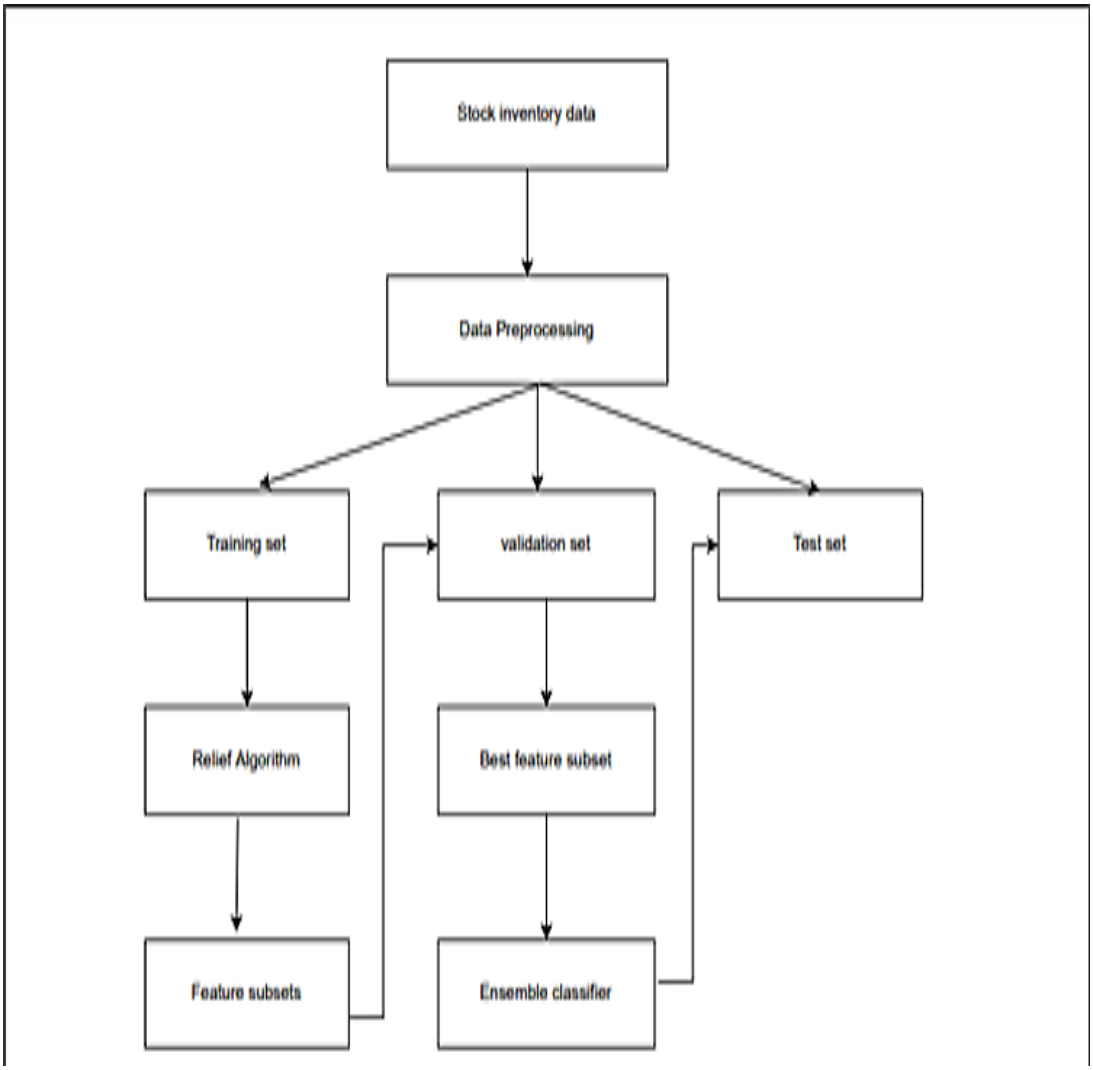


Table-1:Components&Technologies:

S. No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g.WebUI, MobileApp, Chatbotetc.	HTML,CSS, JavaScript /AngularJs /ReactJs etc.
2.	Application Logic-1	Logic for a process in the application	Java/Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	DataType, Configurations etc.	MySQL, NoSQL,etc.
6.	Cloud Database	Database Service on Cloud	IBMDB2, IBM Cloud ant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local File system
8.	ExternalAPI-1	Purpose of External API used in the application	IBM WeatherAPI, etc.
9.	ExternalAPI-2	Purpose of External API used in the application	AadharAPI, etc.
10.	Machine Learning Model	Purpose Of Machine Learning Model	Object Recognition Model,etc.

Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frame works	Open-source frame works used	IBM Cognos Analytics, Python
2.	SecurityImplementations	Request authentication using Encryptions	Encryptions
3.	ScalableArchitecture	Scalability consists of 3-tiers	Web Server – HTML,CSS, Javascript Application Server –Python DatabaseServer– IBM Cloud
4.	Availability	The application is available for cloud users	IBM Cloud Hosting
5.	Performance	The user can know how to maintain the inventory to increase profits.	ML algorithms

6. Project planning phase

PREPARE MILESTONE AND ACTIVITY LIST

TITLE	DESCRIPTION	DATE
Literature Survey & Information Gathering	Literature survey on the selected project & gathering information by referring the technical papers, research publications etc.	17 SEPTEMBER 2022
Prepare Empathy Map	Prepare Empathy Map Canvas to capture the user Pains & Gains, Prepare list of problem statements	17 SEPTEMBER 2022
Ideation	List the by organizing the brainstorming session and prioritize the top 3 ideas based on the feasibility& importance.	25 SEPTEMBER 2022
Proposed Solution	Prepare the proposed solution document, which includes the novelty, feasibility of idea, businessmodel, social impact,scalability of solution, etc.	25 SEPTEMBER 2022
Problem Solution Fit	Prepare problem - solutionfit document.	09 OCTOBER 2022
Solution Architecture	Prepare a solution architecture document.	09 OCTOBER 2022

SPRINT DELIVERY PLAN

Product backlogs,Sprint schedule,Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story/ Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	USN-1	As a user, Ican collect the dataset through the given dataset link.	2	High	Madhumitha, Abisha,
Sprint-1	Load the Dataset	USN-2	As a user, I can load the dataset with the tool IBM Cognos Analytics.	1	High	Deepika Thiruthamizhi
Sprint-2	DataPreparation	USN-3	As a user,Ican prepare	2	Low	Abisha, Deepika

			the dataset to improve the charts.			
Sprint-2	Format the data	USN-4	As a user, I can format the data.	2	Medium	Madhumitha,Thiruthamizhi
Sprint-3	Data Exploration	USN-5	As a user I can explore the data for the given charts.	5	High	Deepika, Madhumitha, Thiruthamizhi Abisha
Sprint-4	Dashboard	USN-6	As a user ,I can create a dashboard from the prepared dataset for the given chart.	5	High	Deepika ,Madhumitha, Thiruthamizhi Abisha
Sprint-4	Develop a HTML Webpage	USN-7	As a user, I can access the	5	High	Deepika, Madhumitha,

	for the Dashboard		dashboard via a hyperlink on a web page.			Thiruthamizhi Abisha
Sprint-4	Report	USN-8	Report Creation	5	High	Deepika, Madhumitha, Thiruthamizhi Abisha

Project Tracker, Velocity

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	20	6 Days	24Oct 2022	29 Oct2022	6	29Oct2022
Sprint-2	20	6Days	31Oct 2022	05 Nov 2022	15	05 Nov 2022
Sprint-3	20	6Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6Days	14 Nov 2022	19 Nov 2022	20	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)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

Sprint	**Totalstory Points**	**Duration**	**Average Velocity**
Sprint-1	6	6Days	6/6=1
Sprint-2	15	6Days	15/6=2.5
Sprint-3	20	6Days	20/6=3.33
Sprint-4	20	6Days	20/6=3.33
Total	**61**	**24Days**	**61/24=2.54**

7.PROJECT DEVELOPMENT PHASE

DELIVERY OF SPRINT -1

Project Development Phase:

Sprint-1:

Data Collection

Data Preparation

Sprint 2:

Data Exploration

Sprint 3:

DashBoard Creation

Sprint 4:

Report Creation

Story Creation

Data Collection:

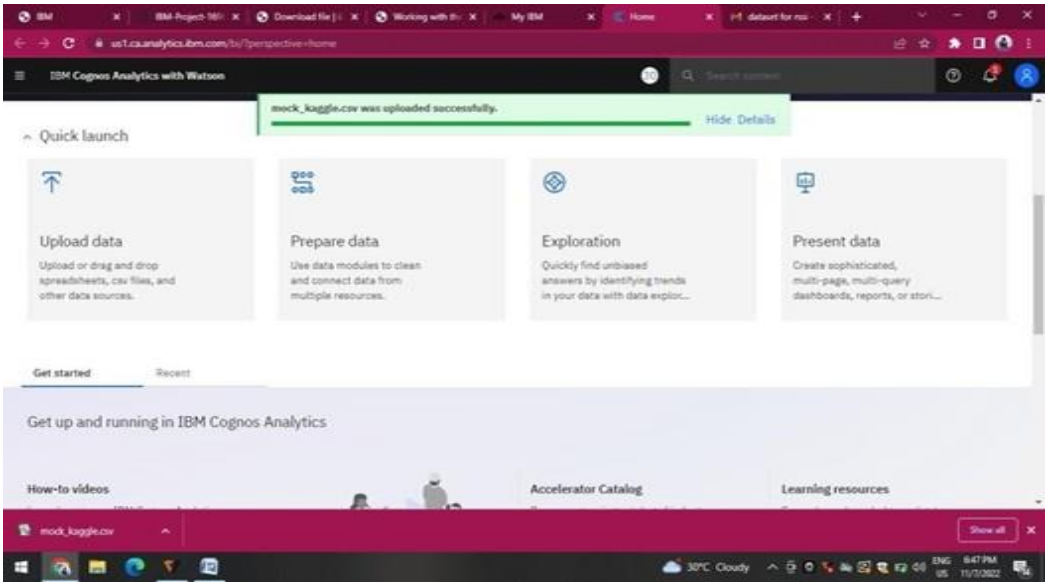
Download the Dataset

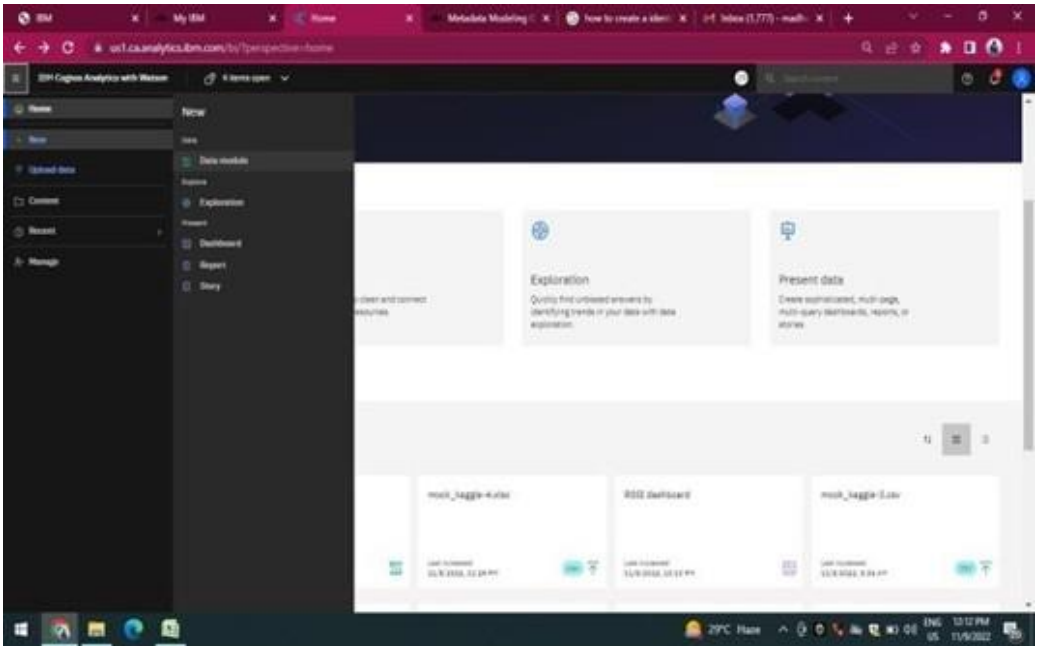
Dataset link-

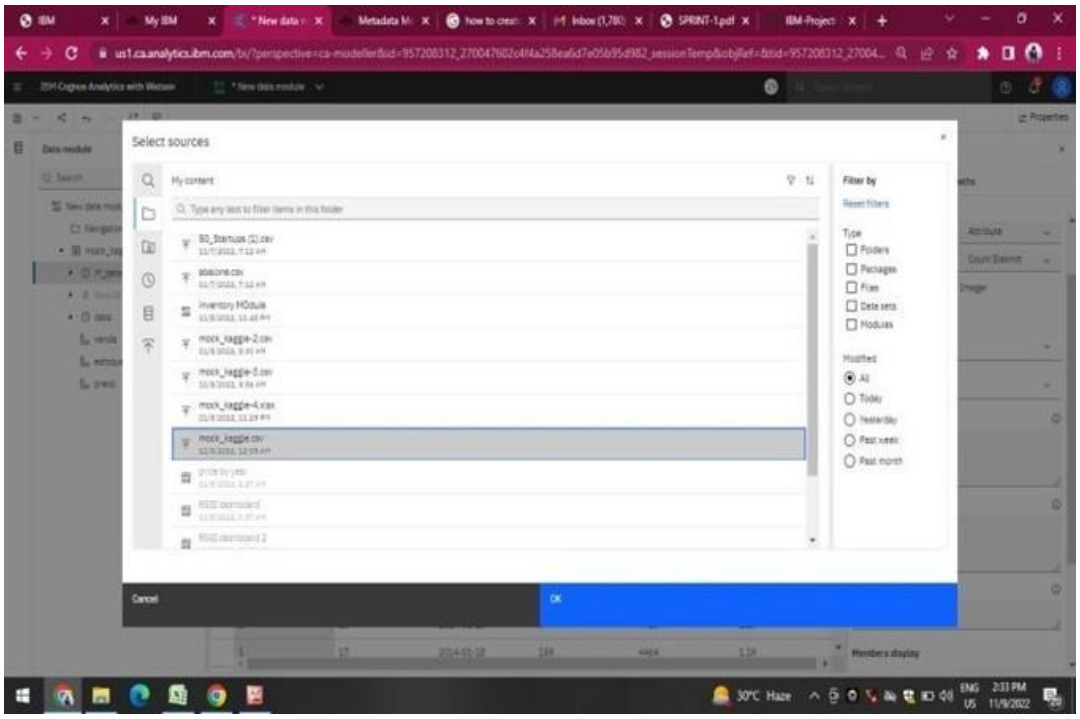
https://drive.google.com/drive/folders/1kiL-5CHJmQvbk9VyFsuUs-myAupBZGNy

Load the Dataset:

