RETAIL STORE STOCK INVENTORY ANALYTICS

NALAIYA THIRAN PROJECT BASED LEARNING

on

PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND ENTREPRENEURSHIP

A PROJECT REPORT

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ABSTRACT

Inventory is usually the most important operational activities of wholesale and retail business. Maintaining the inventory collectively suggests that keeping tab on the realizable value of all the stocks. This paper digs into the challenges of manual inventory management for wholesale and retail business and derives solutions to these challenges by designing an inventory management system with predictive analytics to order and update the stocks. The findings show the challenges facing the manual system of inventory management which is mostly done by keeping book records; the manual system requires everyday counting of items in the inventory, human errors are very prevalent during counting and recording. Based on the findings this paper highlights the possible solutions to the above problems; a computerized inventory management system to order and update the stocks was designed and goods were supplied to implement the possible solutions. The objective of this project is twofold. First, it proposes an analytic model for hospital inventory management commodities, which would be able to predict the future demands of various inventory commodities. The model takes into account previous demand, population and geographic Location and other factors to successfully predict the future demand. Second, the project suggests an optimization model that would minimize the cost involved in supply chain & logistics management so that the required commodities can be made available to the hospitals at the minimum possible cost.

As inventory management deals with huge volume and different varieties of information which seems very complex to handle in the daily basis. Inventory stock should be modified or updated based on the customer retention which changes continues with the change in demand which also adds value to the organization in profits by avoiding wastages in the stock. To update the stock data in the organization one should keep on track with the end user demand time to time which can be done by keep track on goods based on First in first out and Last in First Out stock.

INTRODUCTION

Inventory management can be a dangerous balancing act as businesses seek to avoid lost sales due to out of stock merchandise, and reduce the expense of overstocking the wrong product or over-ordering the wrong inventory. Another factor that makes inventory management a lot more challenging is that styles and trends never stay the same. Considering also that inventory management is one of the most important activities of wholesale and retail businesses, along with this process has come a dramatic increase in volumes of data which is a challenge to cope with. An inventory management system with predictive analytics can be developed to help wholesale and retail businesses maintain optimal levels of inventory and copy with sheer volumes of data in their businesses.

Some of the drawbacks of using big data analytics in the retail sector has raised concerns among the customers as well the retailers. Privacy concern is one of them. Customers feel that their privacy are being snatched away when retailers track their location or store their purchase information for targeting them with personalized advertisements. Although big data analytics help employees to fasten up their work, it also poses a high cost for managing such a huge amount of data. Software needed to sort and analyze these data are very expensive. On the other hand, requires skilled people to work with them. Data quality decreases because of automation of data gathering, sorting and analyzing them.

Some major advantages of using big data analytics in the retail sector are it saves costs, helps in product development, speeds up data management, helps in predicting future, helps in inventory management, helps in price management, helps in micro targeting customers, etc. Retail inventory management is the process of ensuring you carry products 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. Inventory management is vital for retailers because the practice helps them increase profits.

Our dataset contains a lot of historical sales data of a Brazilian top retailer.Basic Questions of every retailer: How much inventory should I carry? Too much inventory means working capital costs, operational costs and a complex operation, lack of inventory leads to lost sales, unhappy customers and a damaged brand.

OBJECTIVE

By the end of this Project, you will:

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

Primary objective:

1. Identifying Consumer Demands:
The first task that a retailer has to perform is to identify the consumer needs and wants. The retailer does not provide raw materials, but offers finished goods and services in a ready-to-use form that the consumers want. For this, from time-to-time, retailer gathers information about consumers liking, disliking, tastes and preferences.

2. Management of Merchandise:
The second task that a retailer performs is the management of merchandise. The retailer performs the function of storing the merchandise and provides as and when required by the customer.

3. Convenience of timing:
The retailer creates time utility by keeping the store open and ready for sale according to consumers' convenience. The new trend in retailing to longer trade hours reflects the socio-cultural changes where over one in ten people work outside normal hours resulting in changing trading hours and panacea for small retailers against the cheaper prices of the super stores and other retail chains. By being available at a location that has easy access and convenient to shop, retailer creates place utility. Finally, when selected and bought by customers, retailers create ownership utility.

In short, retailers are not only the final link between the consumers and the manufacturers but a vital part of modern business world. In the absence of retailing, one can easily imaging how difficult and costly for a consumer to approach a manufacturer for various things every time he wants. Retailers do not sell things in small quantities but make their shopping convenient and less risky.

Retailers have floor staff to answer their queries regarding how to use effectively and safely, guide them what to buy according to individual preferences and budget and give demonstration or display products so that the consumers should have a feel of the merchandise before buying. The successful retailer focuses its activities on meeting these objectives through effective marketing.

Retail Sales Goals:

Retail Sales measures the gross receipts of a retail store by selling durable and 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 timeliest 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 term goals.

3. IDEATION PHASE

3.1 LITERATURE SURVEY

1. Inventory management in retail industry - Application of big data analytics

Author : Hien Vu

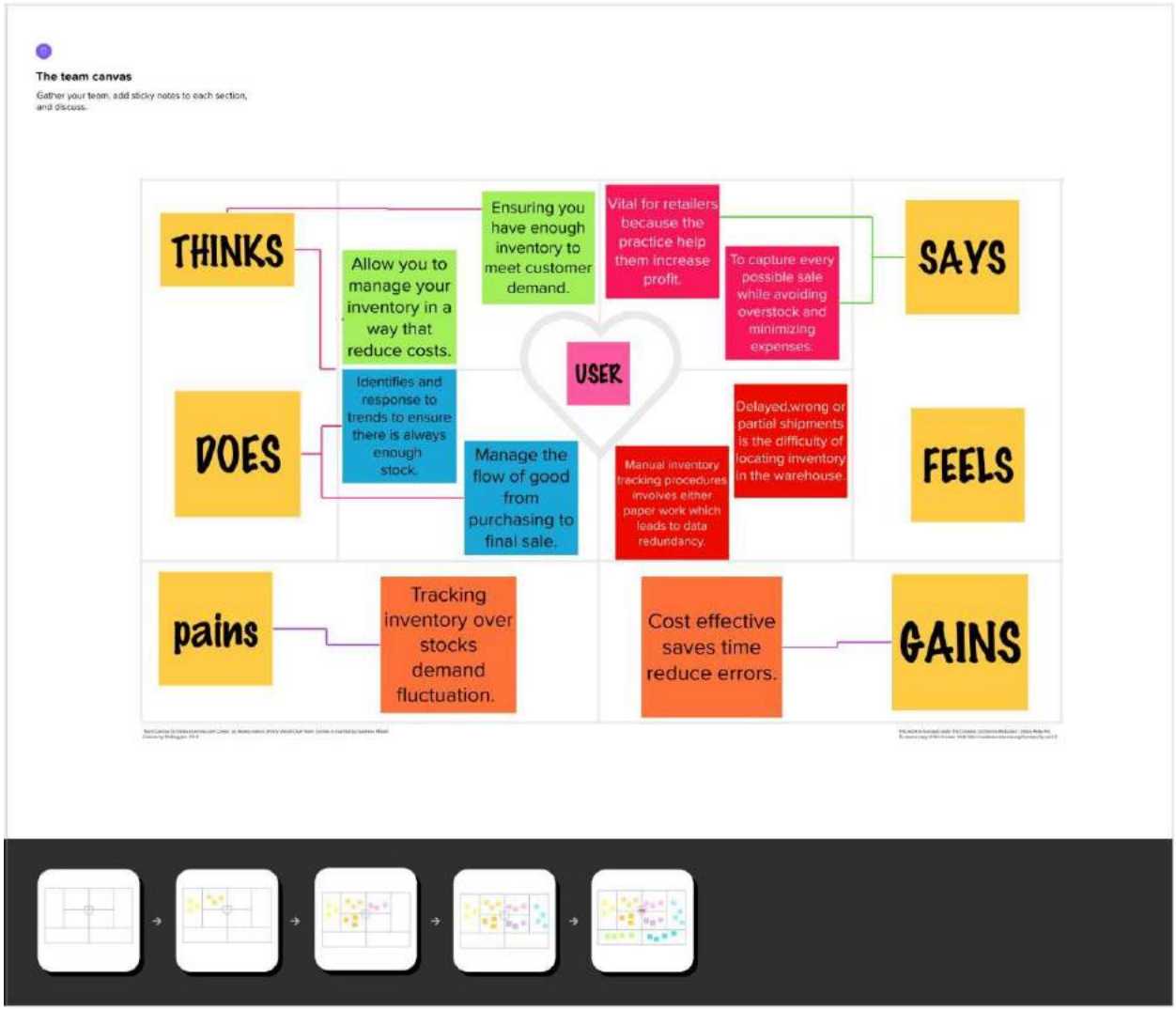
https://www.researchgate.net/publication/329526158_Inventory_management_in_retail_industry_Application_of_big_data_analytics

Retailers are faced with a dilemma where neither an excess of inventory on hand nor a running out of stock is negotiable as the retail sector becomes increasingly highly competitive and narrowly profitable. A thorough analysis of important inventory management strategies that have historically been employed by retailers on a large scale. The trade-off between shortage cost and overage cost is identified in the paper as the fundamental issue with inventory management. Once more, the "performance frontier" graph shows that introducing innovative is a practical way to change the efficiency curve. BDA is that innovative in this scenario. The research identifies opportunities for incorporating BDA into traditional inventory management methods and boosting the applicability and feasibility of these models in the big-data environment.

2. Inventory management for retail companies: A literature review and current trends Author : 1.Cinthya VanessaMunoz, Jorge Andres Espinoza Aguirre, RodrigoArcentales-Carrion & Mario Pena

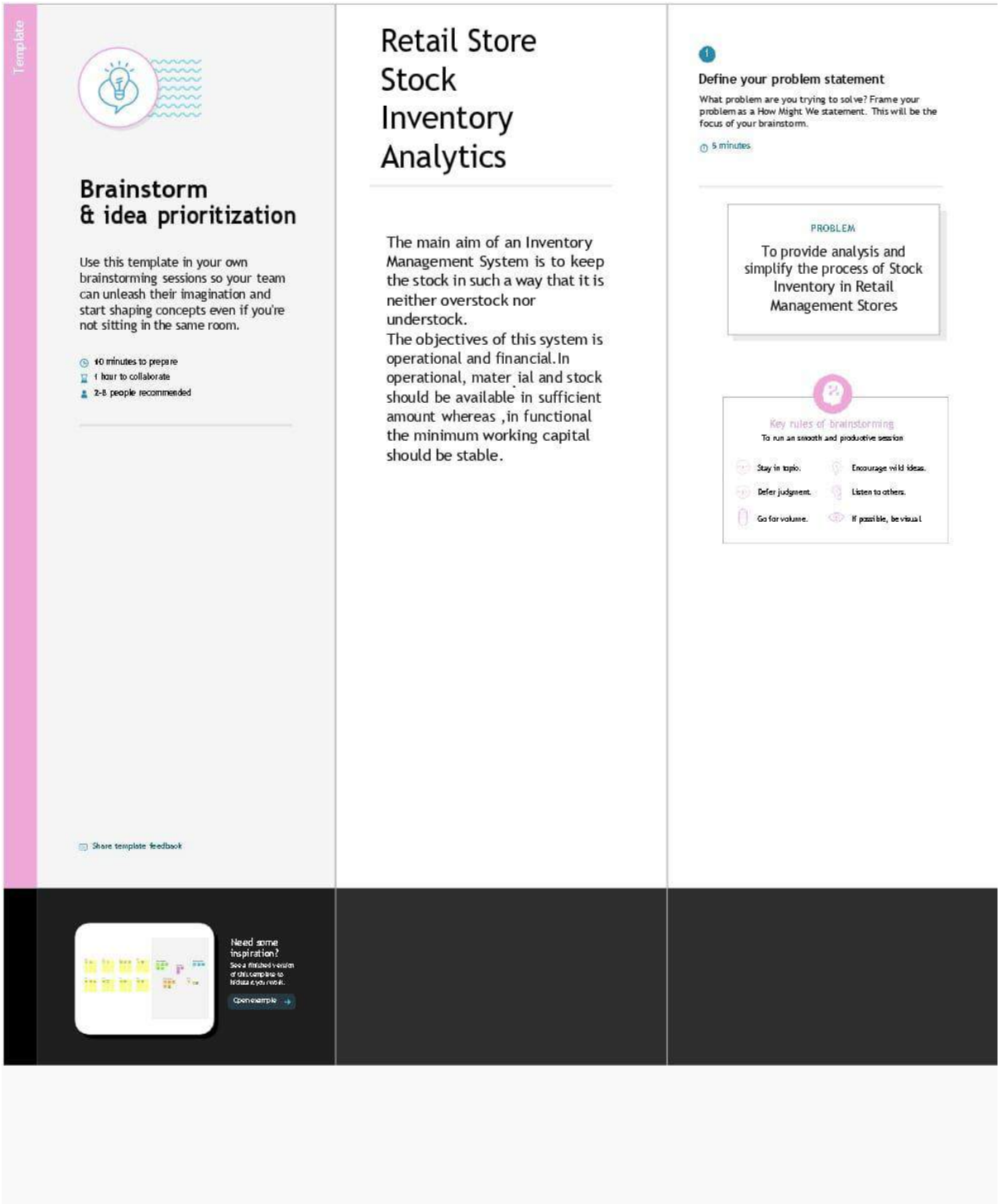
https://www.researchgate.net/publication/352235223_Inventory_management_for_retail_co mpanies_A_literature_review_and_current_trends To identify the primary trends and indicators of inventory management in Small and Mediumsized Enterprises, a systematic literature study was conducted (SMEs). The five-year study period between 2015 and 2019 mainly focuses on the retail industry. The main findings of this study include the top inventory control and management models, the Key Performance Indicators (KPIs) for managing them correctly, and the advantages and difficulties of selecting or implementing an effective system

3.2 EMPATHY MAP



3.3 IDEATION PHASE

Step 1:



Step 2:

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 doodling!