Tool used–IBM Cognos



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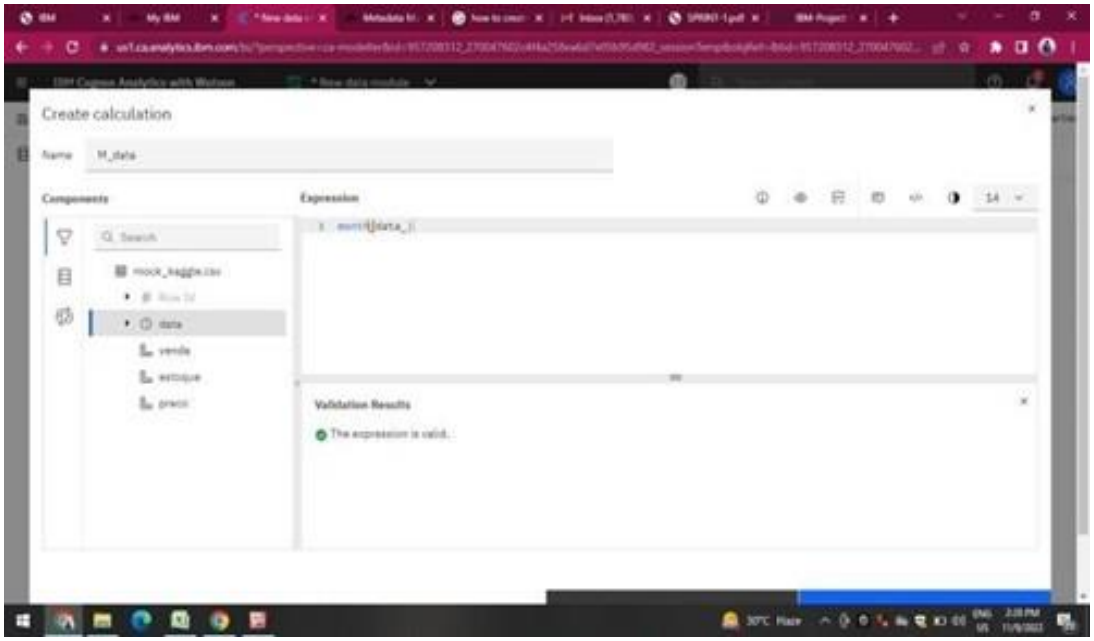
Filter by
Cancel
OK

Month Data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Name
M_data
Components
Expression
Validation Results
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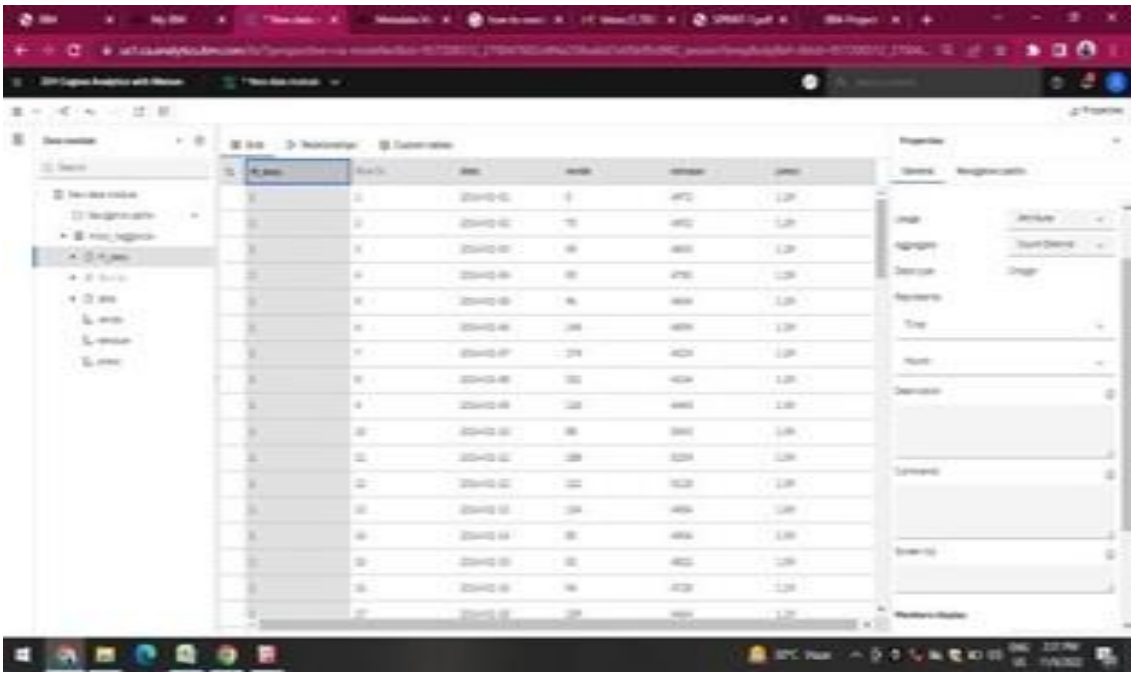
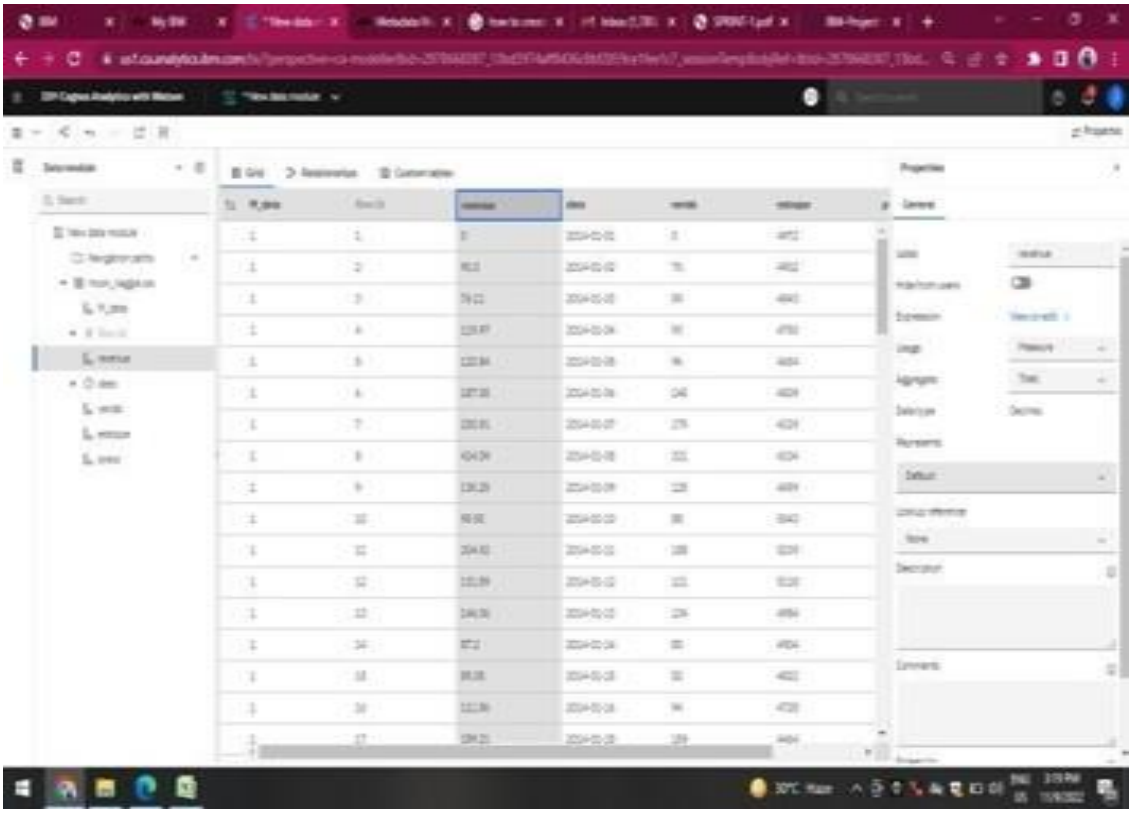
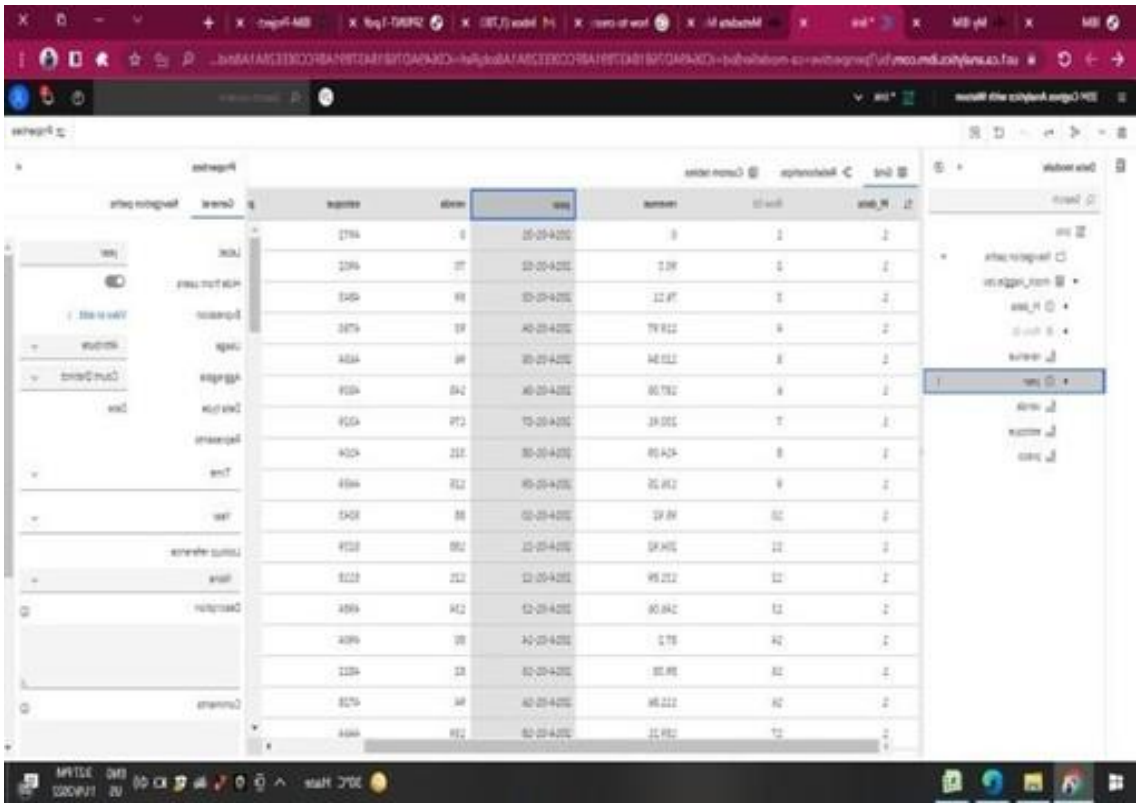