Janani S R

- Take a survey around the neigbourhood
- Having an honest and professional ethics in the work will give us more clients
- Innovation is important
- Get the popular store owners experience
- To understand the current trend and movement of Stocks or products
- Gather inventory info to identify strengths and weakness

Manjhu priyanga A

- Creating a fearless path between the customer and dealer
- Providing a user friendly network will create a next path to the the growth of analysis
- The thoughts and perspective of every individual in the group must be regarding the vision of the organisation
- Scheduling the proper delivering report will give more profit
- Do a Q&A session for detailed info
- Forming a trust worthy relationship between the customer will make sure that we are in the stage of developing in our platform

Hephzibah J

- Reordering the products needs to be done in a timely manner.
- Patience of co workers will decide the client admittance in project out source
- Creating a fearless path between the customer and dealer
- The structure of the web or software that we provided for the client, should like more professional and without bugs
- The analysis of an every project should be by an providing data or else by a external proper data
- Contribution of every individual will payoff the organisation

Jovitha M

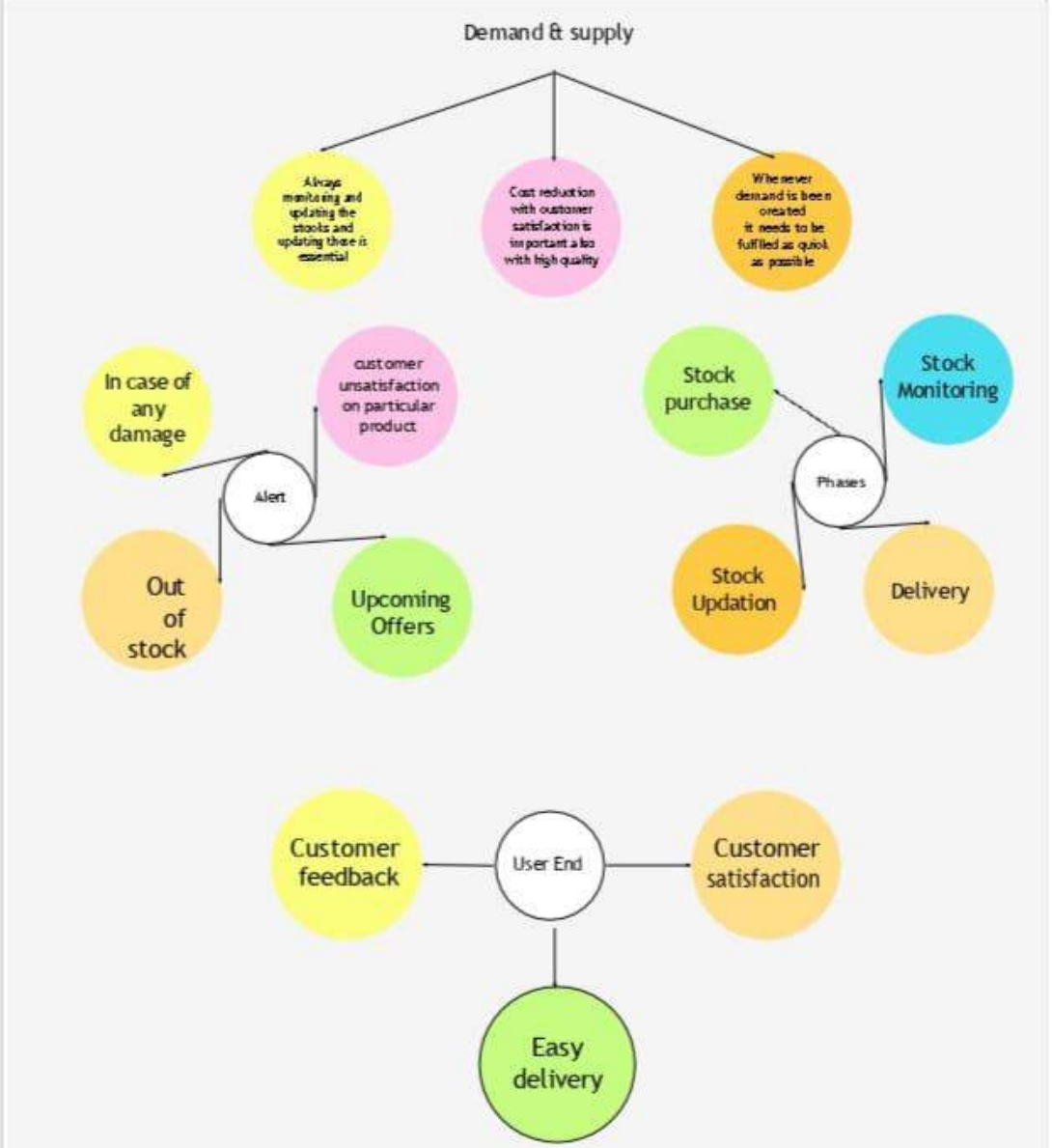
- Clearing the proper acknowledgement to customer before leaving over the project
- Recreating the paper work pattern into digital is difficult job for every individual in a group
- The analysis of an every project should be by an providing data or else by a external proper data
- Providing a user friendly network will create a next path to the the growth of analysis
- Providing a centralized path to the all the clients will show the equality
- Attracting words will work on the stocks dashboard for new clients a sales to buy a stock

3

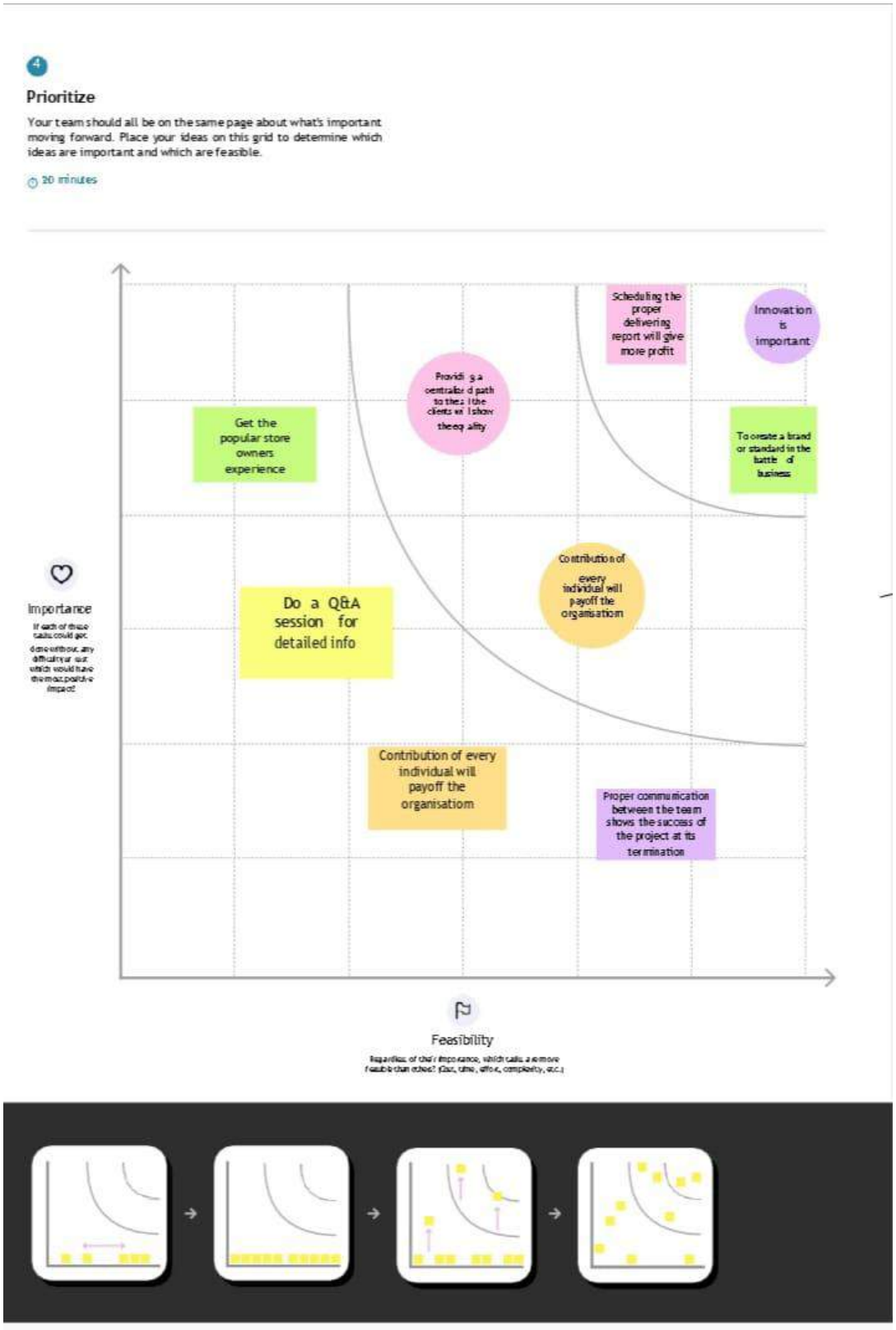
Group ideas

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



Step 3:


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
Scheduling the proper delivering report will give more profit
Innovation is important
Get the popular store owners experience
To create a brand or standard in the battle of business
Contribution of every individual will payoff the organisation
Do a Q&A session for detailed info
Contribution of every individual will payoff the organisation
Proper communication between the team shows the success of the project at its termination
Importance
Feasibility

3.4 PROBLEM STATEMENT:

Retail store stock inventory analytics is implemented to analyze the historical sales data of a Brazilian top retailer. By deeply understanding the dataset, identifying pattern, relationships and connection using IBM cognos analytics and building visualizations of stock inventory to create meaningful dashboards. The final dynamic dashboard helps retailers by providing detailed product listing, easy categorization, inventory reports, satisfying customer needs and meet variation in product demand.

4. PROJECT DESIGN PHASE 1

4.1 PROPOSED SOLUTION

S. No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Due to poor inventory, retailers are not able to provide right goods to consumer in right quantity at right place in right time. Through analysis and visualization of stock data, user can meet customer demand without running out of stock or carrying excess supply
2.	Idea / Solution description	Using **"Modern inventory systems and analysis"** can help to track inventory levels and raise red flags when the stock levels decline. This allows retailers to re-stock before they can run-out -of stock Based on **"Analysis of Safety Stock Customer Service Level"** can reduce high inventory levels of stocks
3.	Novelty / Uniqueness	**Optimal Demand Forecast** provides accurate demand forecasts would ensure that the business does not endup with too little or too much stock
4.	Social Impact / Customer Satisfaction	Retailers able to maintain stocks neither stock outs nor excess carrying. Customers can satisfied with their demands and met the availability of the products.

5.	Business Model (Revenue Model)	Retailers are able to understand the deepest customer needs and adjust their offering to meet shoppers demands.

		Improve the decision-making process oriented at reducing costs and increasing revenues.
6.	Scalability of the Solution	Ensures obsolete inventory, replenishment optimization, omni channel retailing and economic order quantity for optimal orders

4.2 PROBLEM SOLUTION FIT

1. CUSTOMER SEGMENT(S)

1.It always lead to short term forecasting of the inventory.
2.It leads to overstocking and affects capital, operational costs.
3.By managing inventory, retailers meet customer demand without running out of stock or carrying excess supply.
4.Inventory management is vital for retailers because they increase profits.

6. CUSTOMER CONSTRAINTS

1.The analytical projects help in analyzing or managing inventory.

2.Once it is analyzed and the data sets are provided it will perform its work to the fullest.

3.Retailers will feel more comfortable in forecasting inventory without relying on others.

5. AVAILABLE SOLUTIONS

1.Even though there are more various ways and methods to manage the inventory system, this analysis is more useful.

2.Because the analysis is done on various categories.

2. JOBS-TO-BE-DONE / PROBLEMS

1.The analytics provides datasets which consist of the details about how much stock is available?

2.Whether it has to be updated is it overstocking? etc.

3.Once the data sets are provided it is easy to make a report of the inventory.

4.The short term forecasting of the inventory is made simple.

9. PROBLEM ROOT CAUSE

1.The main root cause of this stock inventory management is to maintain stock and to have a clear view in forecasting the inventory.

2.This analytical project surely reduces the percentage of unawareness of the stocks and it helps in forecasting.

7. BEHAVIOUR

1.It tries to make a record of stocks available.

2.It Helps in managing inventory. It is user friendly.

3. TRIGGERS

1. All retailers wants to make profits. So, they are triggered to use this type of analysis so they can make better decisions regarding stock inventory system.

4. EMOTIONS: BEFORE / AFTER

B**EFORE**: The shopkeepers with either too little nor too much stock on hand leads to working of capital costs, operational costs, and a complex operation.
AFTER: Based on the inventory management analysis we can manage how much inventory is required and we can calculate the profit & losses...

10. YOUR SOLUTION

1.By preparing various types of charts it is easy to analyse the business and we can make better business decisions.

2.The main objective is to manage the inventory system i.e there must not be any excess stock and lack of stock.

3.It can be done very efficiently and effectively.

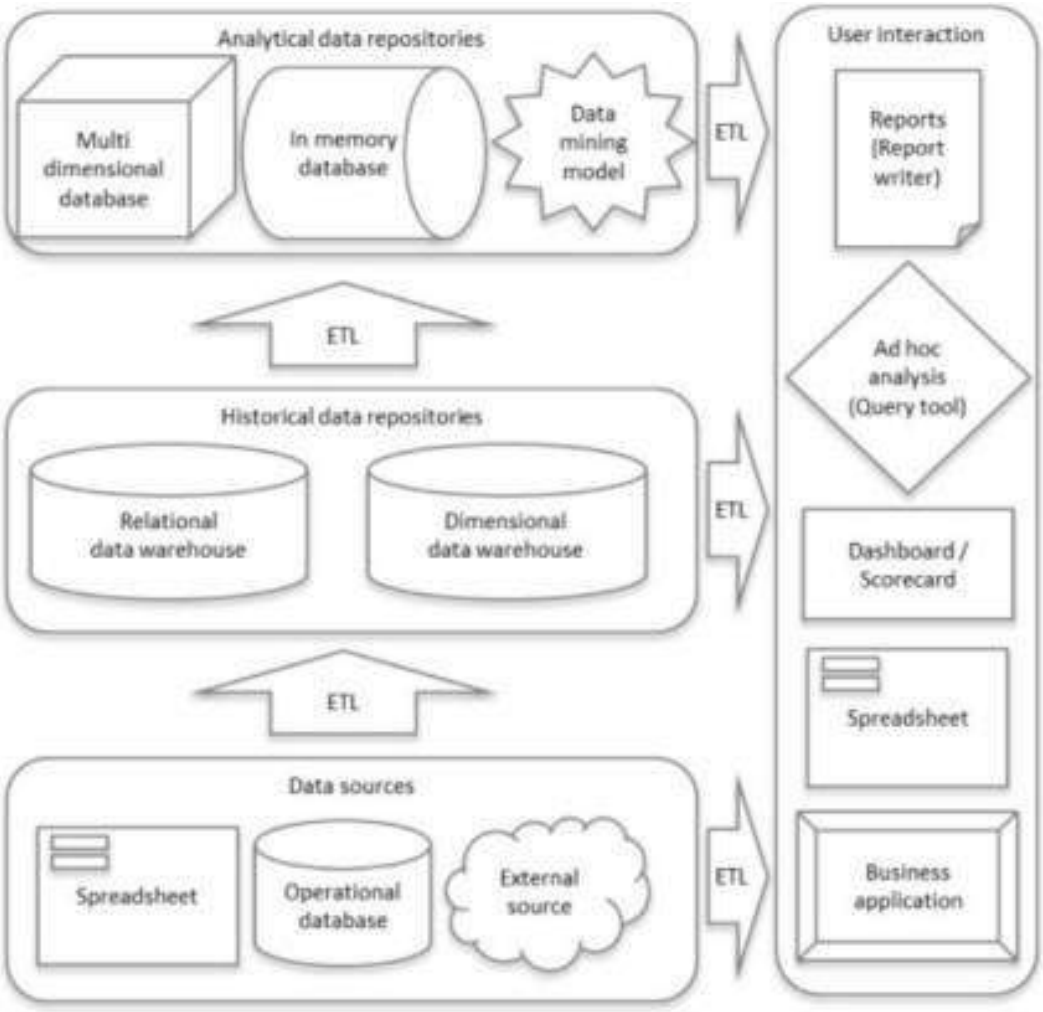
8.1 ONLINE CHANNELS

OFFLINE: In offline mode it is possible to analyze the inventory system to make sure stocks don't remain excess.

8.2 OFFLINE CHANNELS

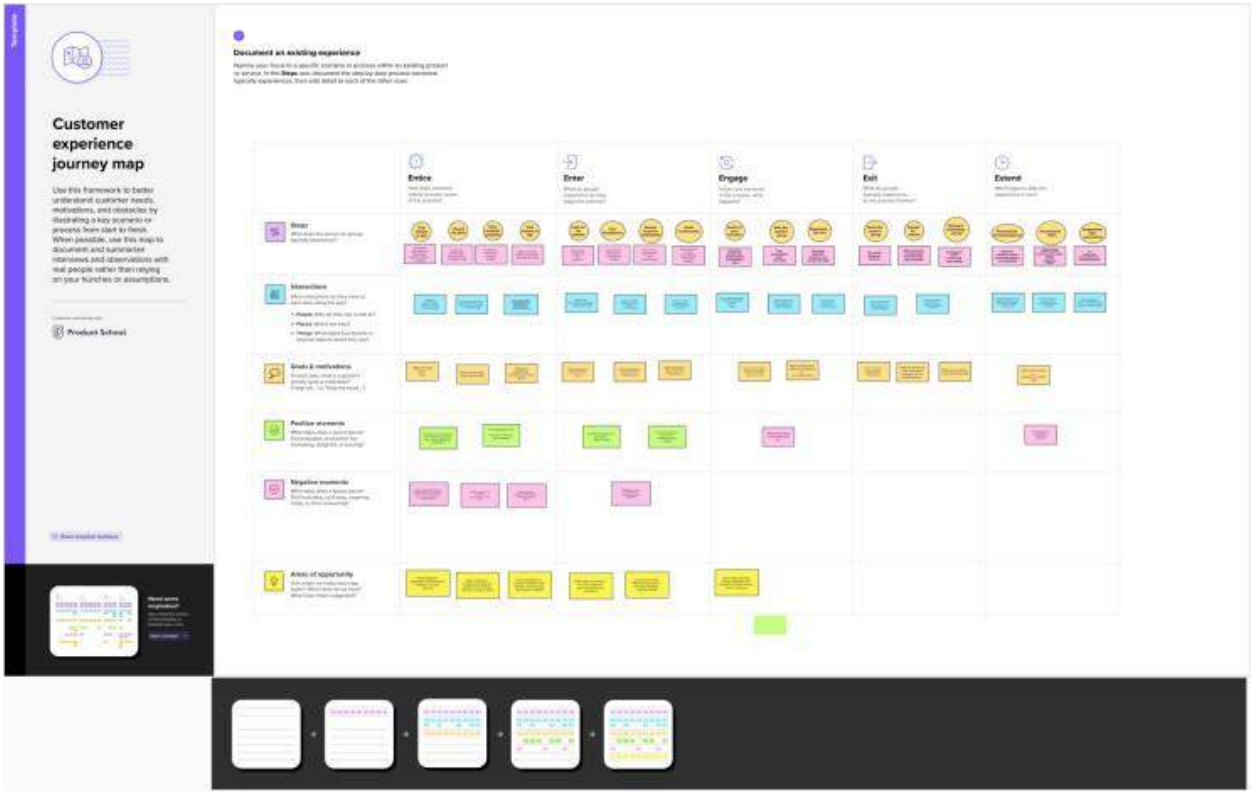
ONLINE: It can neither be used in online or either in offline too. It is a double mode operating system which is designed to be user friendly..

4.1 SOLUTION ARCHITECTURE



5. PROJECT DESIGN PHASE 2

5.2 CUSTOMER JOURNEY MAP



5.2 SOLUTION REQUIREMENT

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via EmailConfirmation via OTP
FR-3	User Login	Login using User id Login using Email Login using Password
FR-4	Stock management	Adding or Removing stocks based onthe users needs. Analyse the stock details periodically. Generate different barcodes for different products.
FR-5	Billing	Billing will be made easier throughbarcodes. Receipt Generation.

FR-6	Review	Customer can give reviews on the product.

Non-functional Requirements:

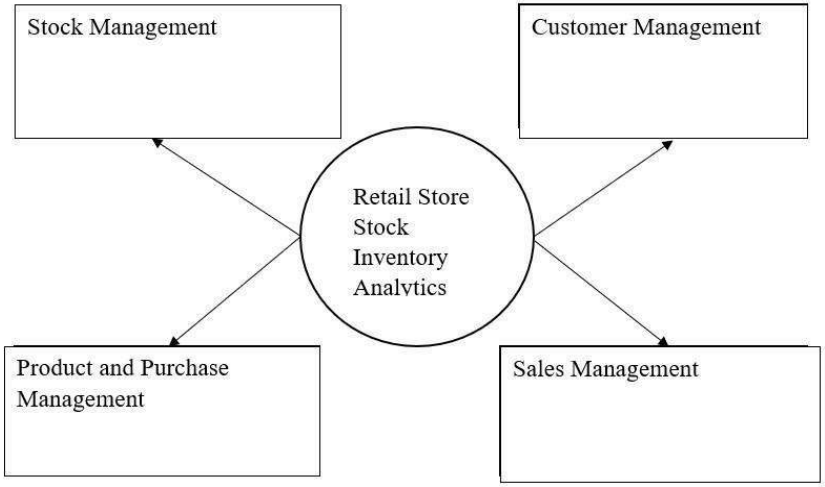
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	An analytics platform helps youunderstand your customers. It allows you to save on costs. It helps you improve your store'sindoor conditions.
NFR-2	**Security**	Protecting digital information from unauthorized access, corruption, ortheft throughout its entire lifecycle.
NFR-3	**Reliability**	Prevents from loss. Helps in stock prediction.
NFR-4	**Performance**	The solution offers lower requesttime for any request processed. Receipt Generation.
NFR-5	**Availability**	Can be used by both retailers and customers for all devices. The solution understands the requestmade to server to provide efficient results by prioritizing the request made and load balancing.

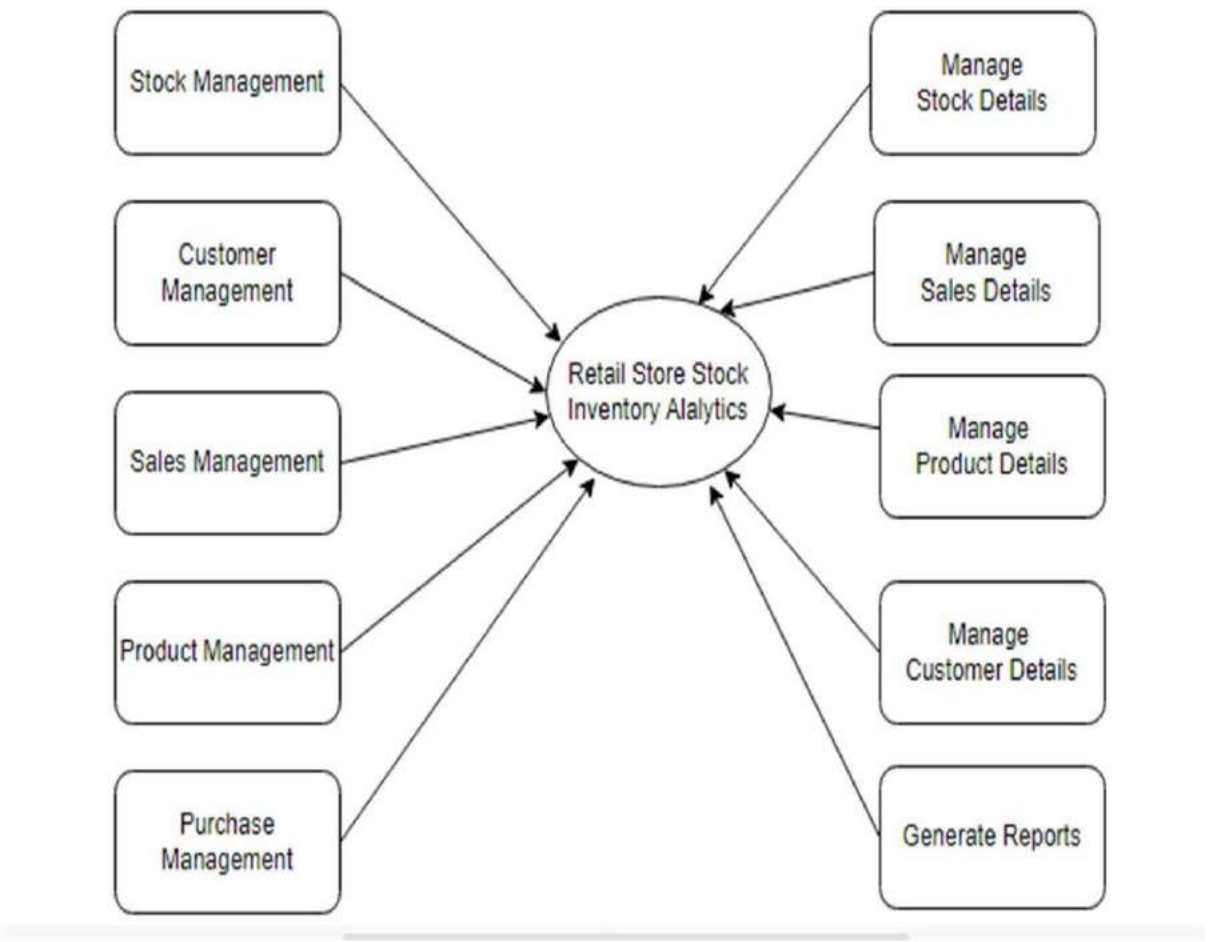
NFR-6	**Scalability**	Proposed solution offers higher compatibility with any kinds of working environment. Easier for disk space management and obtaining results. Works with lesser down time when new functional are being tested and added to solution.