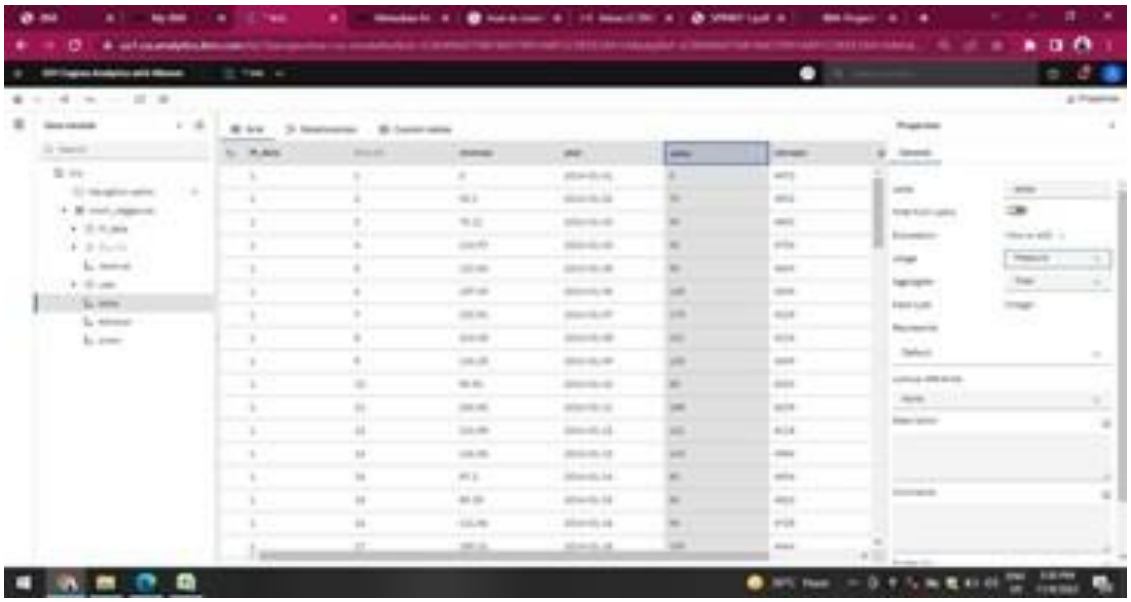
Revenue data



Year data



Sales data



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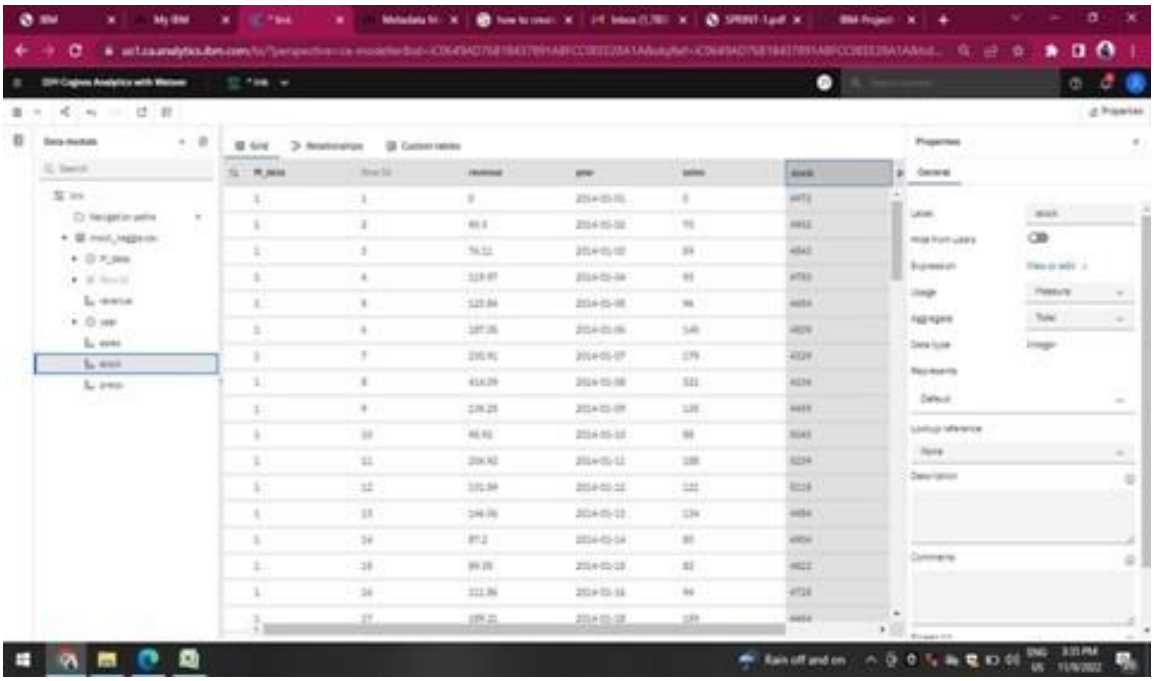
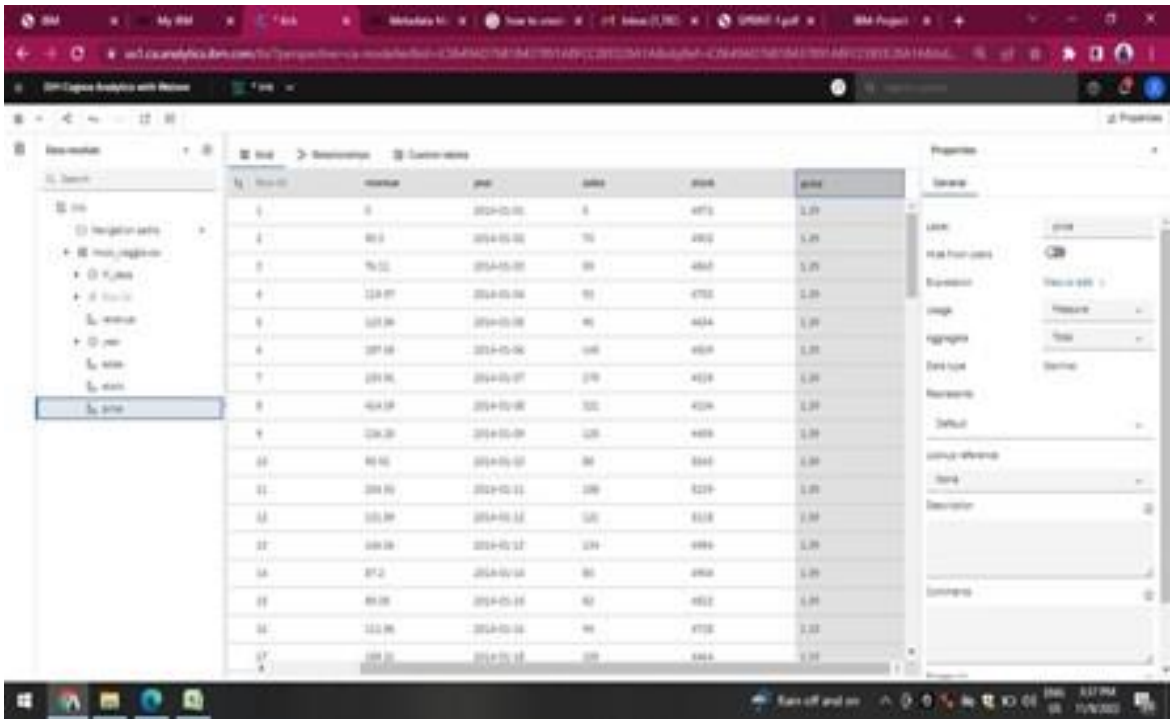


Price data



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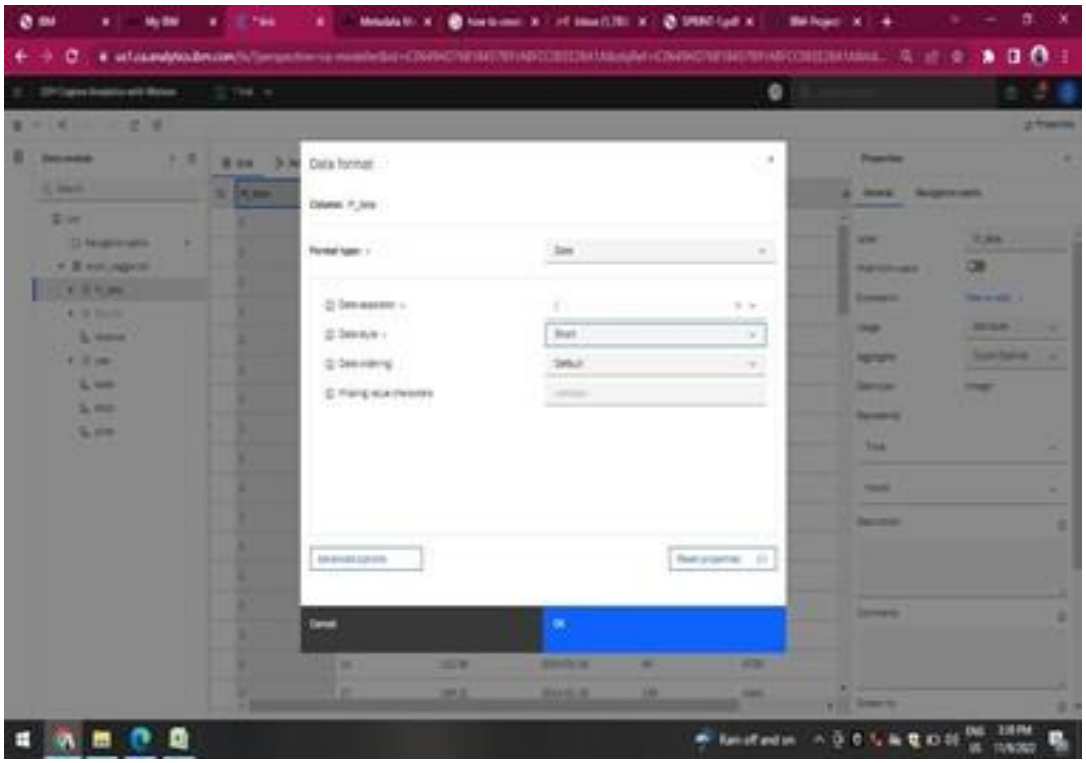

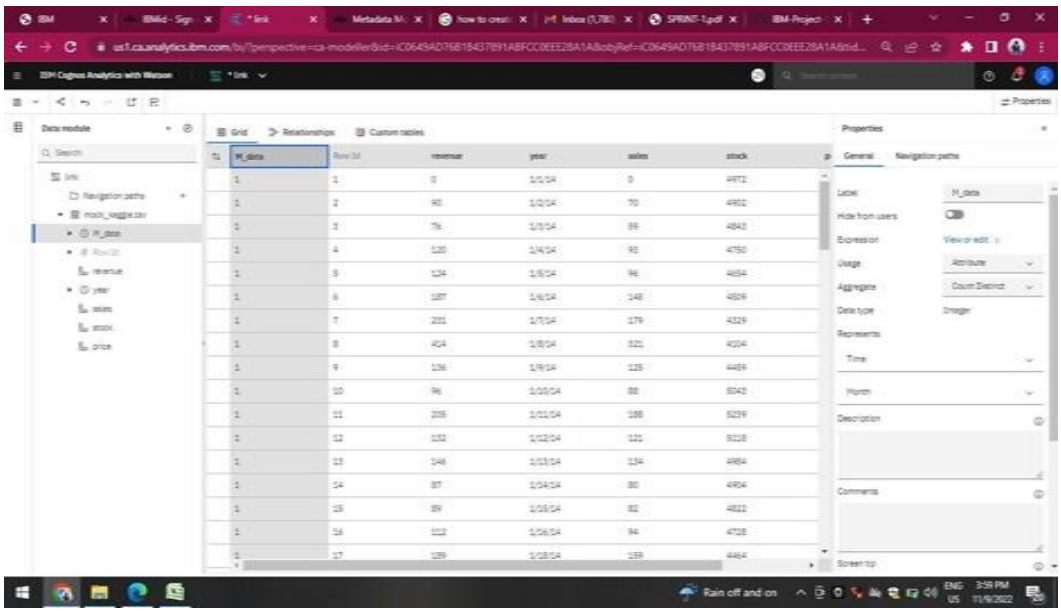

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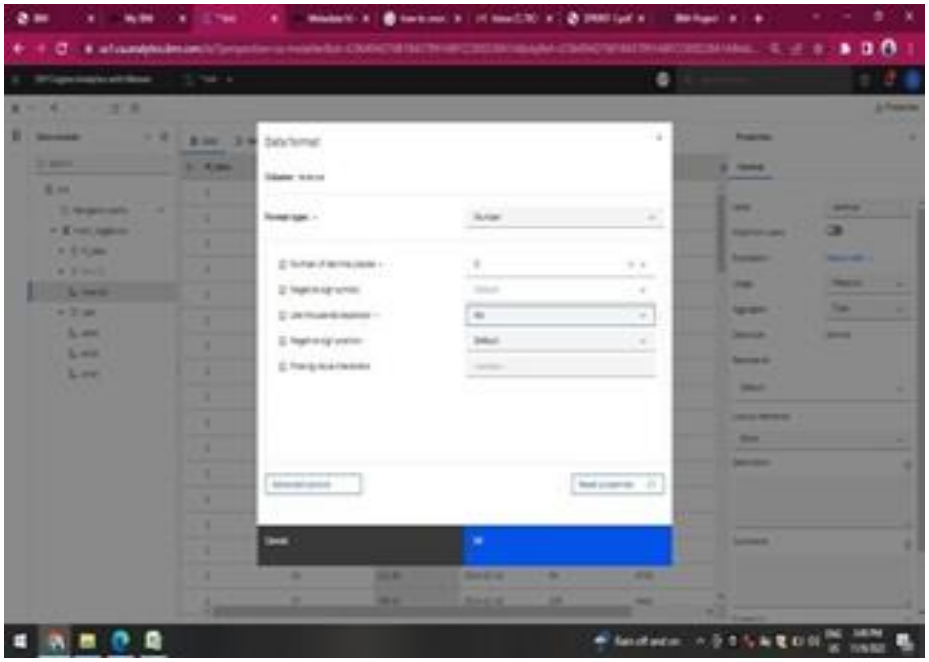
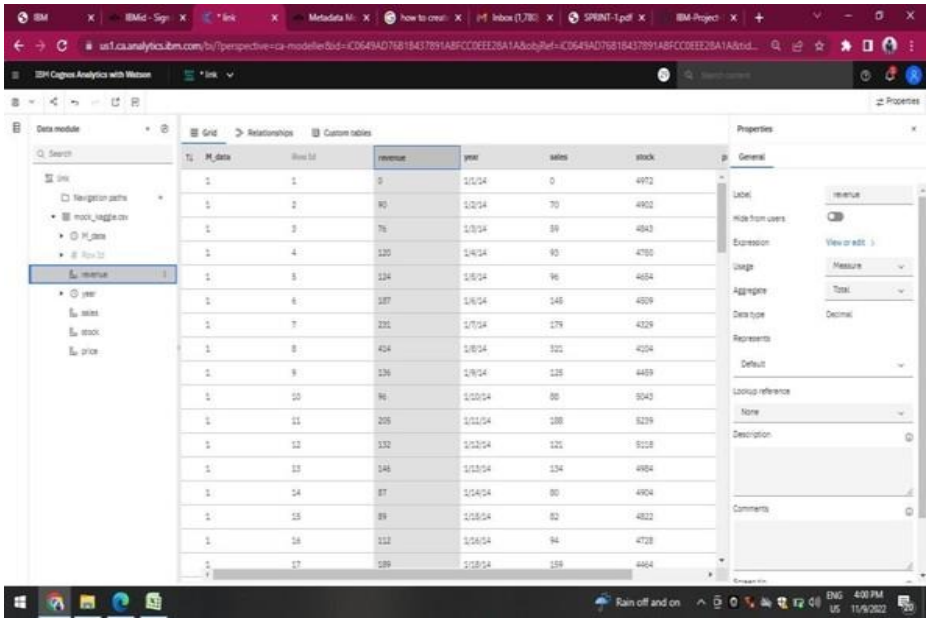
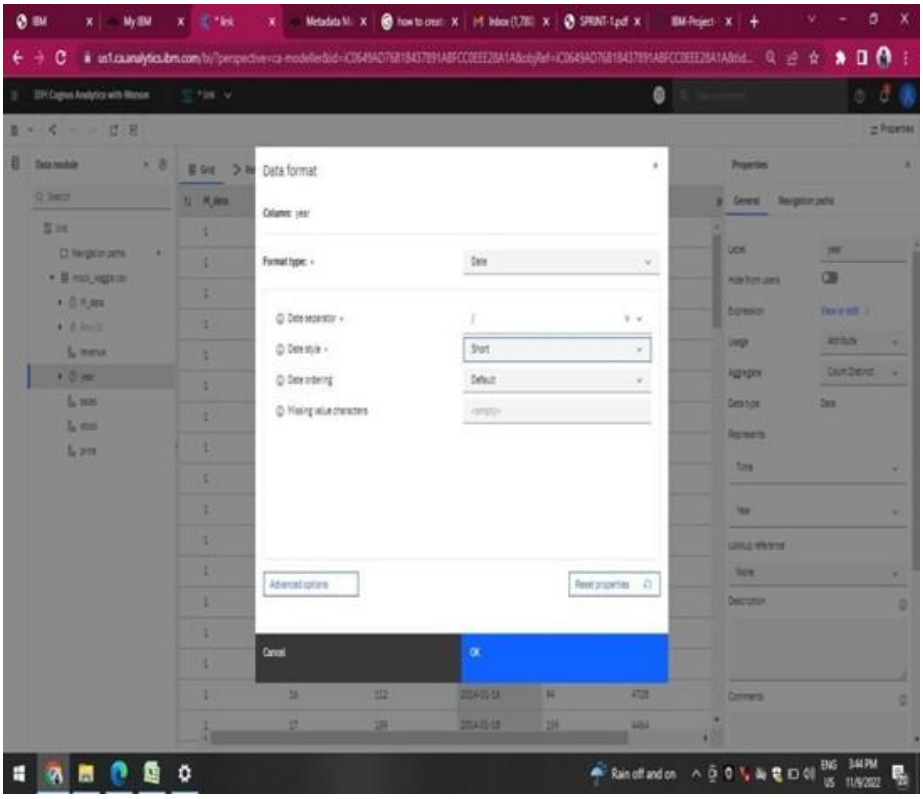
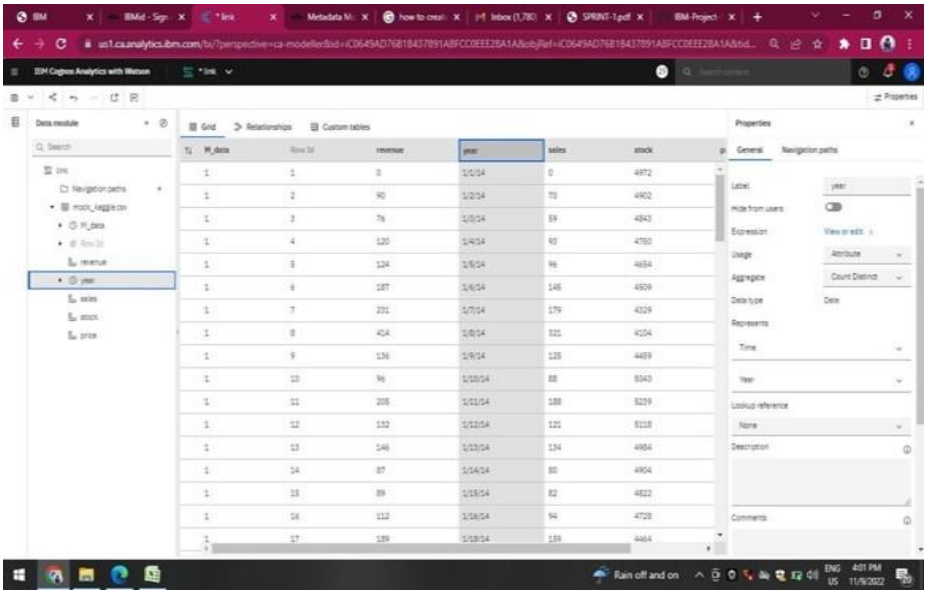