5.3 DATA FLOW DIAGRAM

Data flow diagram:



First Level DFD :



User Stories :

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 address, password, and password confirmation.	I can access my account dashboard.	High	Sprint-1
		USN-2	As a user, I will receive a confirmation email after completing the registration process for the web application.	I can receive confirmation mail & confirm.	High	Sprint-1
		USN-3	As a user, I can sign up for the app using Facebook.	I can register & access the Dashboard using Facebook .	Low	Sprint-2
		USN-4	As a user, I can sign up for the application using Gmail.	I can register & access the dashboard using mail.	Medium	Sprint-1
	Login	USN-5	After installing the web application, I can log in as a user by entering my email address and password.	I can access the dashboard by login into the application.	High	Sprint-1
	Dashboard	USN-6	As a user, you can view the information displayed in charts and graphs for datasets and dashboards.	I can analyze the stocks in my retail store.	High	Sprint-1
Customer (Web user)		USN-1	As a user, I can register in the web application by entering my email address, password and confirming the password.	I can access my account dashboard.	High	Sprint-1
		USN-2	As a user, I can register in the web application by entering my email address, password and confirming the password.	I can receive confirmation emails & verify it.	High	Sprint-1
Administrator		USN-3	As a user, I can register for the application through Facebook.	I can register & access the dashboard with Facebook.	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail.	I can register & access the dashboard using Gmail.	Medium	Sprint-1

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
	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 logging in 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 analyze 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 analyze the customer complaints and rectify their problems.	High	Sprint-2
Administrator		ADMIN-1	As an administrator, I will manage backup and recovery, data modeling and design, distributed computing, database systems, and data security.	Administrators can evaluate, design, review and implement data and they are also responsible for updating and maintaining the data.	HIgh	Sprint-2

5.4 TECHNOLOGY STACK

Technical architecture:

Taken-in

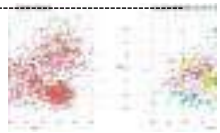
Data set

Date Integration

Data Pre-process

Data Cleaning Data Transformation

Data Processing Data Prediction



Data Visualization

Output (Dashboard Creation)

Table 1-Components and technologies:

S.no	Components	Description	Technologies
1.	User interface	The user interacts with application using web UI	HTML, CSS, JavaScript
2.	Data Processing	The data from the data set is preprocessed	IBM Cognos Analytics
3.	Cloud Database	The clean data set is stored in IBM cloud	IBM Cloud
4.	Data Visualization	The data is visualized into different forms	IBM Cognos Analytics, Python
5.	Prediction	These algorithm techniques are used to predict theproper way to make the stock in store	ML algorithms Logistics Regressions, Linear Regressions, Random forest, ABC techniques

Table 2- Applications Characteristics:

S.no	Characteristics	Description	Technology
1.	Open source framework	Open source framework is used	IBM Cognos Analytics, Python

2.	Security implementations	Request authentication using encryptions	Encryptions
3.	Scalable architecture	Scalability consists of 3 tiers	Web server HTML, CSS, JavaScript, Application server Python, Database Server- 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

6.1 PROJECT PLANNING PHASE MILESTONE AND ACTIVITY LIST

Title	Description	Completed Date
Literature Survey & Information Gathering	Prepare Literature survey for the selected project & gathering information	15 SEPTEMBER 2022
Prepare Empathy Map	Prepare Empathy Map Canvas to capture the user Pains & Gains, Prepare list of problem statements	15 SEPTEMBER 2022
Ideation	List the by organizing the brainstorming session and prioritize the top 3 ideas based on the feasibility & importance.	20 SEPTEMBER 2022
Proposed Solution	Prepare the proposed solution document, which includes the novelty, feasibility of idea, business model, social impact, scalability of solution, etc.	10 OCTOBER 2022
Problem Solution Fit	Prepare problem - solution fit document.	10 OCTOBER 2022
Solution Architecture	Prepare solution architecture document	10 OCTOBER 2022
Customer Journey	Prepare the customer journey maps to understand the user interactions & experiences with the application (entry to exit).	10 OCTOBER 2022

Functional Requirement	Prepare the functional requirement document.	25 OCTOBER 2022
Data Flow Diagrams	Draw the data flow diagrams and submit for review.	25 OCTOBER 2022
Technology Architecture	Prepare the technology architecture diagram	25 OCTOBER 2022
Prepare Milestone & Activity List	Prepare the milestones & activity list of the project	05 NOVEMBER 2022
Sprint delivery plan	Prepare the sprint delivery plan of the project	05 NOVEMBER 2022
Project Development – Delivery of Sprint -1	Develop & submit the developed code by testing it	IN PROGRESS
Project Development - Delivery of Sprint-2	Develop & submit the developed code by testing it.	IN PROGRESS
Project Development - Delivery of Sprint-3	Develop & submit the developed code by testing it.	IN PROGRESS
Project Development - Delivery of Sprint-4	Develop & submit the developed code by testing it.	IN PROGRESS

6.2 SPRINT DELIVERY PLAN

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

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 is done.	2	High	Janani S R Jovitha M Hephzibah J Manjhupriyanga A
Sprint-1	Data Preparation	USN-2	As a user, I am able to view the accurate analytics of data.	3	High	Janani S R Jovitha M Hephzibah J Manjhupriyanga 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	Janani S R Jovitha M Hephzibah J Manjhupriyanga A

Sprint-3	Dashboard Creation	USN-4	As a user, I can view the different visualization in the dashboard.	8	High	Janani S R Jovitha M Hephzibah J Manjhupriyanga A
Sprint-4	Report Creation	USN-5	As a user, I can view the detailed report of the sales, stock, revenue and price. The user can get the report of the particular data.	8	High	Janani S R Jovitha M Hephzibah J Manjhupriyanga A
Sprint-4	Story Creation	USN-6	As a user, I can view the story to get the better understanding of the sales, stock,revenue and price. The user can make decisions based on the story.	8	High	Janani S R Jovitha M Hephzibah J Manjhupriyanga A

Sprint	**Total Story Points**	**Duration**	**Sprint Start Date**	**Sprint End Date**	**Story Points Completed (as on Planned End Date)**	**Sprint Release Date (Actual)**
Sprint -1	5	3 Days	05 Nov 2022	08 Nov 2022	5	08 Nov 2022
Sprint -2	8	3 Days	09 Nov 2022	12 Nov 2022	8	12 Nov 2022
Sprint -3	8	3 Days	13 Nov 2022	16 Nov 2022	8	16 Nov 2022
Sprint -4	16	2 Days	17 Nov 2022	19 Nov 2022	16	19 Nov 2022

Project Tracker, Velocity & Burndown Chart: (4 Marks)

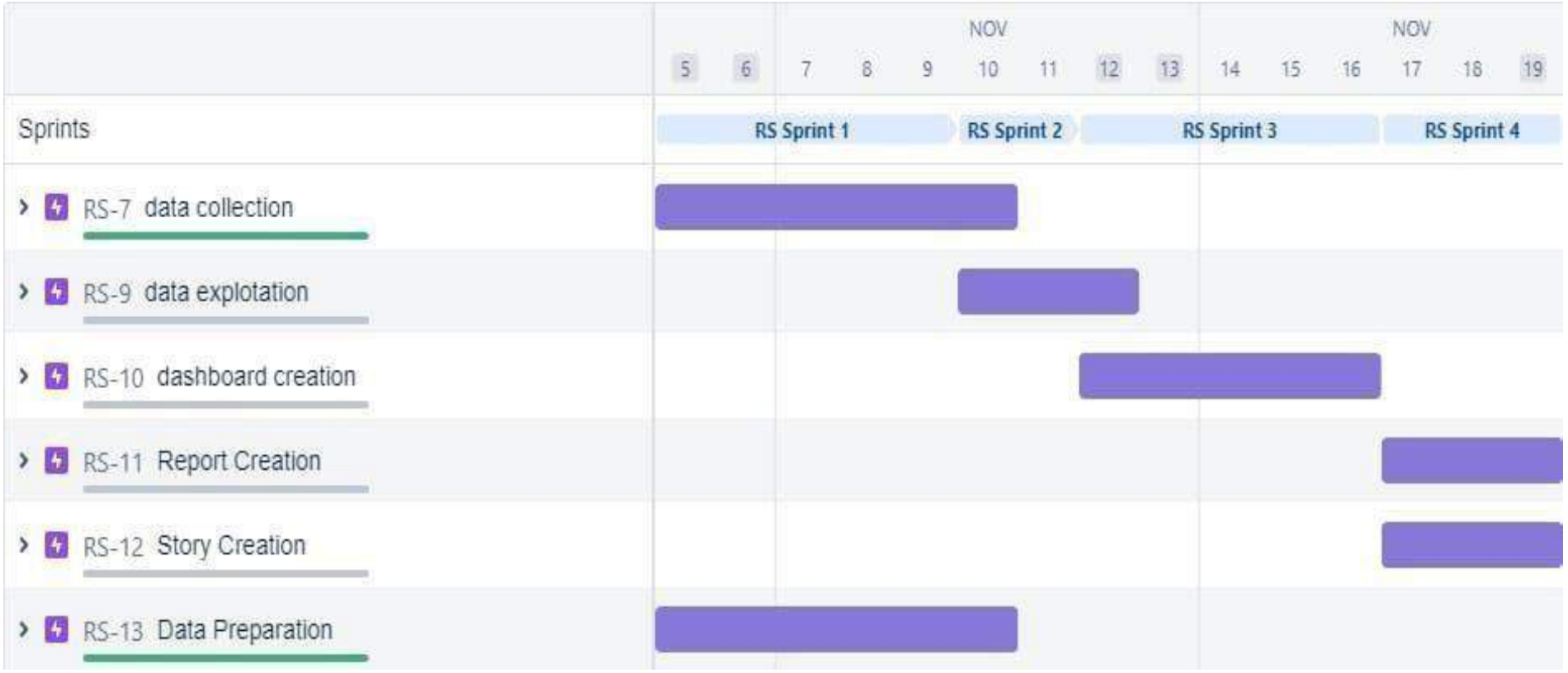
Velocity:

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).

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

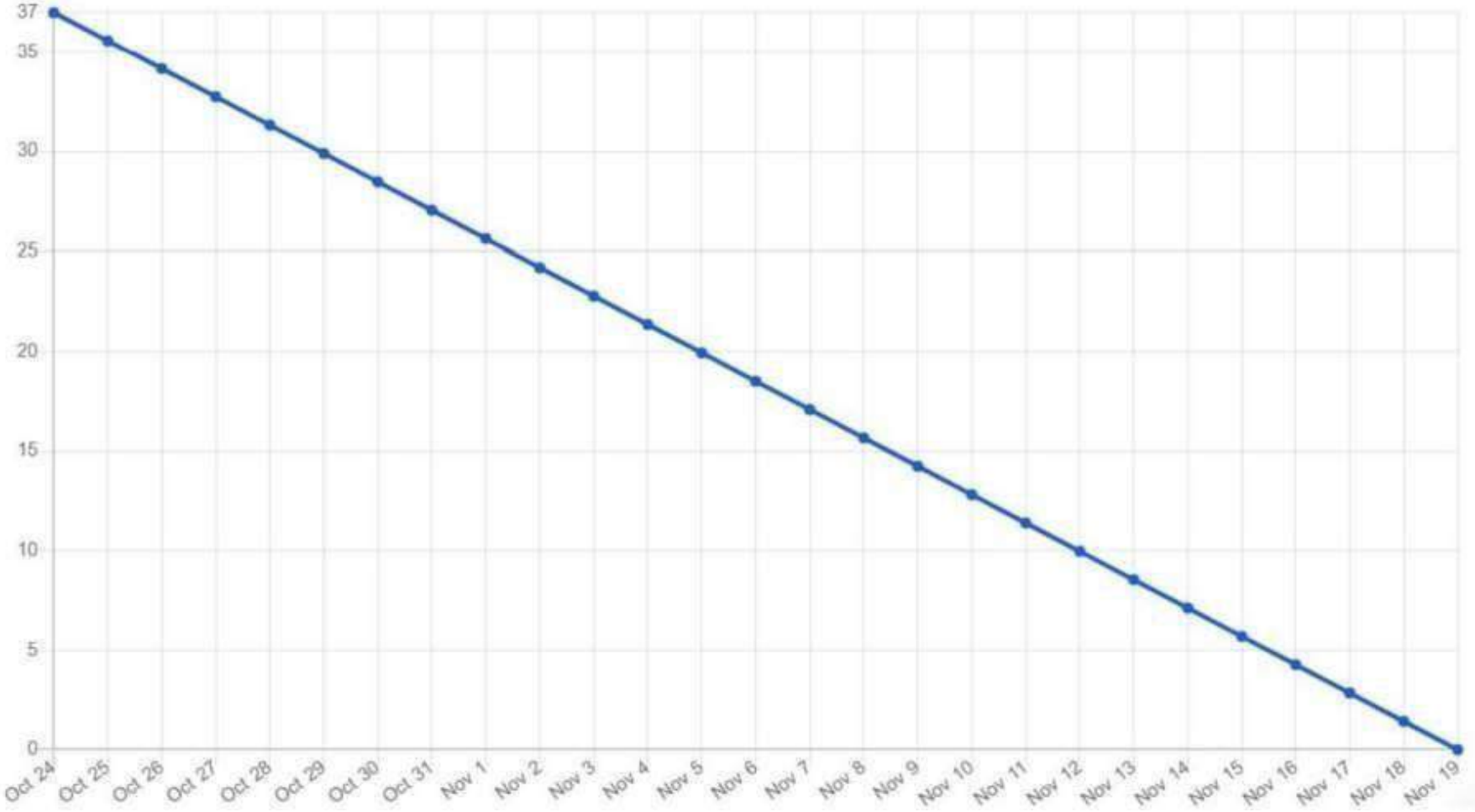
Sprint	Story Points	Duration	Average Velocity
Sprint-1	5	3	1.66
Sprint-2	8	3	2.66
Sprint-3	8	3	2.66
Sprint-4	16	2	8.0
Total	**37**	**11**	**3.36**

Jira Project Planning:



Burn Down Chart:

Overall Burndown Chart:



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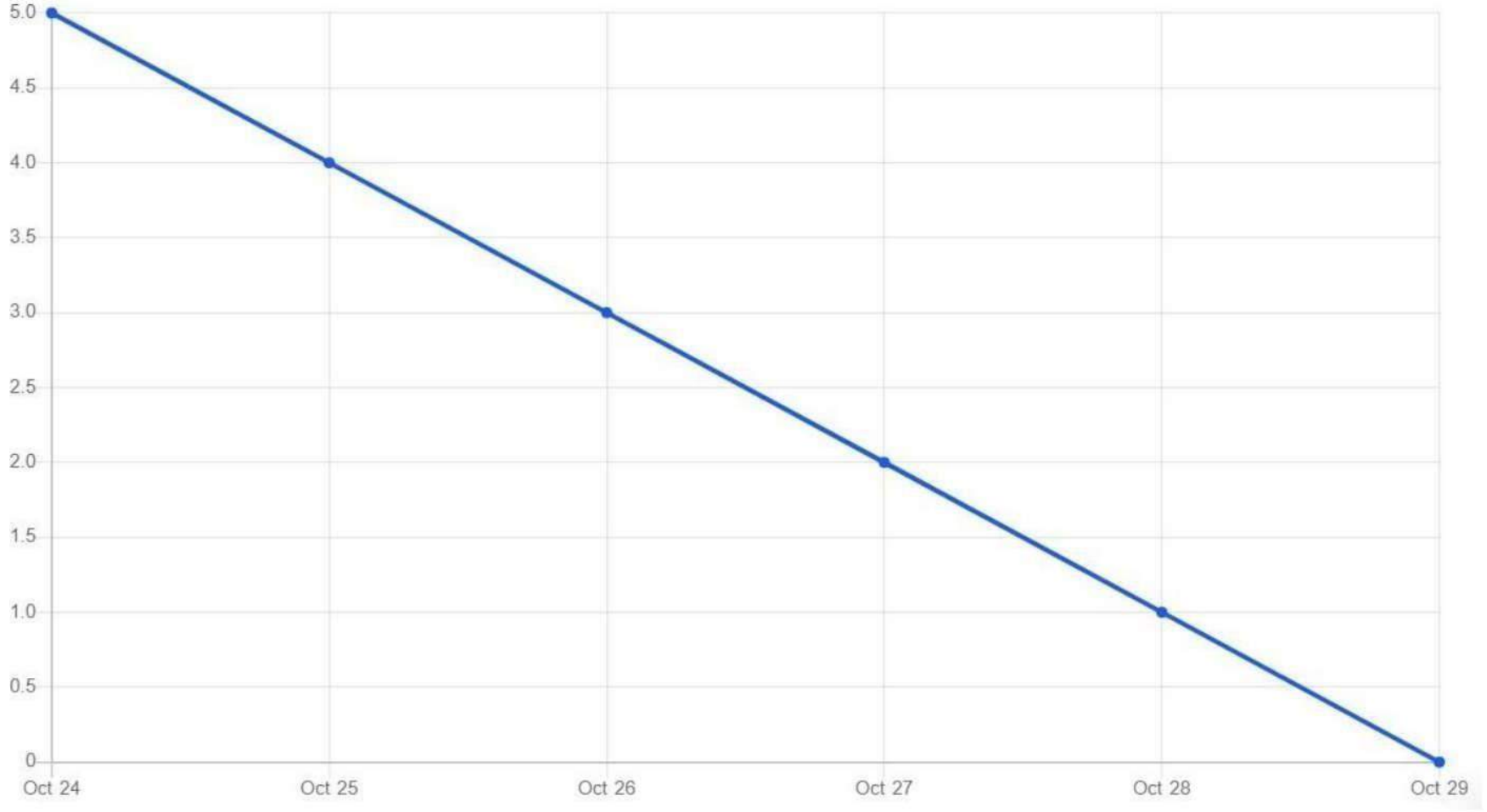
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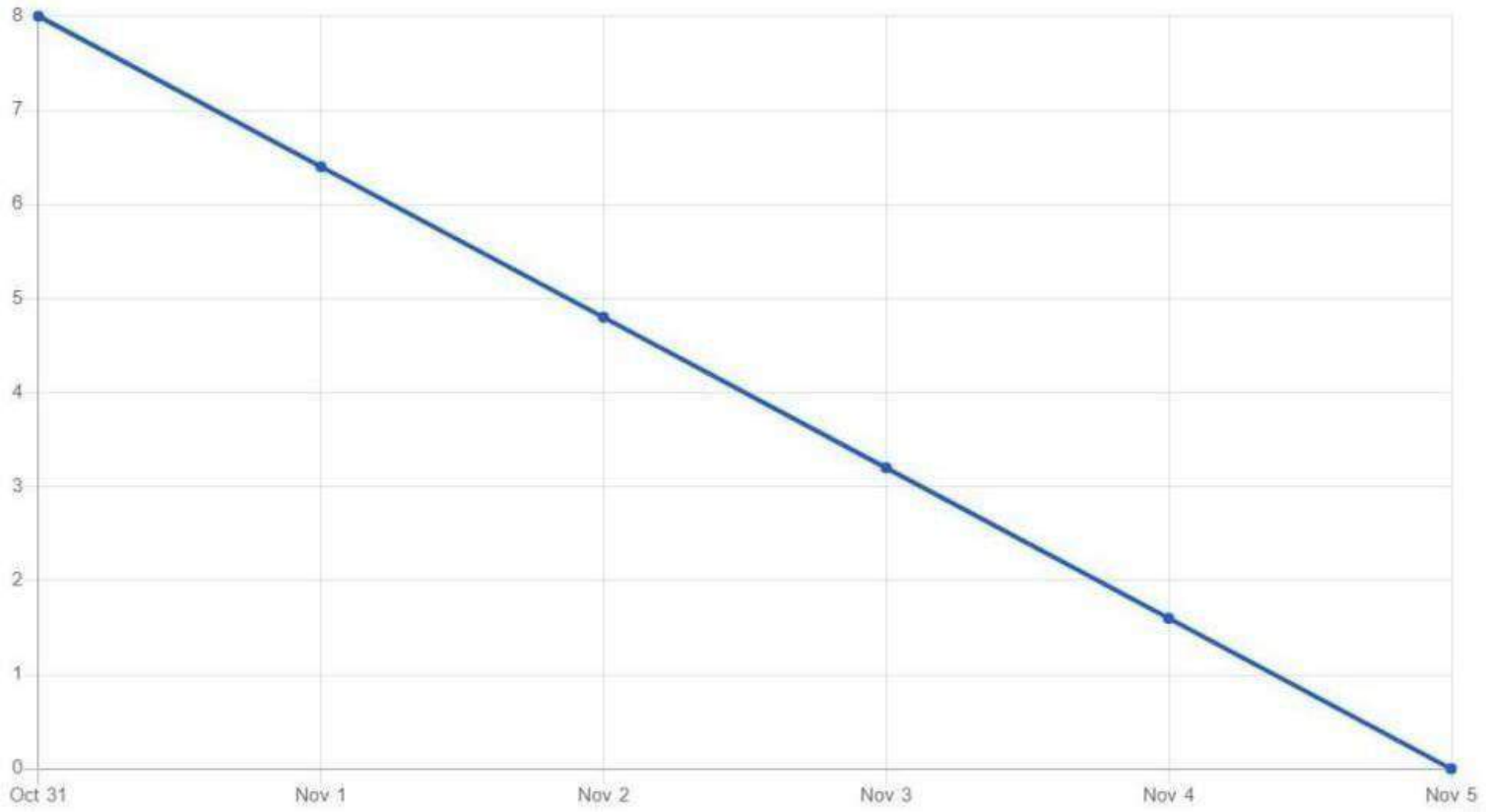
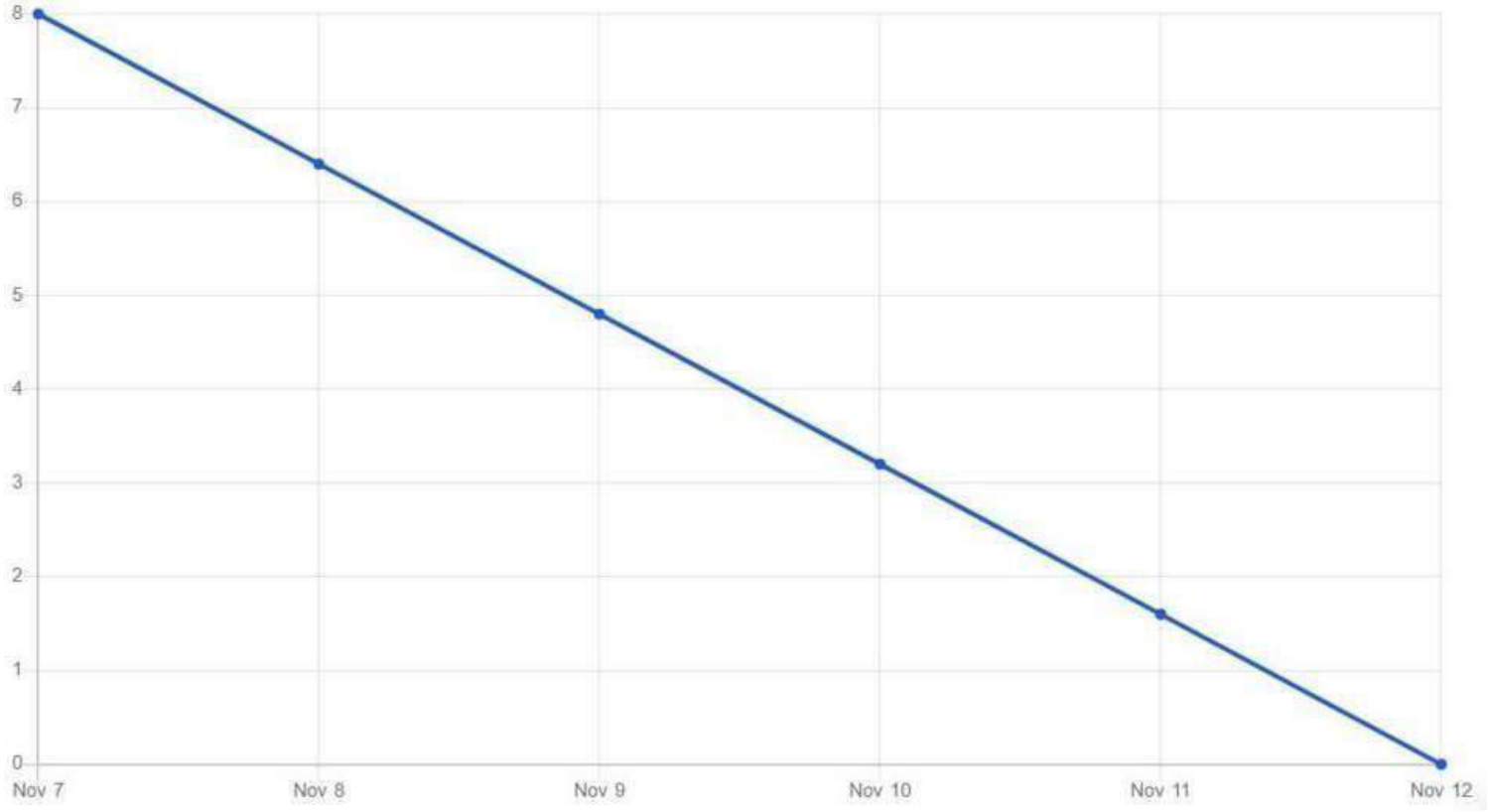
Oct 24
Oct 25
Oct 26
Oct 27
Oct 28
Oct 29

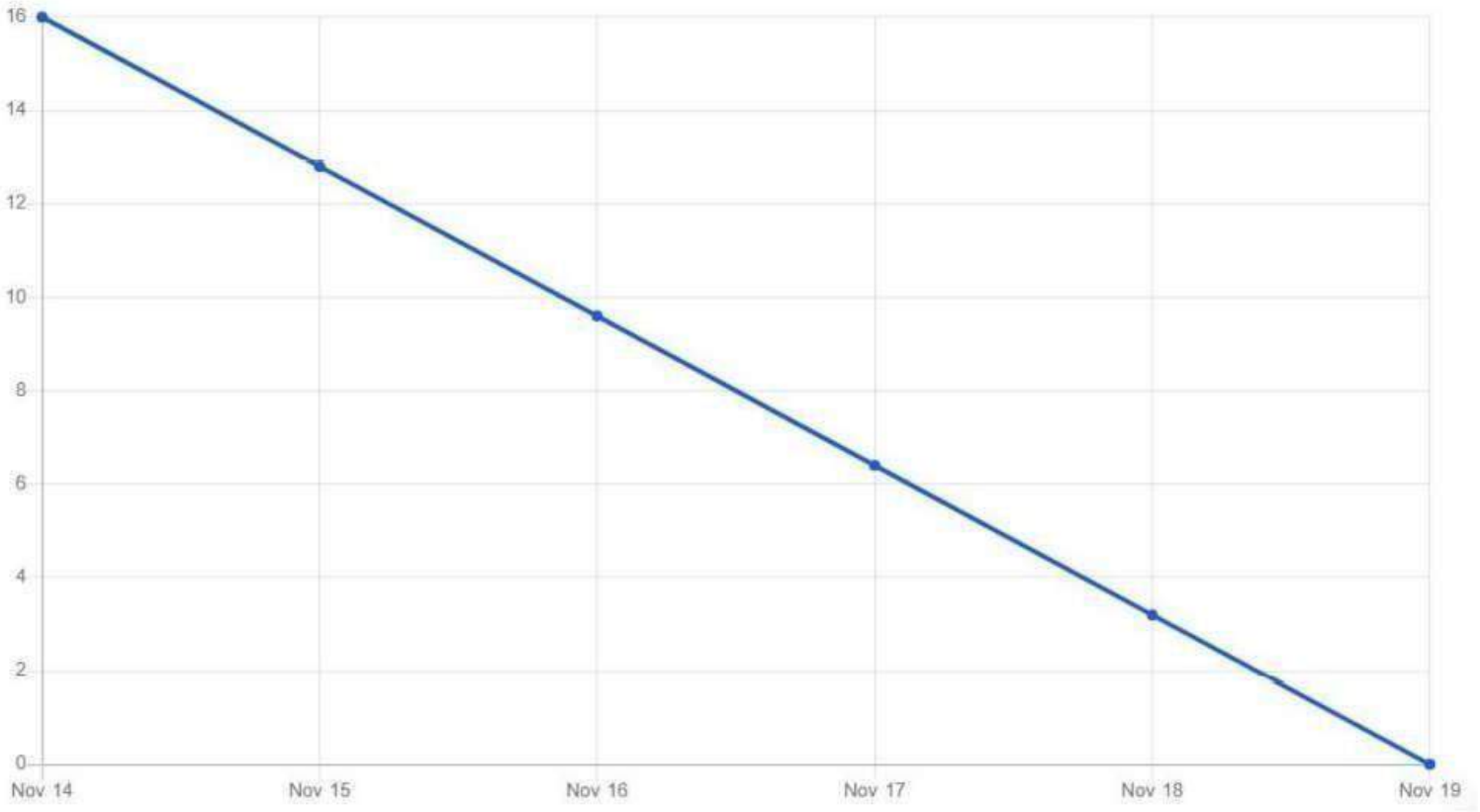
Sprint -2



Sprint – 3



Sprint – 4



7.PROJECT DEVELOPMENT PHASE

7.1 DELIVERY OF SPRINT 1

Project Development Phase:

Sprint-1:

- Data Collection
- Data Preparation

Sprint-2:

- Data Exploration

Sprint-3:

- Dashboard Creation

Sprint-4:

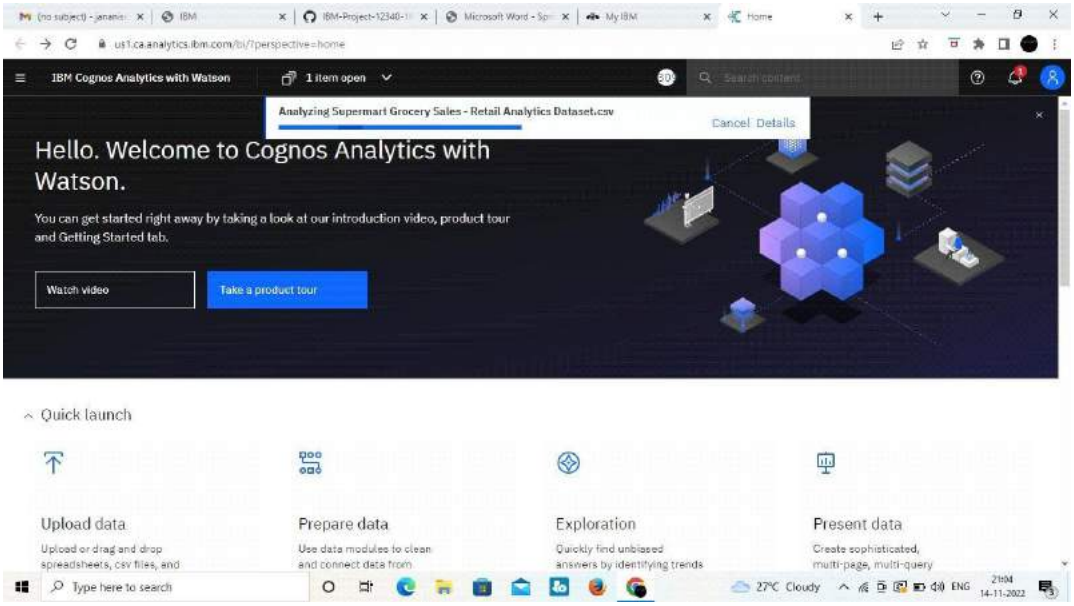
- Report Creation
- Story Creation

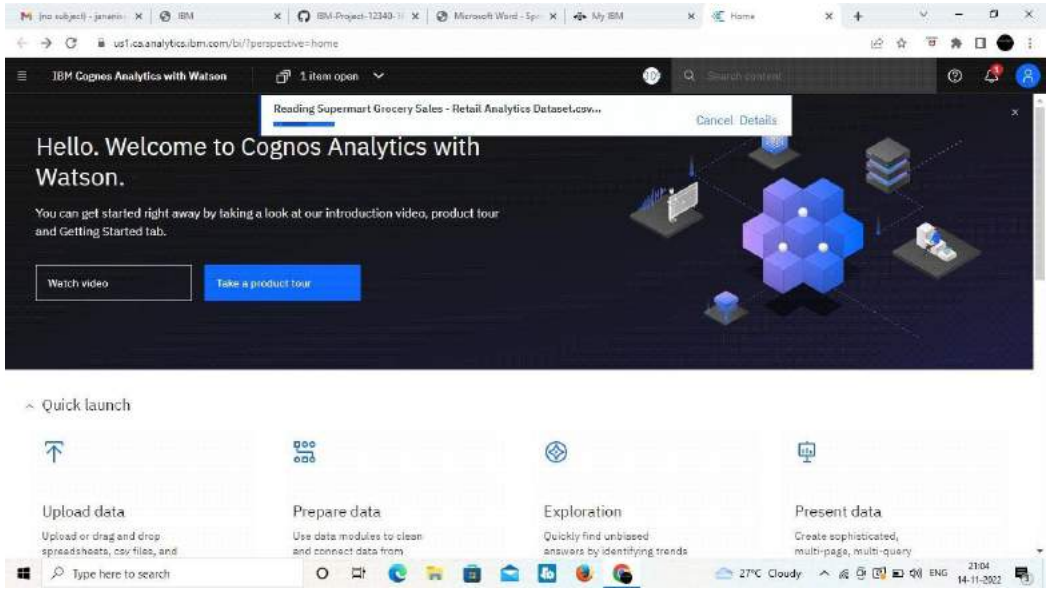
Sprint-1:

Data Collection:
Download the Dataset

https://drive.google.com/file/d/1nQ7bn1iO1e97s9HF9TZAyBv5lGQgLrZ5/view?usp=drivesdk

Load the Dataset:
Tools used – IBM Cognos


IBM Cognos Analytics with Watson
1 item open
Analyzing Supermart Grocery Sales - Retail Analytics Dataset.csv
Cancel Details
Hello. Welcome to Cognos Analytics with Watson.
You can get started right away by taking a look at our introduction video, product tour and Getting Started tab.
Watch video
Take a product tour
Quick launch
Upload data
Upload or drag and drop spreadsheets, csv files, and
Prepare data
Use data modules to clean and connect data from
Exploration
Quickly find unbiased answers by identifying trends
Present data
Create sophisticated, multi-page, multi-query
Type here to search
27°C Cloudy
ENG
14-11-2022


IBM Cognos Analytics with Watson
1 item open
Reading Supermart Grocery Sales - Retail Analytics Dataset.csv...
Cancel Details
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Use data modules to clean and connect data from
Exploration
Quickly find unbiased answers by identifying trends
Present data
Create sophisticated, multi-page, multi-query
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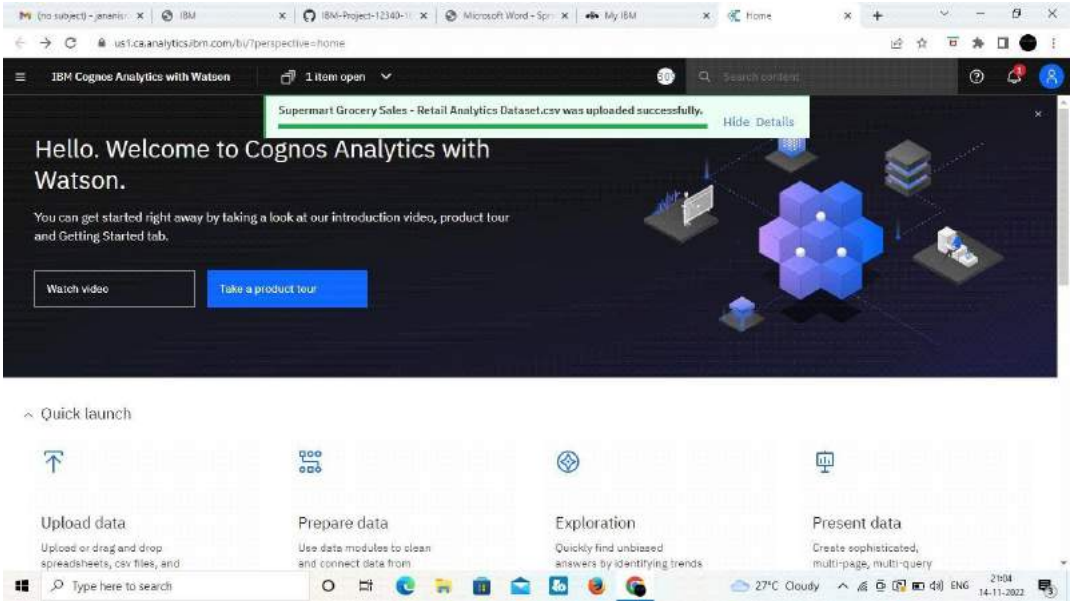

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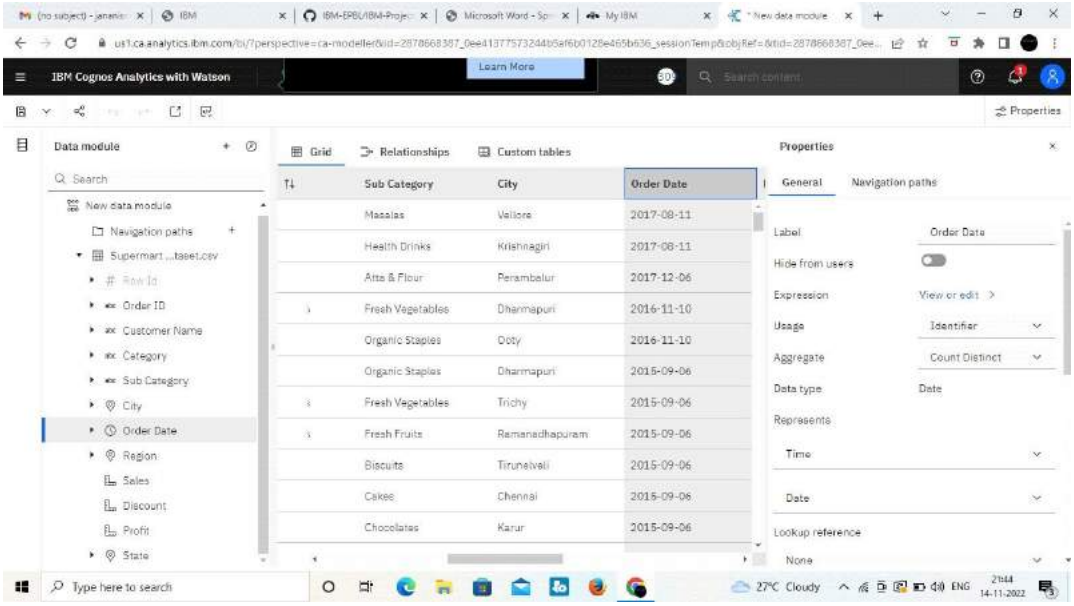

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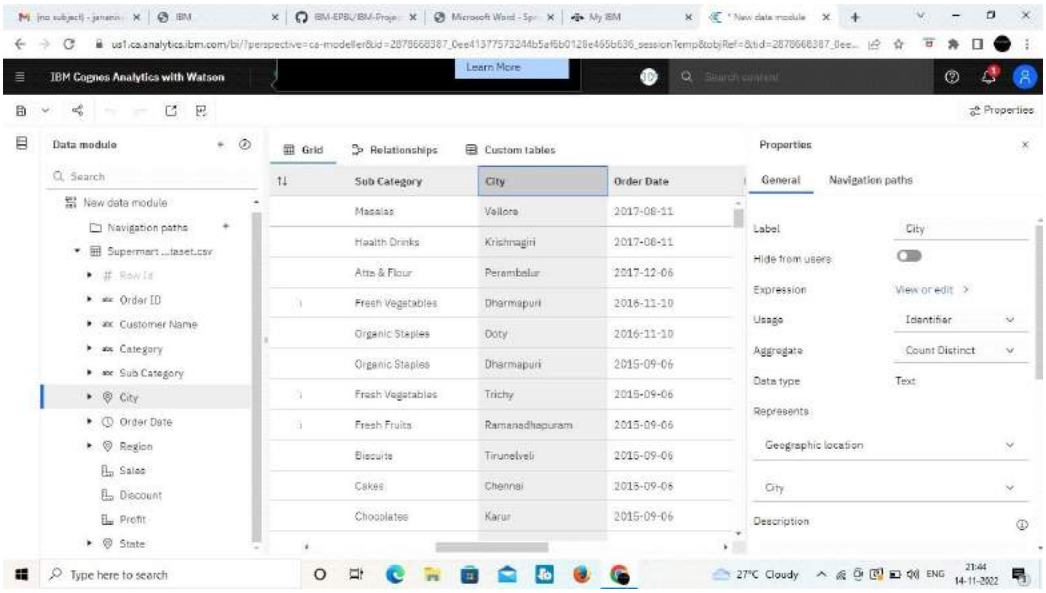
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Relationships
Custom tables
Properties
General
Navigation paths
Sub Category
City
Order Date
Label
Hide from users
Expression
Usage
Aggregate
Data type
Represents
Description

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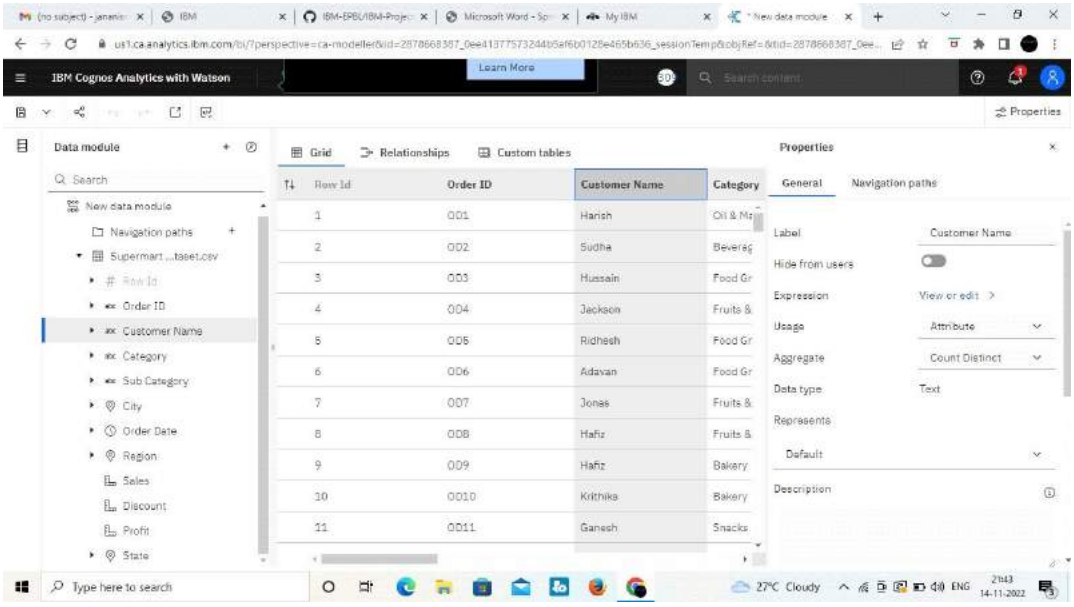
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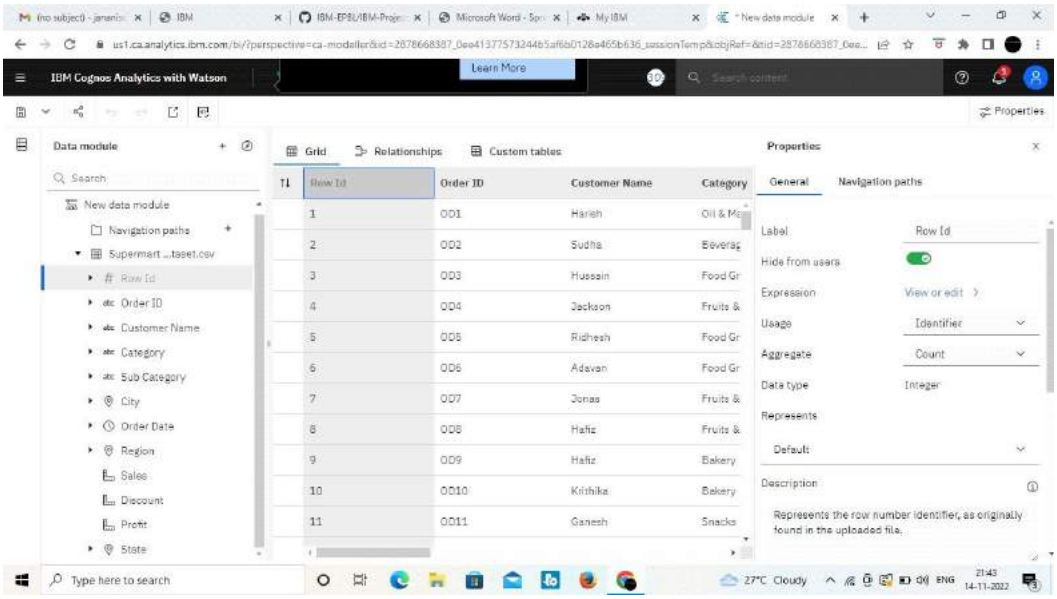
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Custom tables
Properties
General
Navigation paths
Label
Row Id
Hide from users
Expression
View or edit
Usage
Identifier
Aggregate
Count
Data type
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Represents
Default
Description
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Row Id
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Customer Name
Category
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27°C Cloudy
ENG
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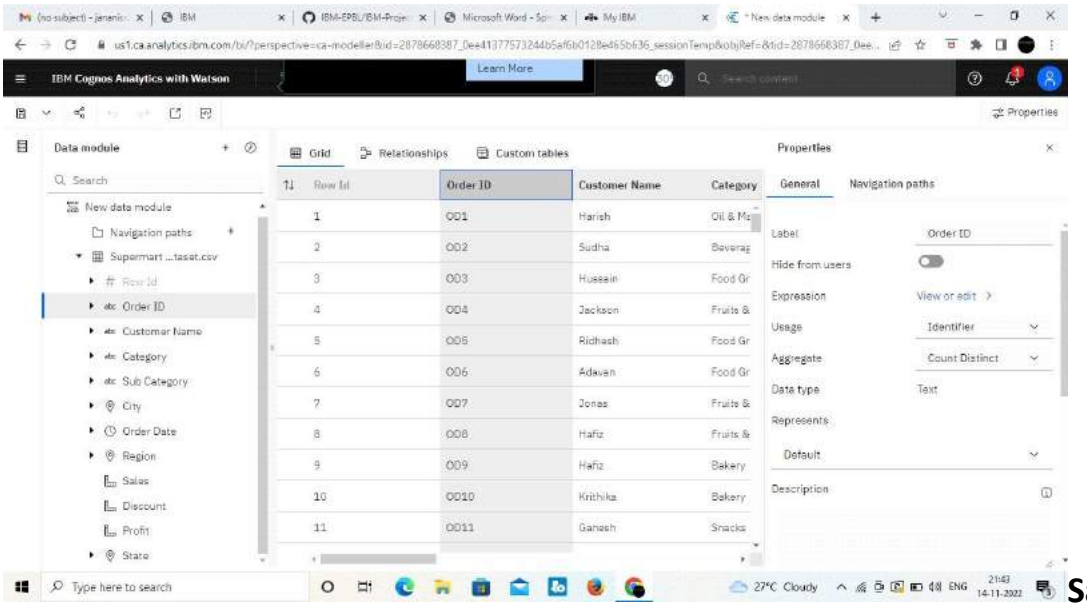
14-11-2022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Data module
Grid
Relationships
Custom tables
Properties
General
Navigation paths
Label
Order ID
Hide from users
Expression
View or edit
Usage
Identifier
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Data type
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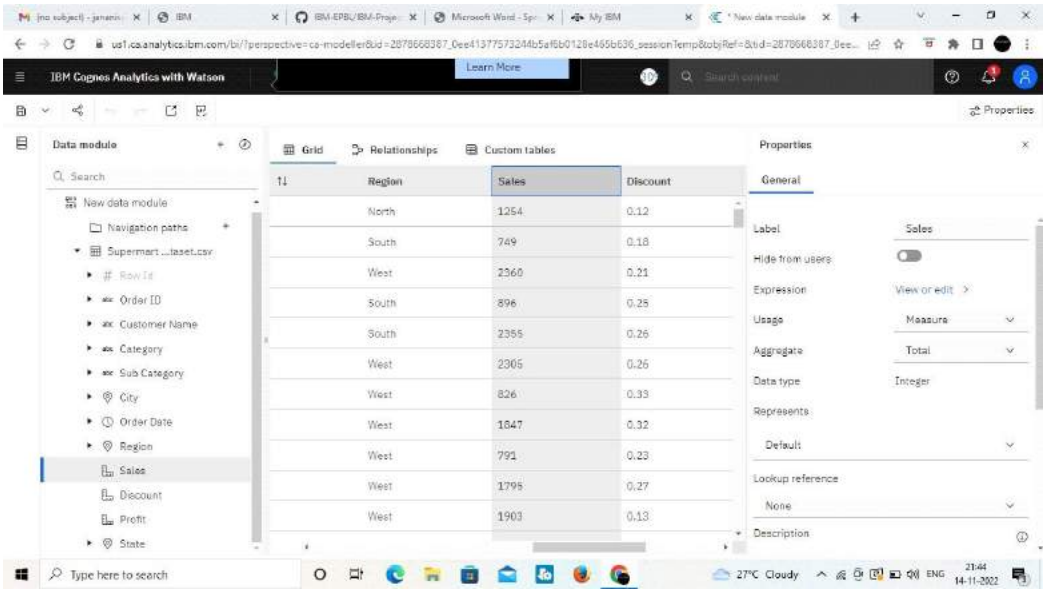
Salse:



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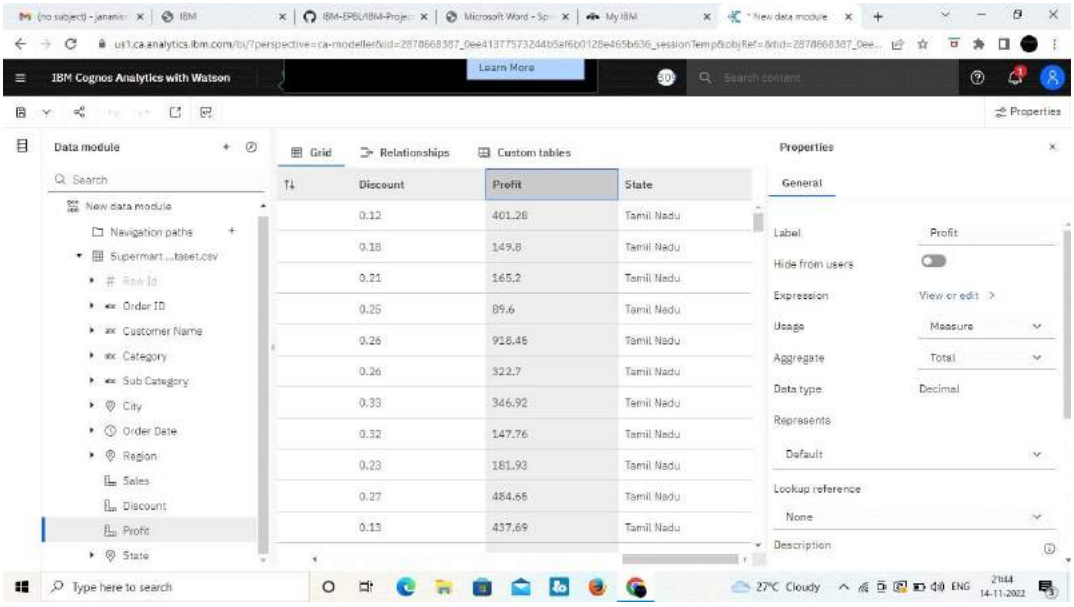

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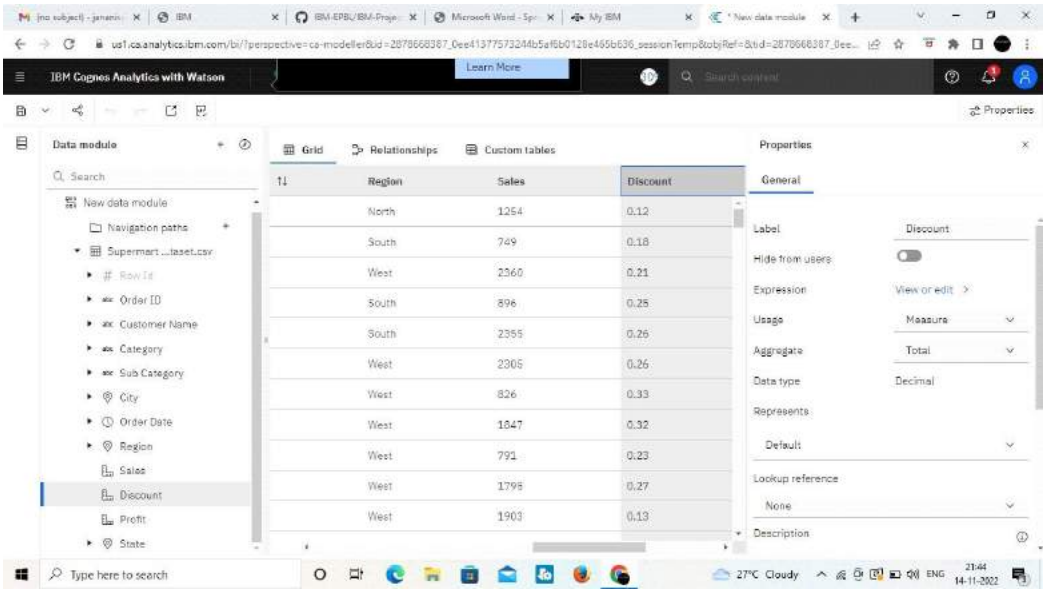

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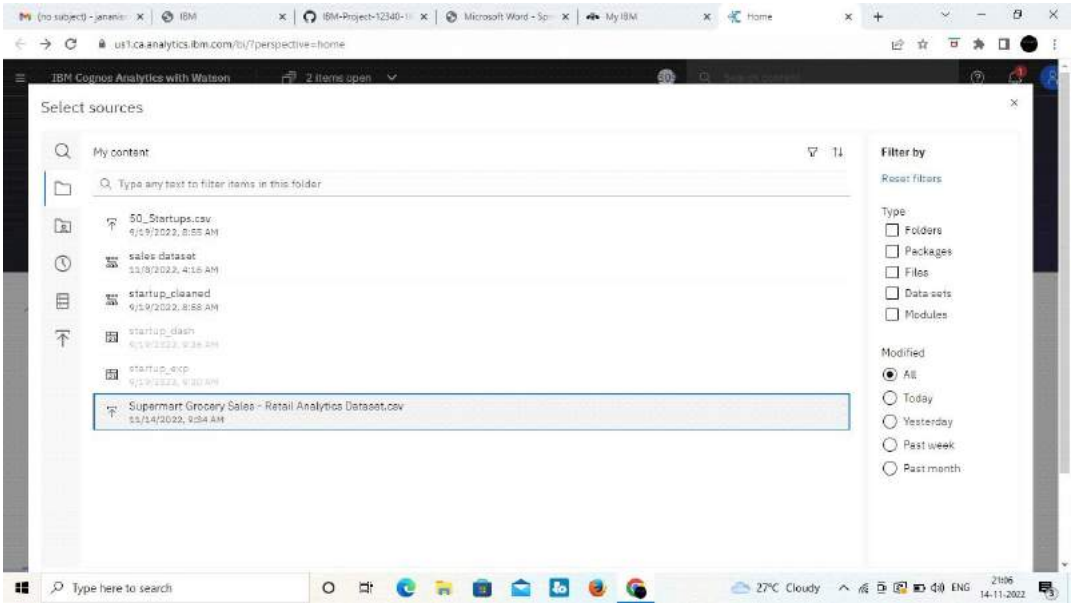