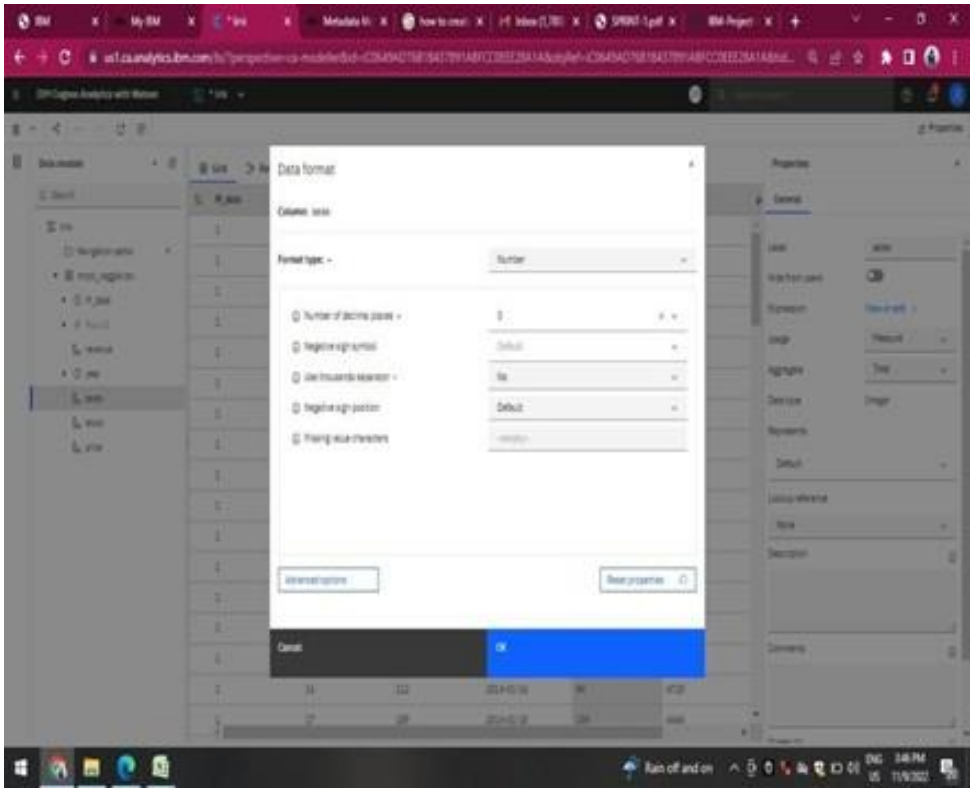


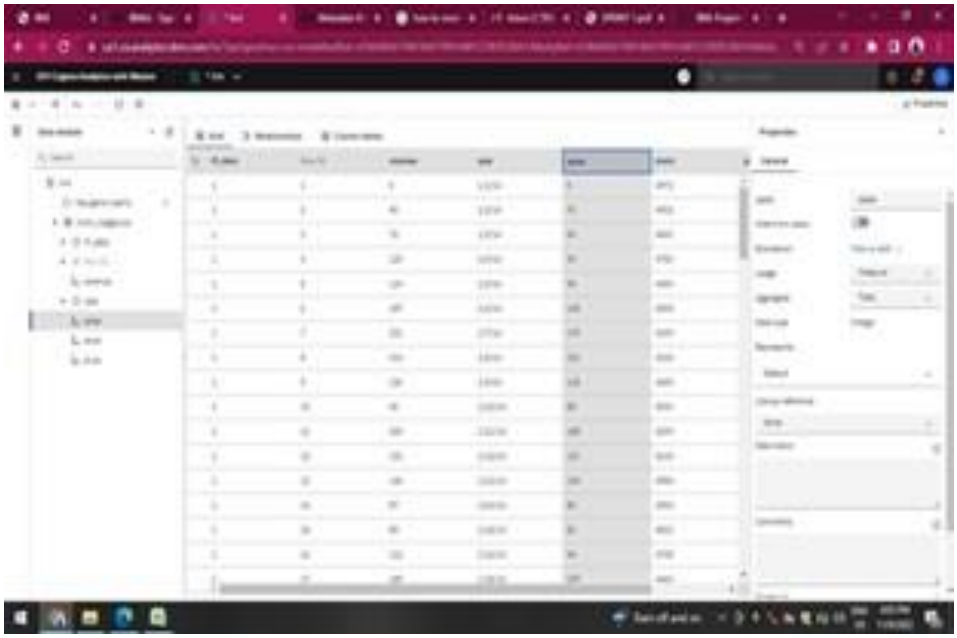
Year-Format Data



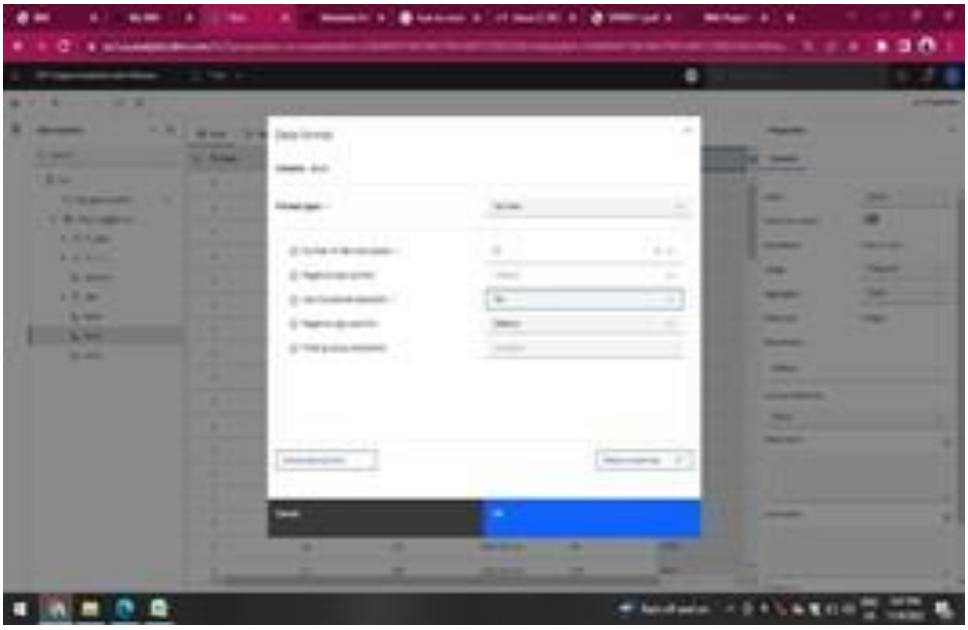


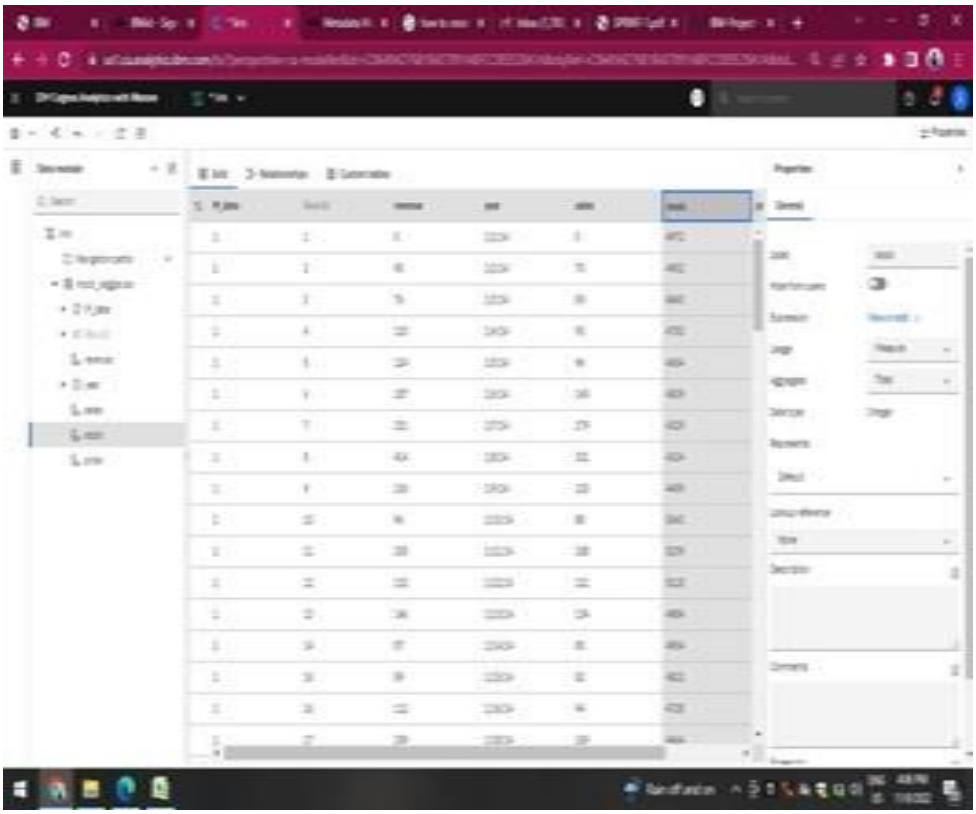
Sales Format Data



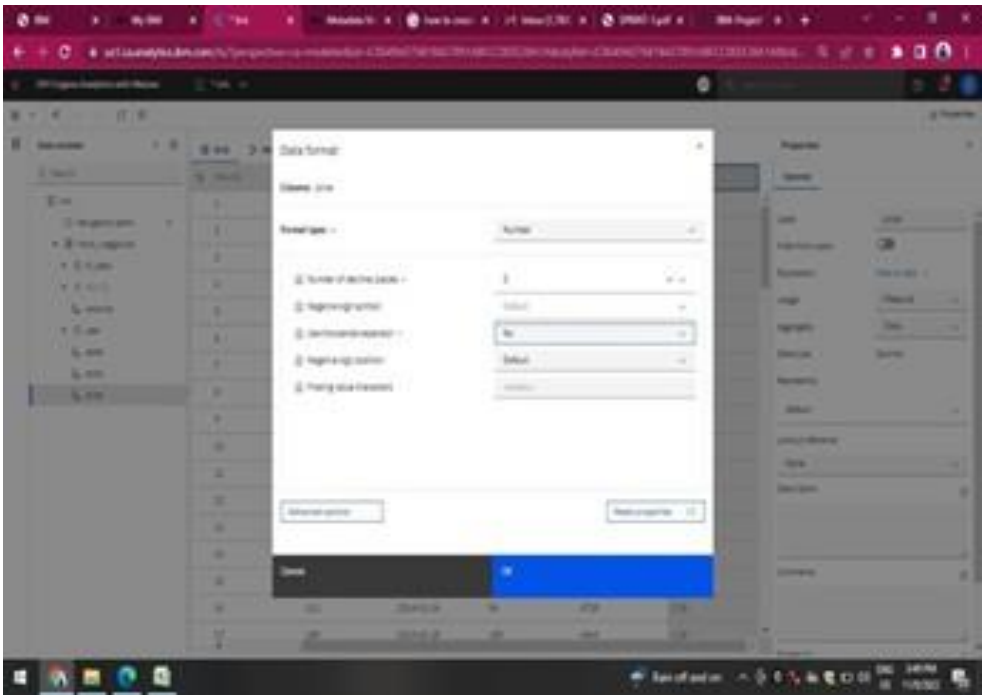


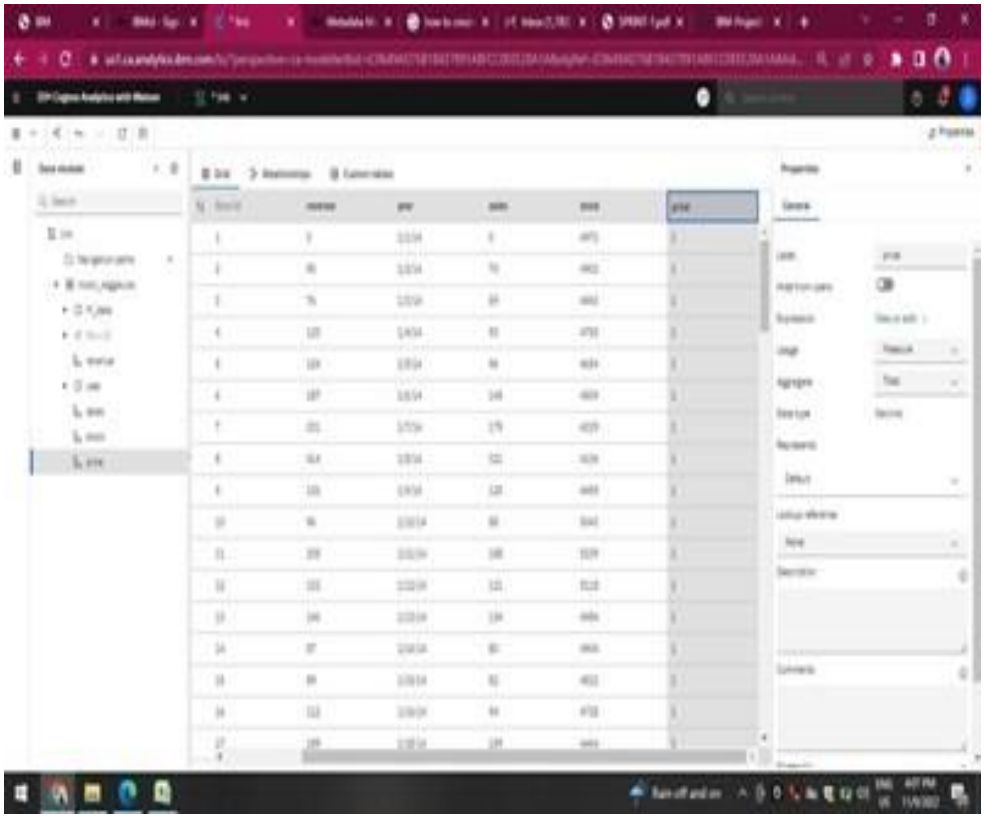
Stock-Format Data





Price-Format Data





DELIVERY OF SPRINT-2

SPRINT-2:

DATA EXPLORATION

- LOAD THE DATASET
- SALES ANALYSIS
- PRICE ANALYSIS
- STOCK AND PRICE FOR YEAR COLORED BY PRICE
  PRICE FOR YEAR COLORED BY YEAR
- STOCK AND SALES FOR YEAR COLORED BY YEAR
- YEAR COLORED BY YEAR SIZED BY STOCK
- STOCK TREE SUN BURST
- SALES TO PRICE WITH LINE WIDTH PRICE
- STOCK USERS
- YEAR SIZED BY SALES
- PREPARED DATA LINK

DATA COLLECTION

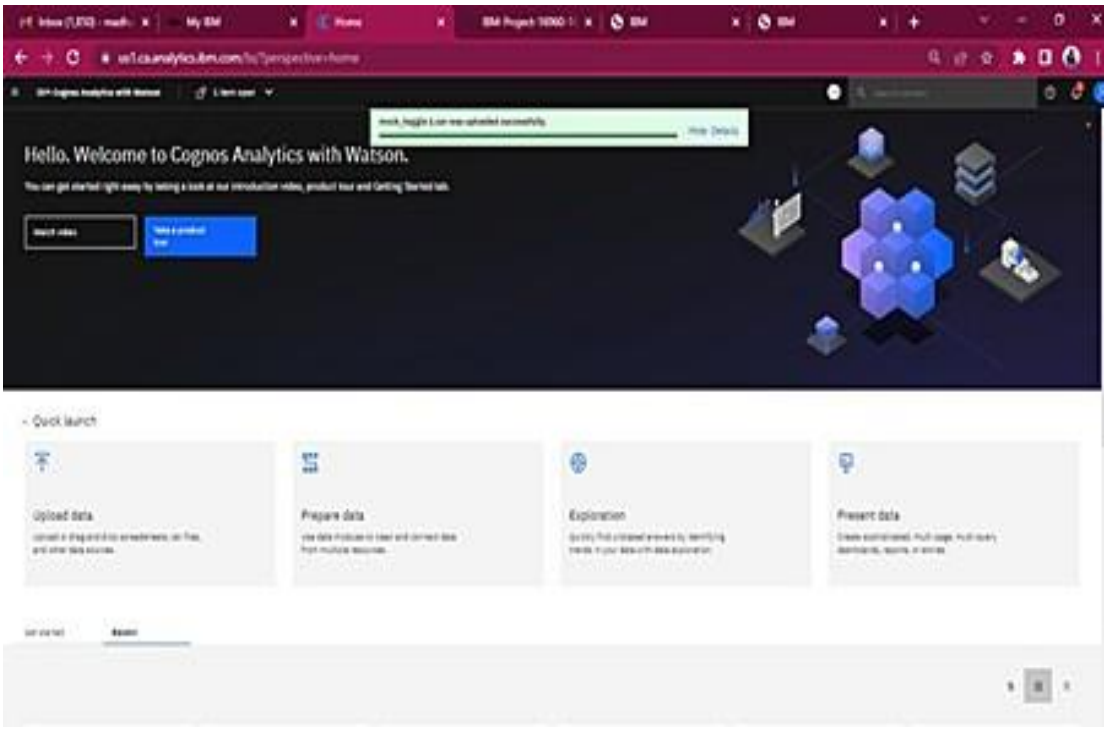
Download the Dataset

Dataset link-

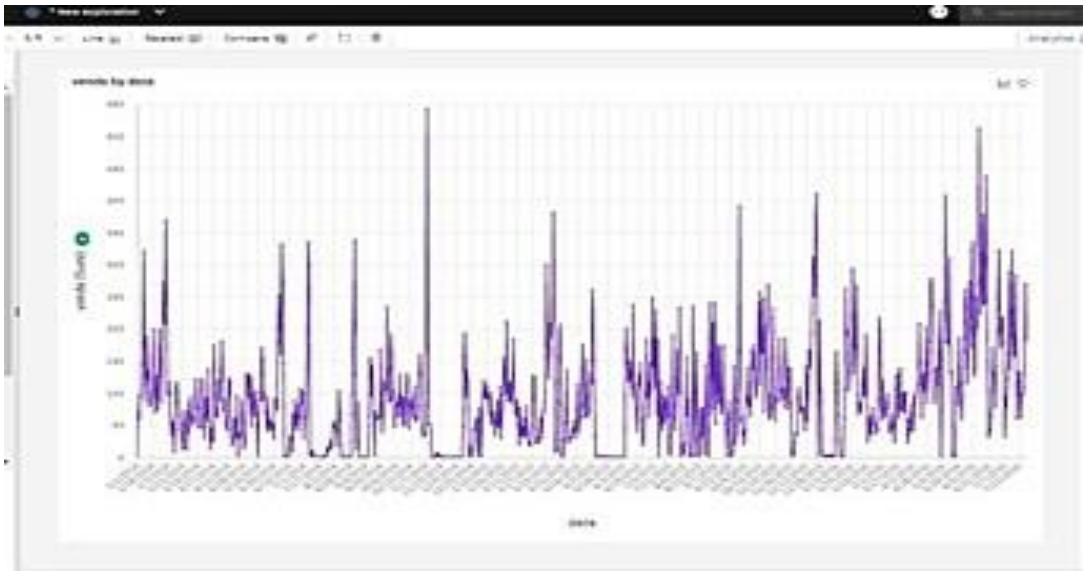
https://drive.google.com/drive/folders/1kiL5CHJmQvbk_9VyFsuUsmyAupBGNy

LOAD THE DATASET

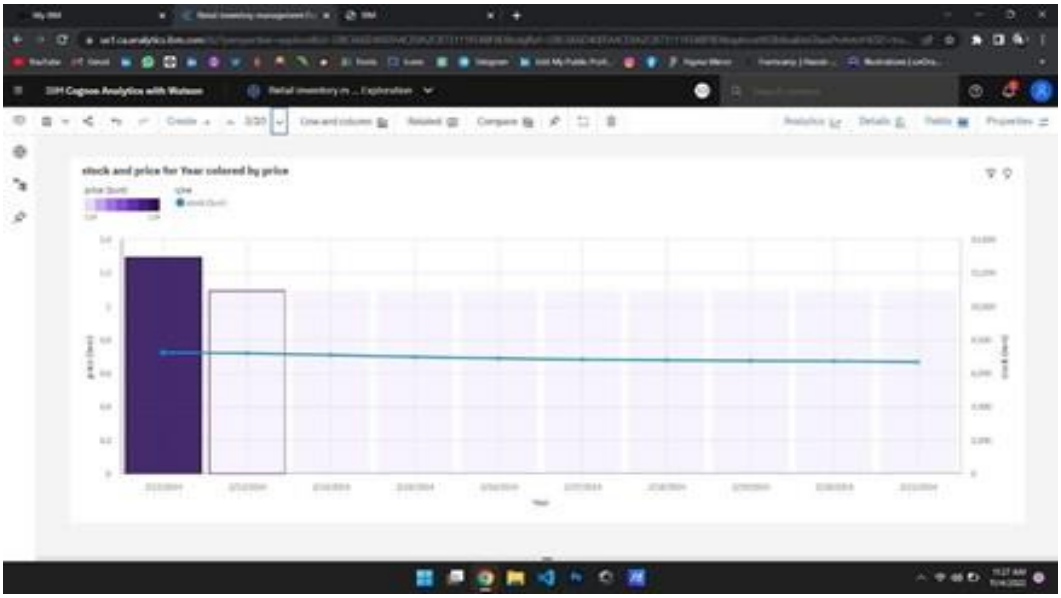
Tool used–IBM Cognos



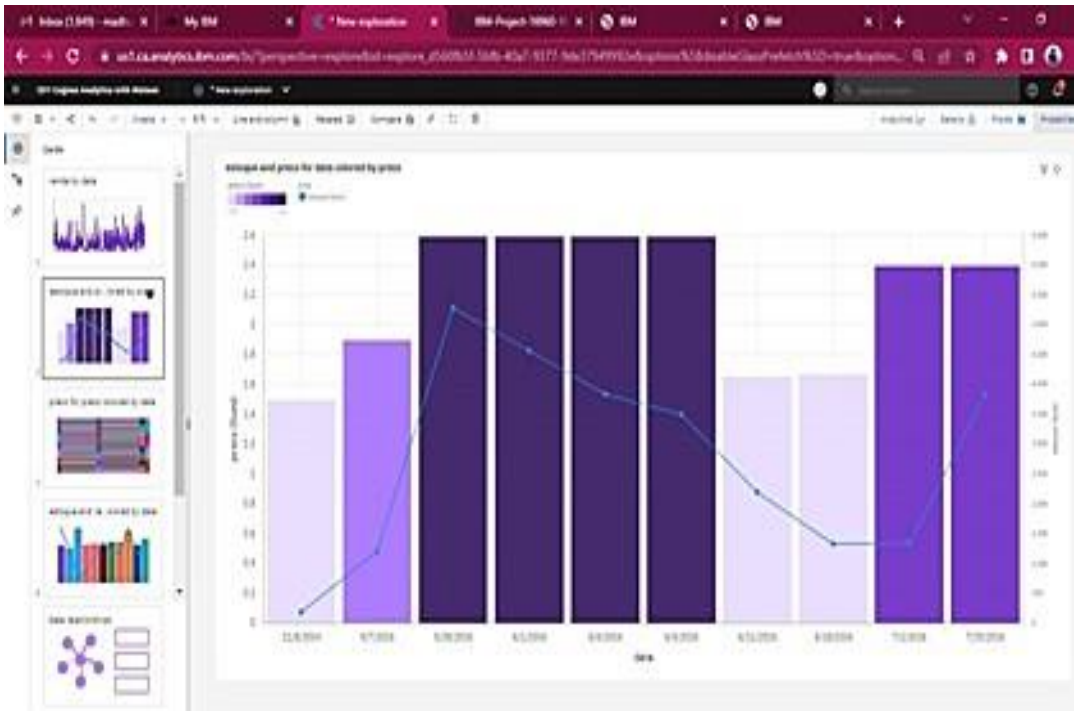
SALES ANALYSIS



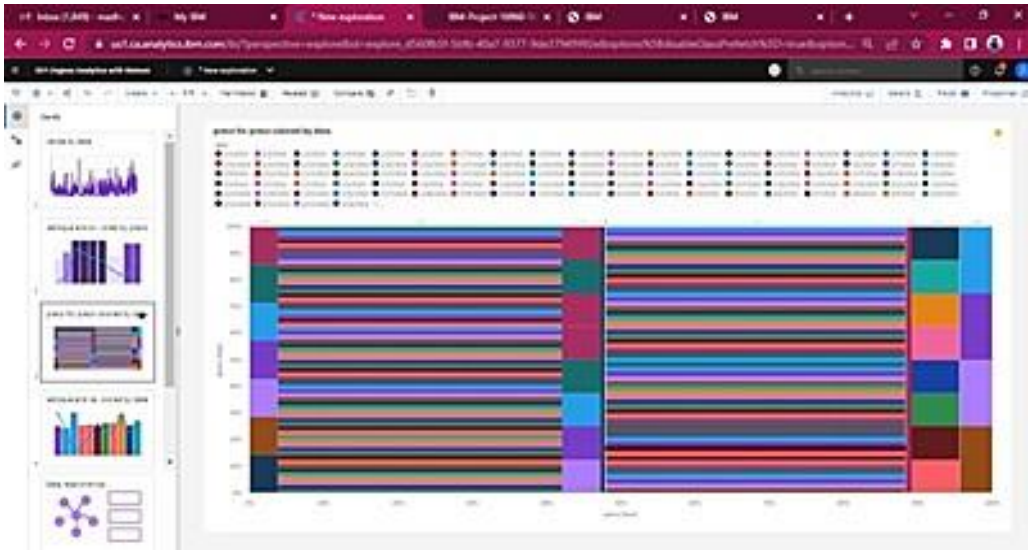
PRICE ANALYSIS



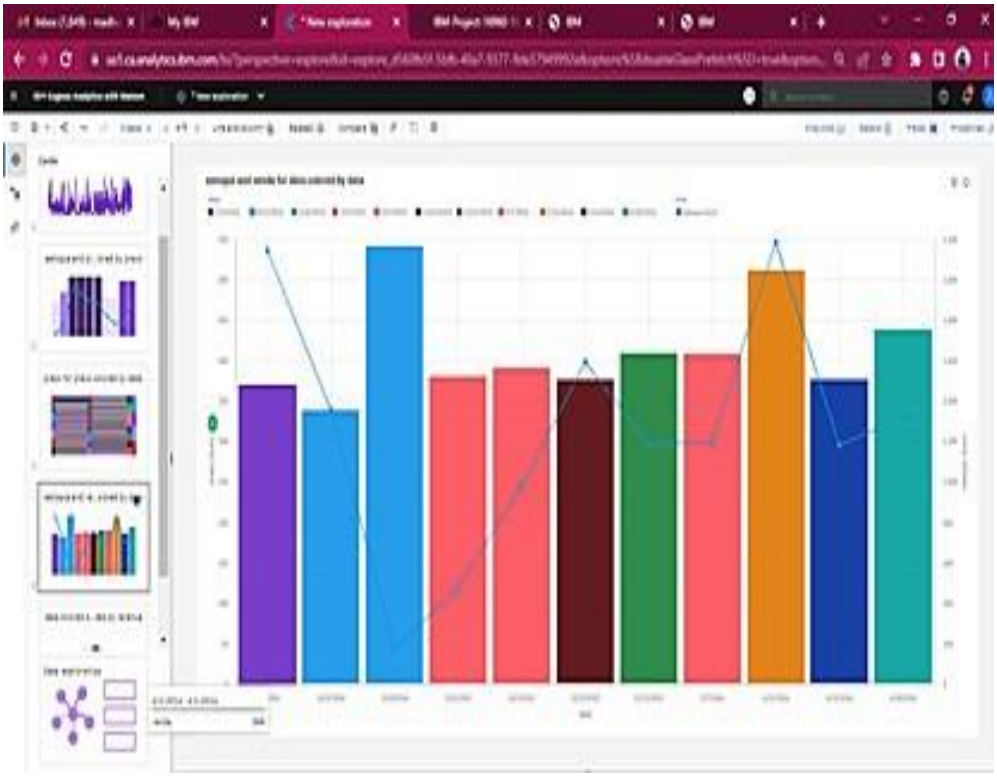
STOCK AND PRICE FOR YEAR COLORED BY PRICE



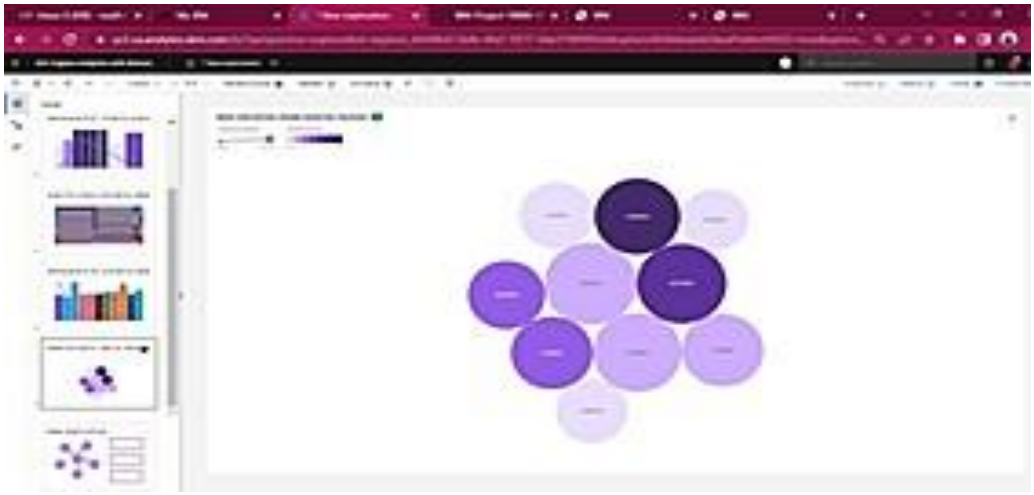
PRICE FOR YEAR COLORED BY YEAR



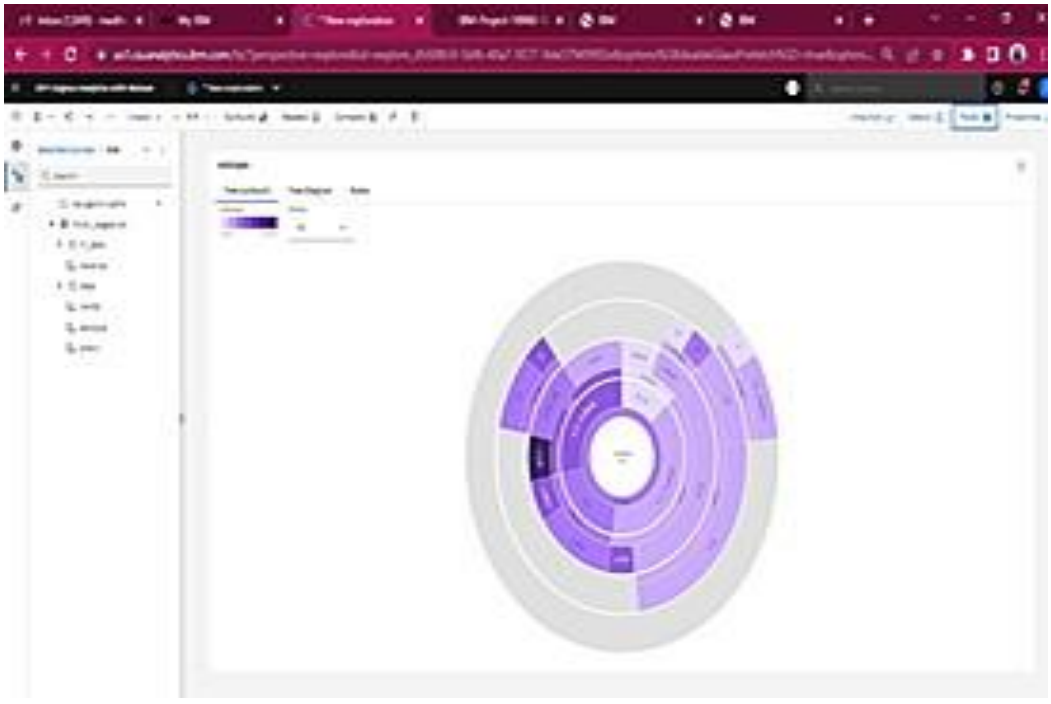
STOCK AND SALES FOR YEAR COLORED BY YEAR



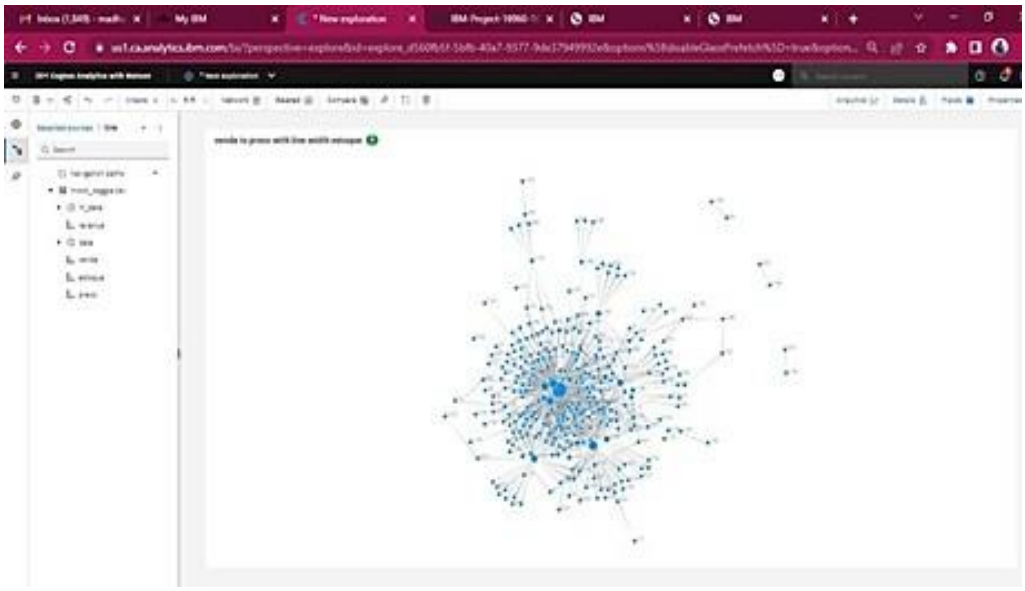
YEAR COLORED BY YEAR SIZED BY STOCK



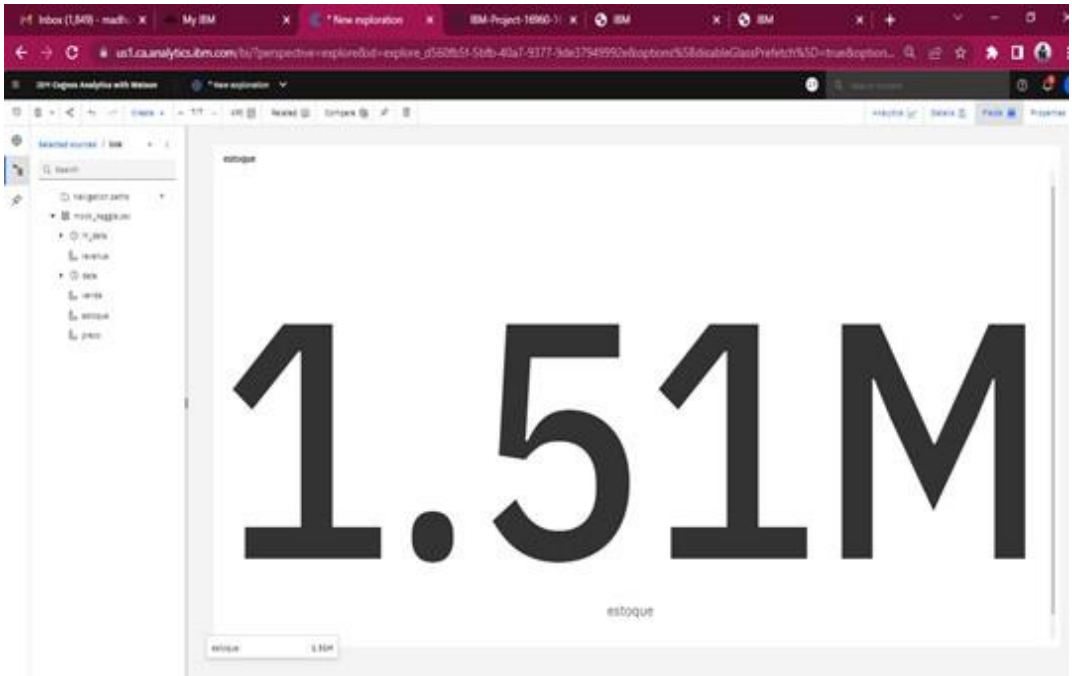
STOCK TREE SUNBURST



SALES TO PRICE WITH LINE WIDTH PRICE



STOCK USERS

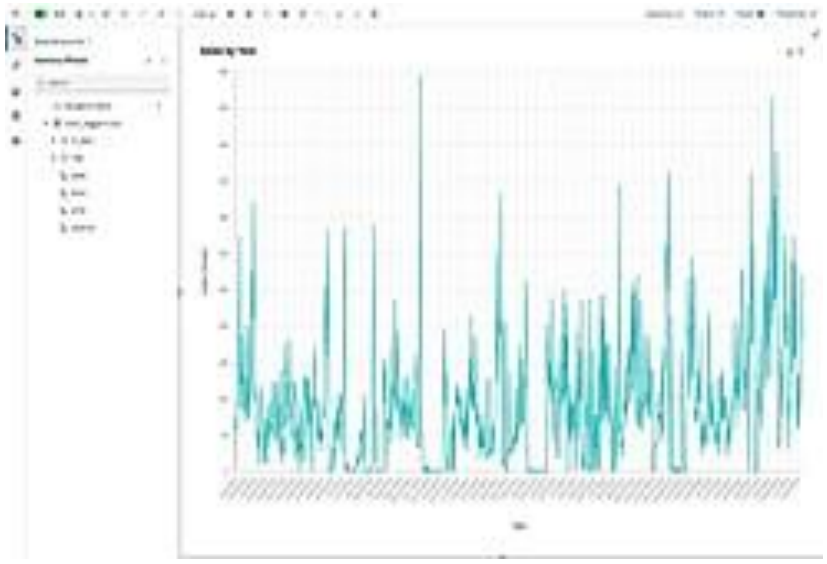


YEAR SIZED BY SALES

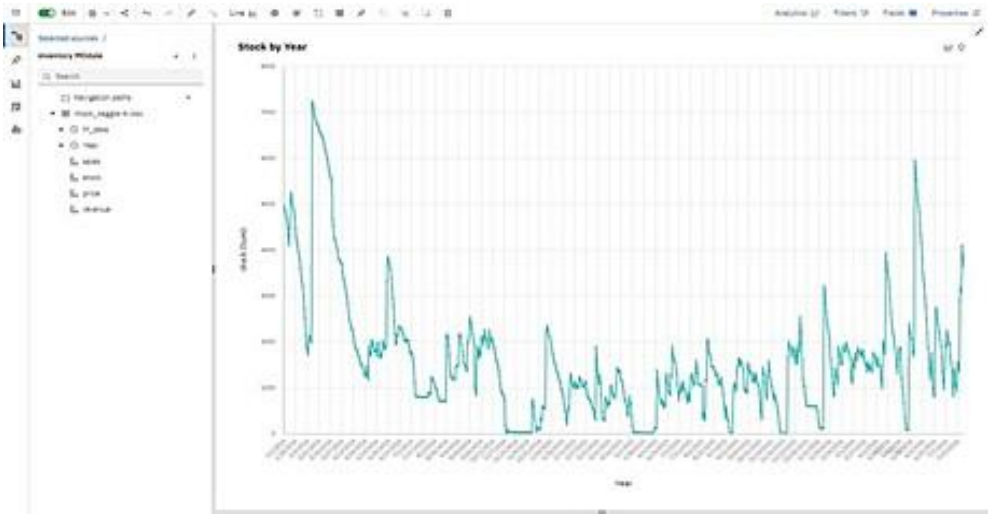
DELIVERY OF SPRINT-3

Dashboard Creation

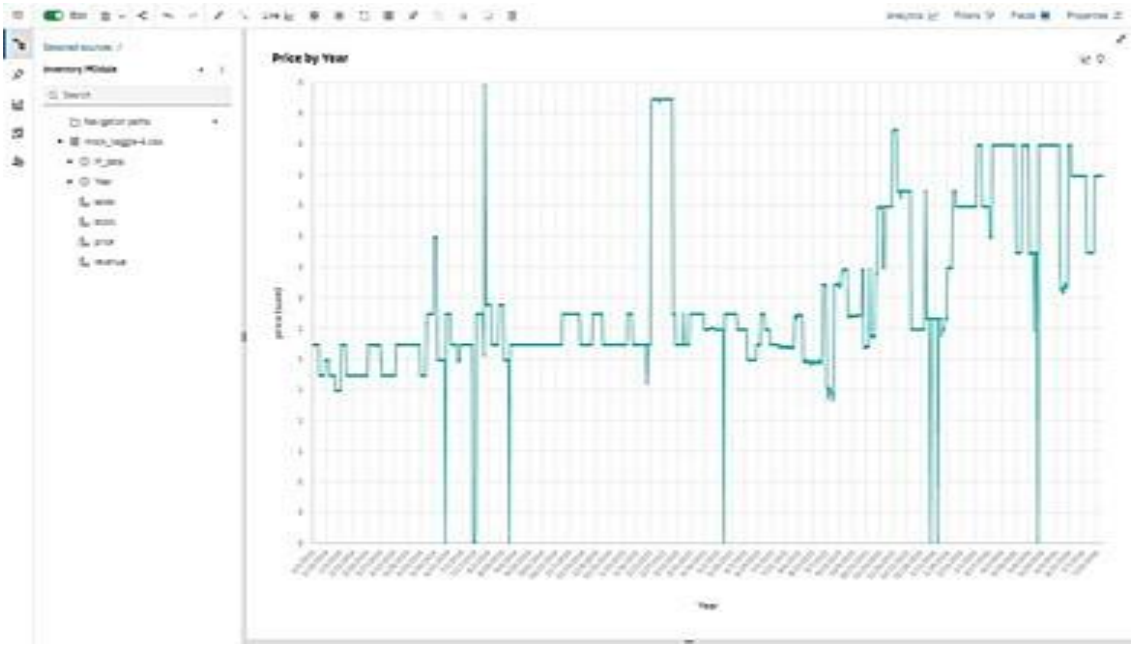
Sales by Year Line Chart



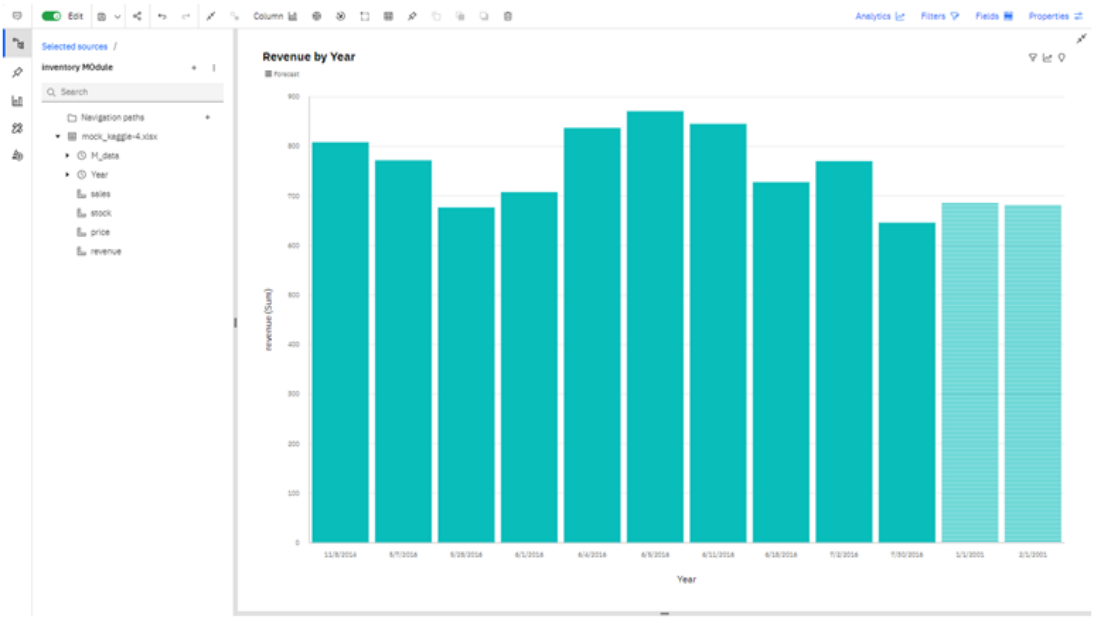
Stock by Year a Line Visual



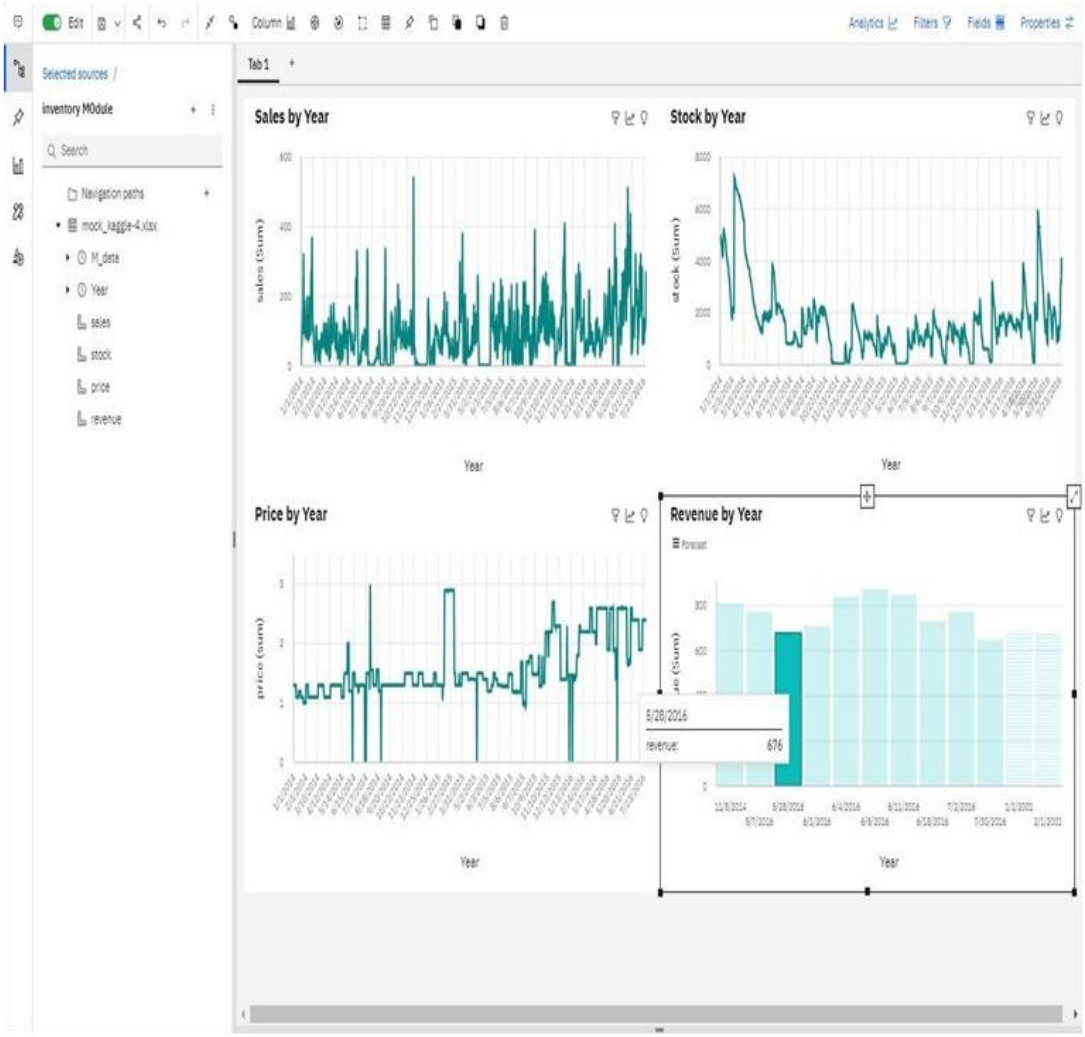
Price by Year Line visual



Revenue by Year Column Forecast visual.



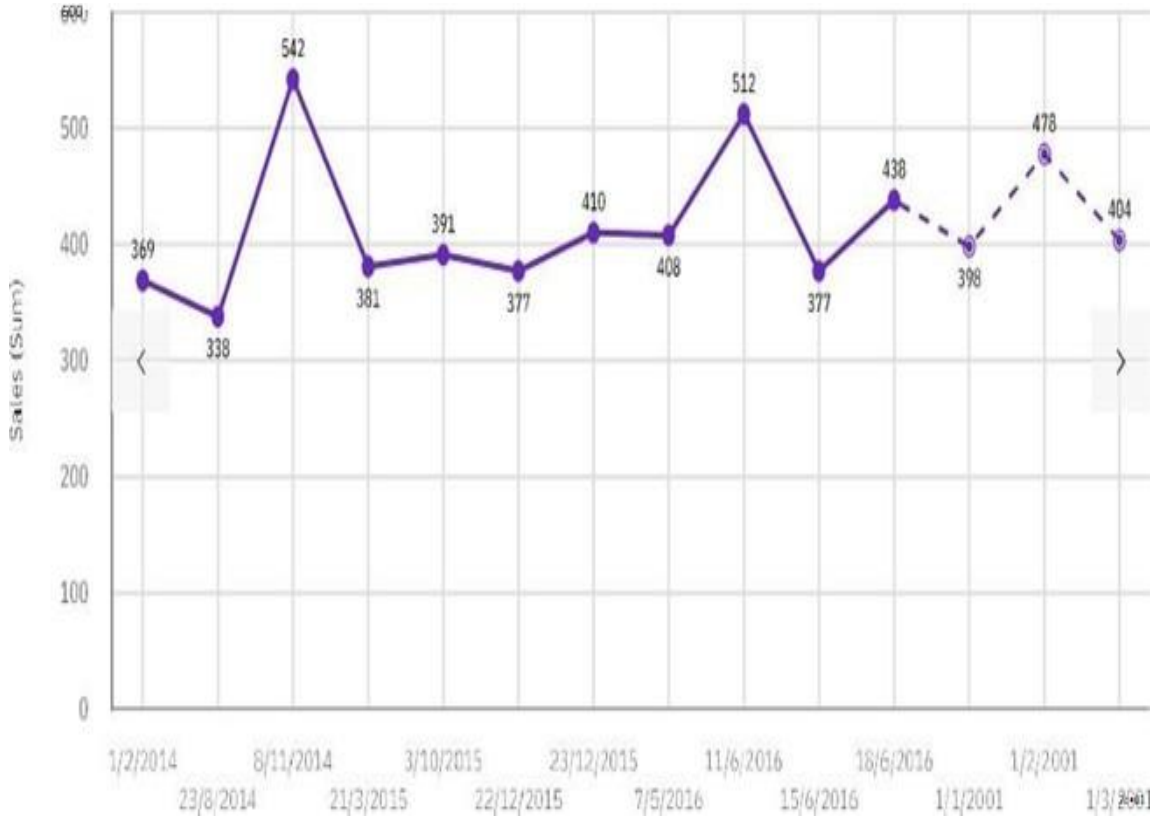
Dashboard creation



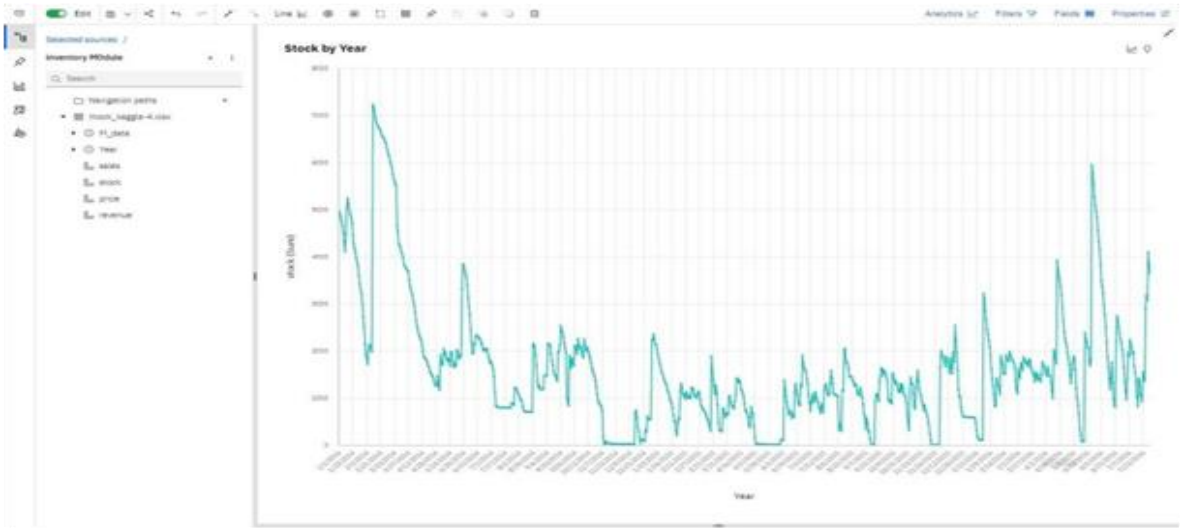
Dashboard:

Stock inventory dashboard

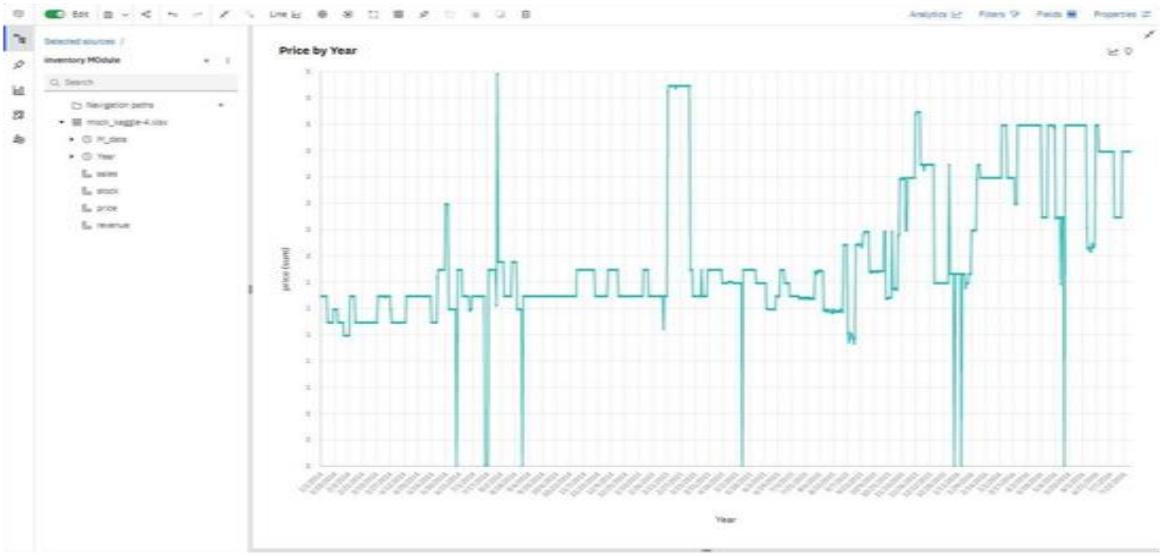
1.Forecast by years:



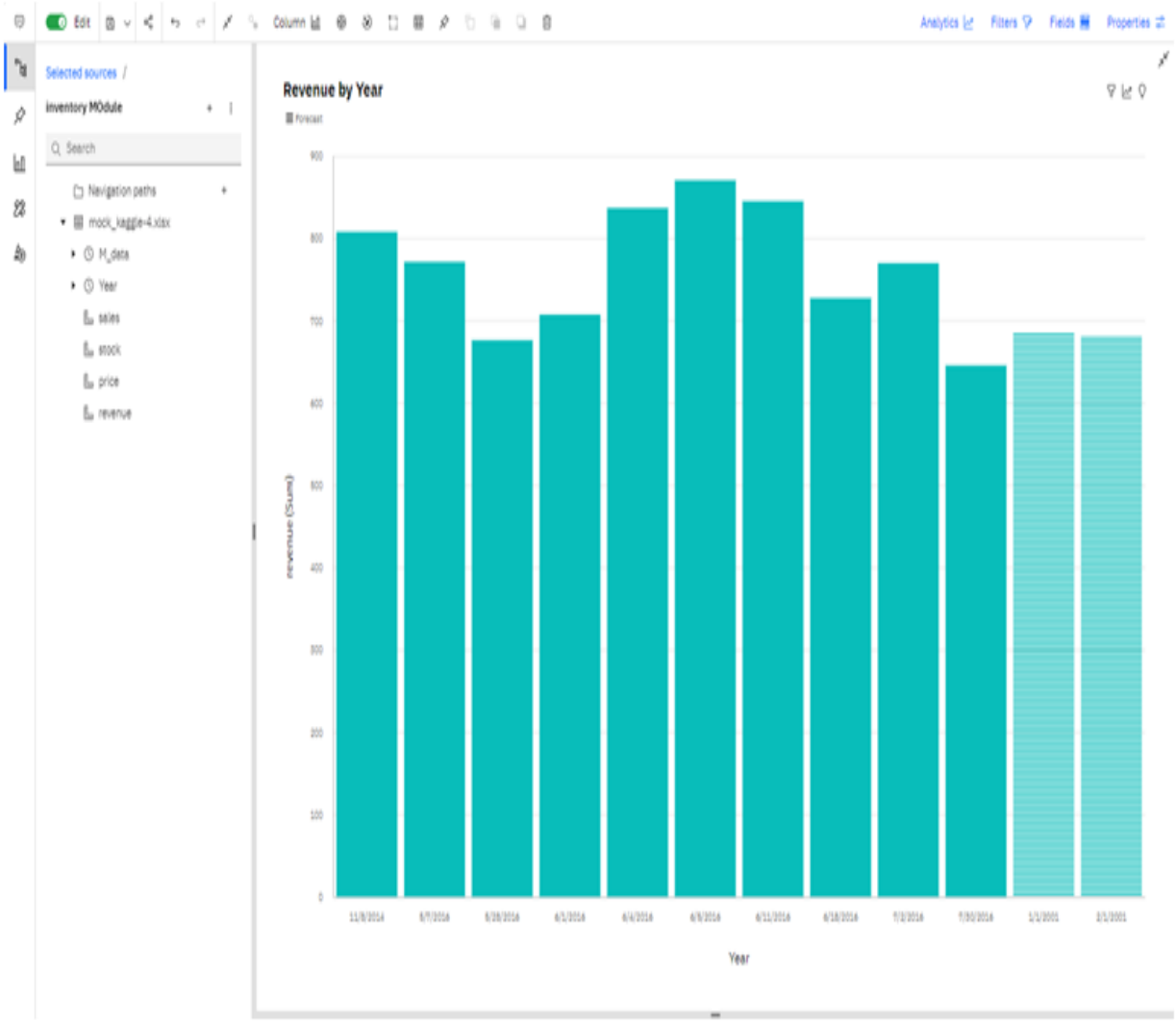
2. Stocks by years:



3. Price by years:

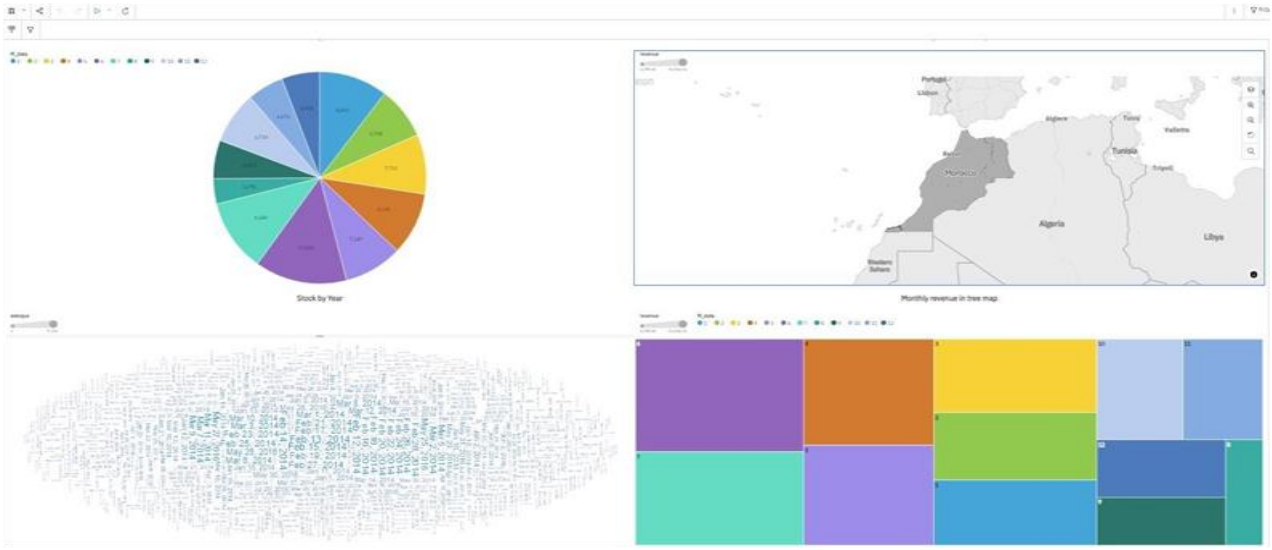


4. Revenue by year:



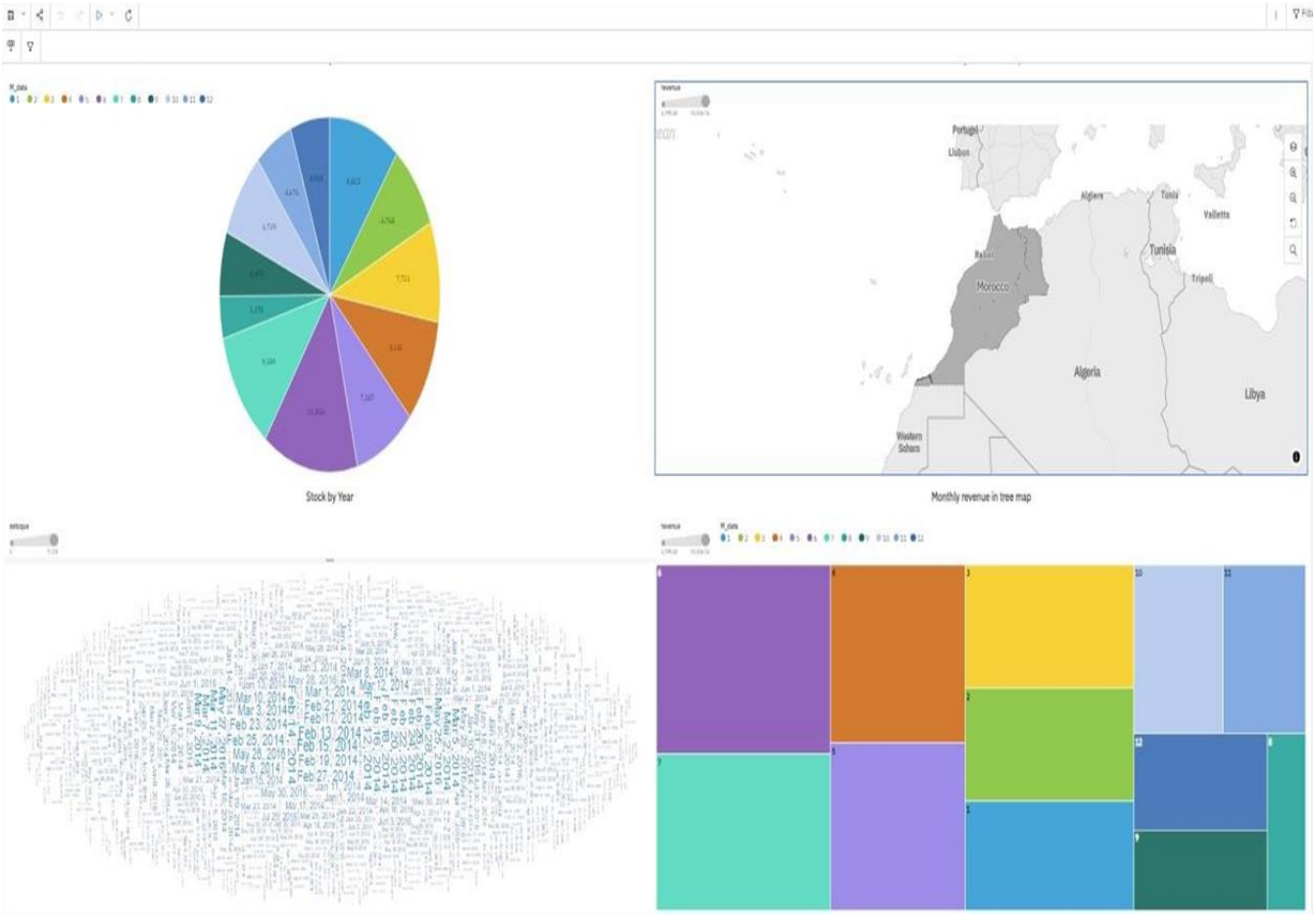
DELIVERY OF SPRINT 4

Retail store stock inventory analytics report

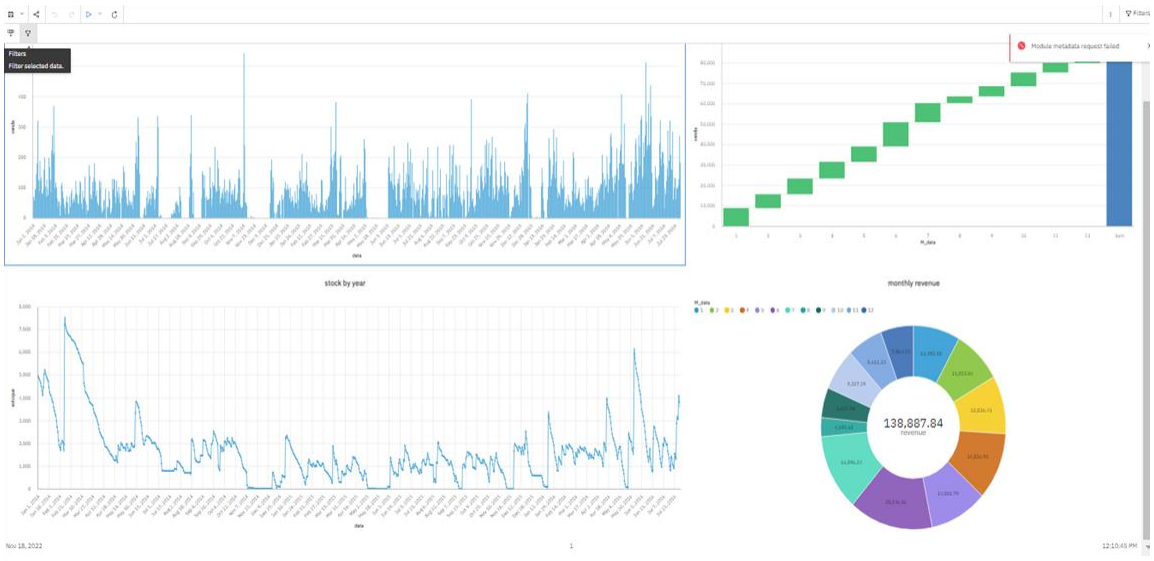


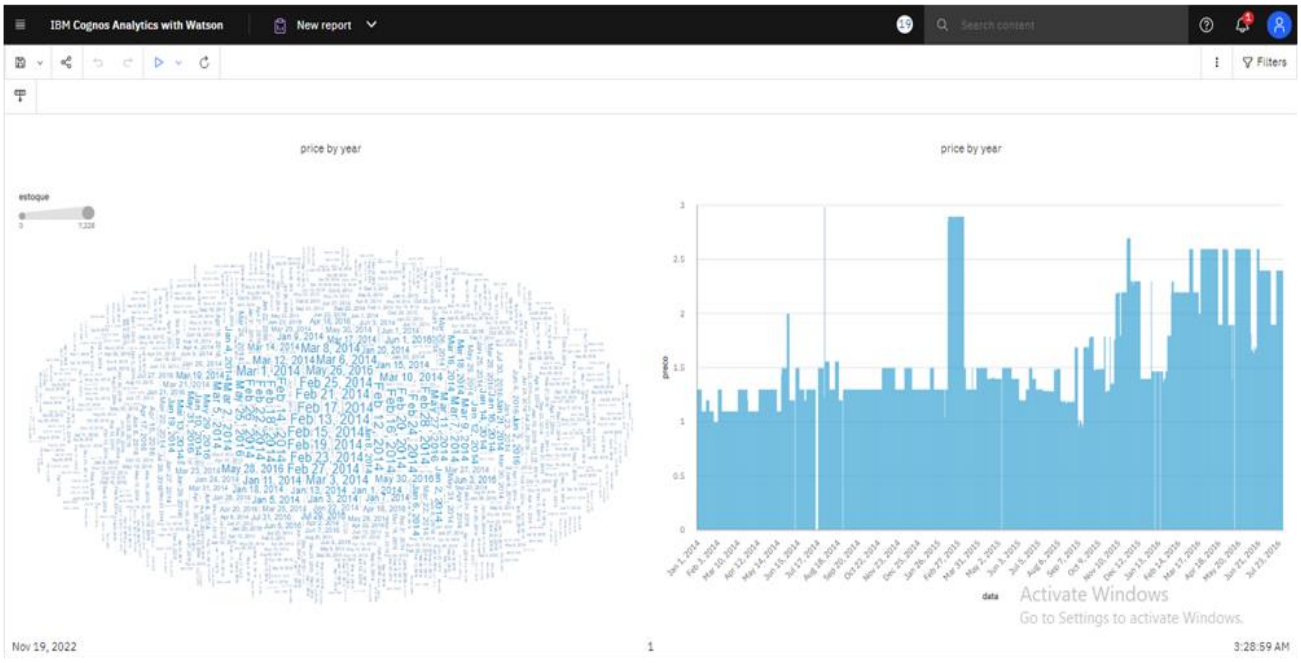
Report Creation:

Monthly Sales, Montly Revenue, Stock by Year

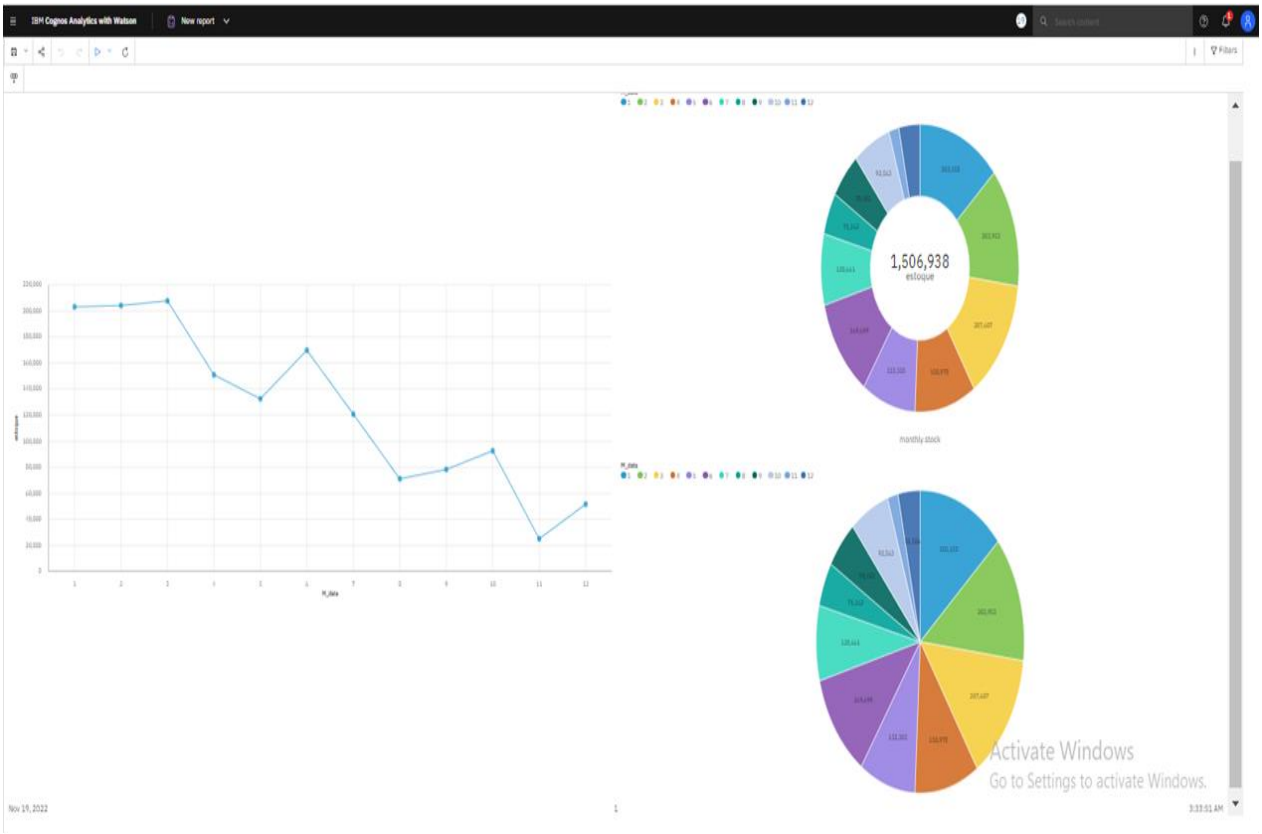


Sales by year ,Monthly sales ,Stock by year, Monthly revenue





1.MONTHLY STOCKS



CONCLUSION

In conclusion, the data clearly illustrates that the respondents seem to be clear about what they do in the inventory management and are well conversant with the control systems. The impression that that the employees at Glencore Rustenburg Smelter trust their superiors and believe in their style of leadership also supports the fact that they are allowed to work independently. The personnel employed in the supply chain understand their role within the inventory management and supply chain discipline as illustrated by the data. The data also showed that the effectiveness of the inventory management and control system is high and helps Glencore Rustenburg Smelter keep track of their inventory. The data highlights clearly that the employees are compliant with the policies of inventory and supply chain management and their practices of the inventory management and control system are effective. The study showed no statistically significant difference with most of the variables in the tool except for age versus the statement that “I find it useful to reconcile the monthly inventory expenditure through the monitoring tool”. Age only became a factor on this statement above. There was a statistically significant difference between race and the following four statements: “Inventory management is a Centralized Function”; “I understand all the 3 Levels of Supply Chain Management”; “I have been trained on all the policies, and SOP in the unit; The Company has a tracking system to manage inventory and monitor turnaround times”.

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