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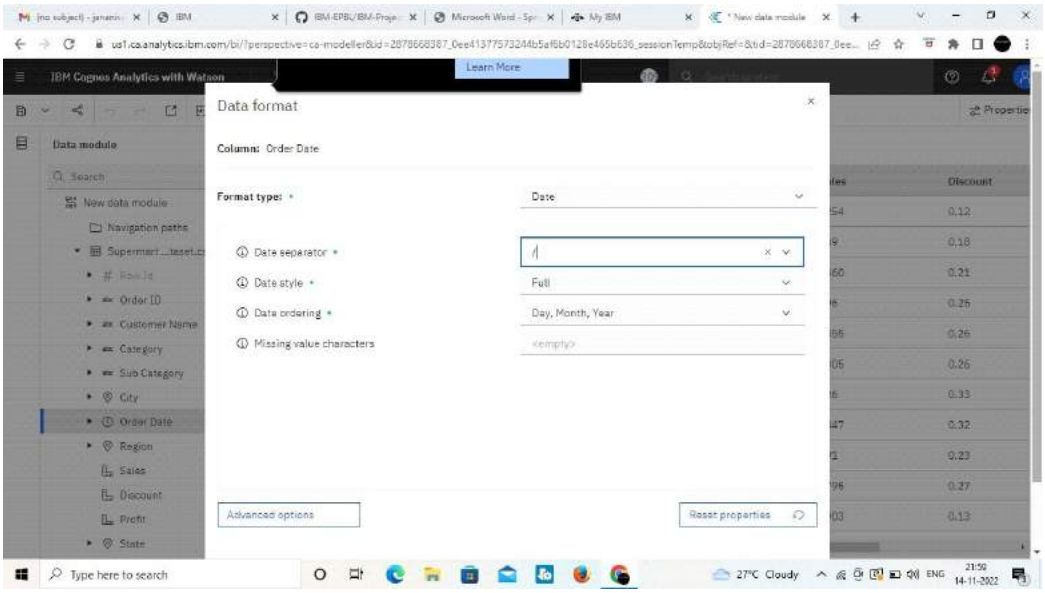
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Learn More
Data format
Column: Order Date
Format type: *
Date
Date separator *
/
Date style *
Full
Date ordering *
Day, Month, Year
Missing value characters
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Advanced options
Reset properties
Data module
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Navigation paths
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Row Id
Order ID
Customer Name
Category
Sub Category
City
Order Date
Region
Sales
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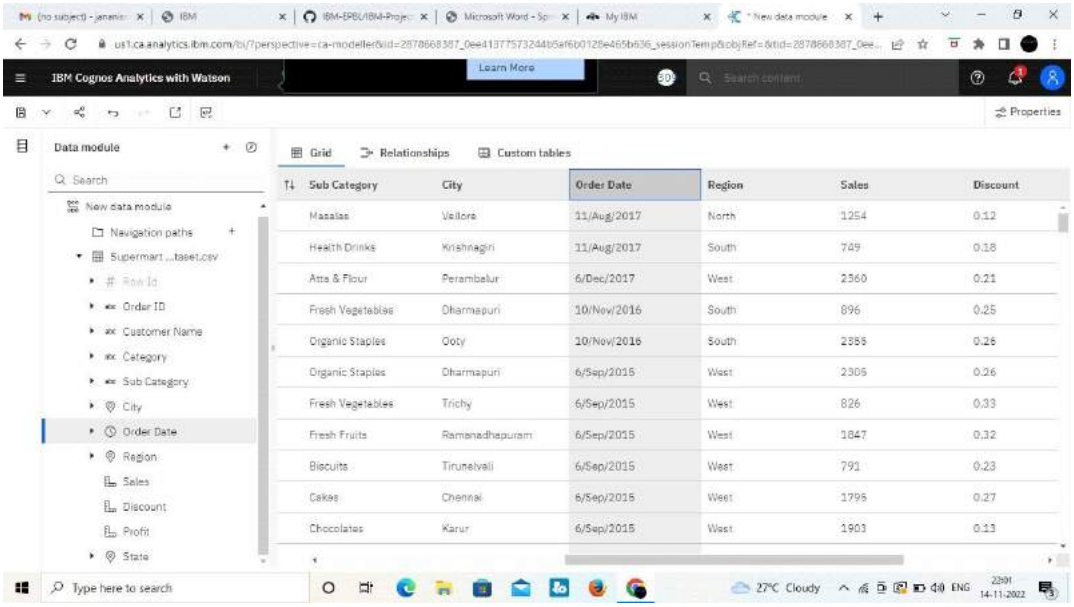
14-11-2022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Supermart ...taset.csv
Row Id
Order ID
Customer Name
Category
Sub Category
City
Order Date
Region
Sales
Discount
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Grid
Relationships
Custom tables
Sub Category | City | Order Date | Region | Sales | Discount
Masalas | Vellore | 11/Aug/2017 | North | 1254 | 0.12
Health Drinks | Krishnagiri | 11/Aug/2017 | South | 749 | 0.18
Atta & Flour | Perambalur | 6/Dec/2017 | West | 2360 | 0.21
Fresh Vegetables | Dharmapuri | 10/Nov/2016 | South | 896 | 0.25
Organic Staples | Ooty | 10/Nov/2016 | South | 2355 | 0.26
Organic Staples | Dharmapuri | 6/Sep/2015 | West | 2305 | 0.26
Fresh Vegetables | Trichy | 6/Sep/2015 | West | 826 | 0.33
Fresh Fruits | Ramanadhapuram | 6/Sep/2015 | West | 1847 | 0.32
Biscuits | Tirunelveli | 6/Sep/2015 | West | 791 | 0.23
Cakes | Chennai | 6/Sep/2015 | West | 1795 | 0.27
Chocolates | Karur | 6/Sep/2015 | West | 1903 | 0.13
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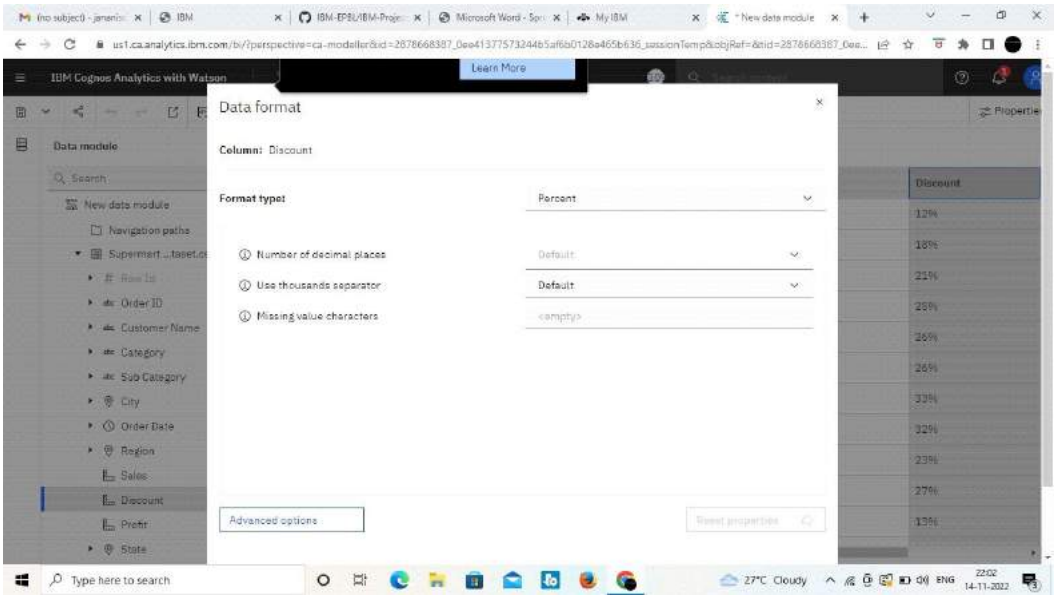
14-11-2022

Discount:


IBM Cognos Analytics with Watson
Learn More
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Column: Discount
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Number of decimal places
Default
Use thousands separator
Default
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Advanced options
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Order ID
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Sub Category
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Order Date
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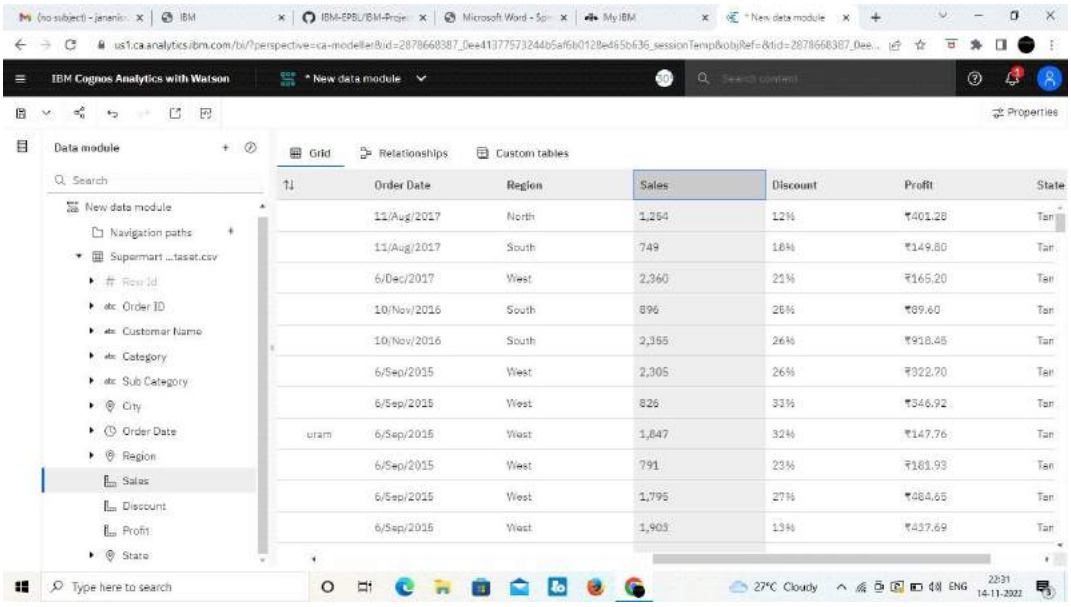
14-11-2022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Sales
Discount
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State
11/Aug/2017 North 1,254 12% ₹401.28
11/Aug/2017 South 749 18% ₹149.80
6/Dec/2017 West 2,360 21% ₹165.20
10/Nov/2016 South 896 28% ₹89.60
10/Nov/2016 South 2,355 26% ₹918.45
6/Sep/2015 West 2,305 26% ₹322.70
6/Sep/2015 West 826 33% ₹346.92
6/Sep/2015 West 1,847 32% ₹147.76
6/Sep/2015 West 791 23% ₹181.93
6/Sep/2015 West 1,795 27% ₹484.65
6/Sep/2015 West 1,903 13% ₹437.69
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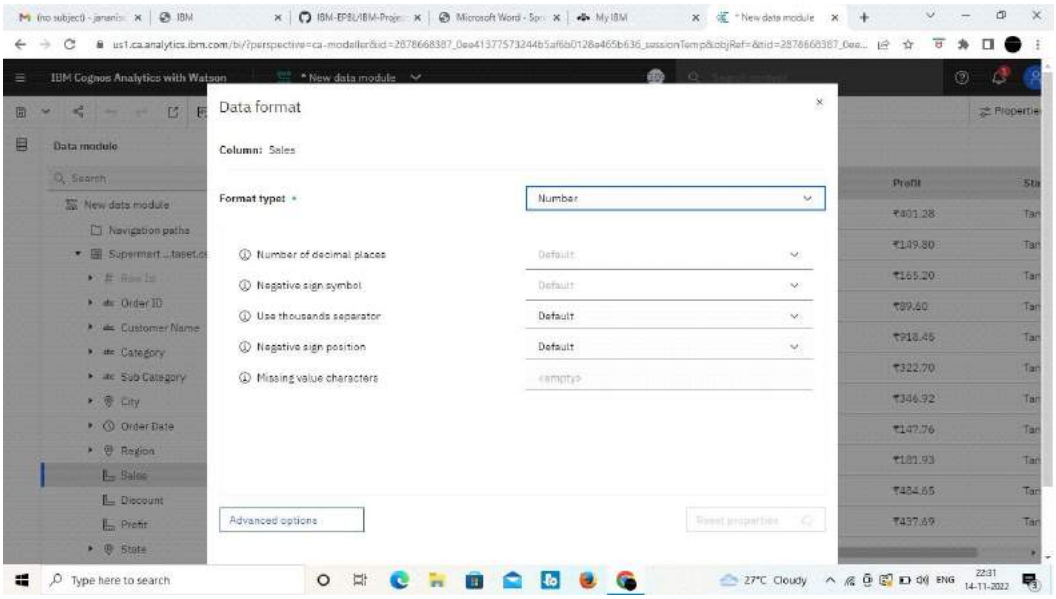
14-11-2022

Sales:


IBM Cognos Analytics with Watson
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Row Id
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Sub Category
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Profit
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₹149.80
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₹89.60
₹918.48
₹322.70
₹346.92
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Type here to search
27°C Cloudy
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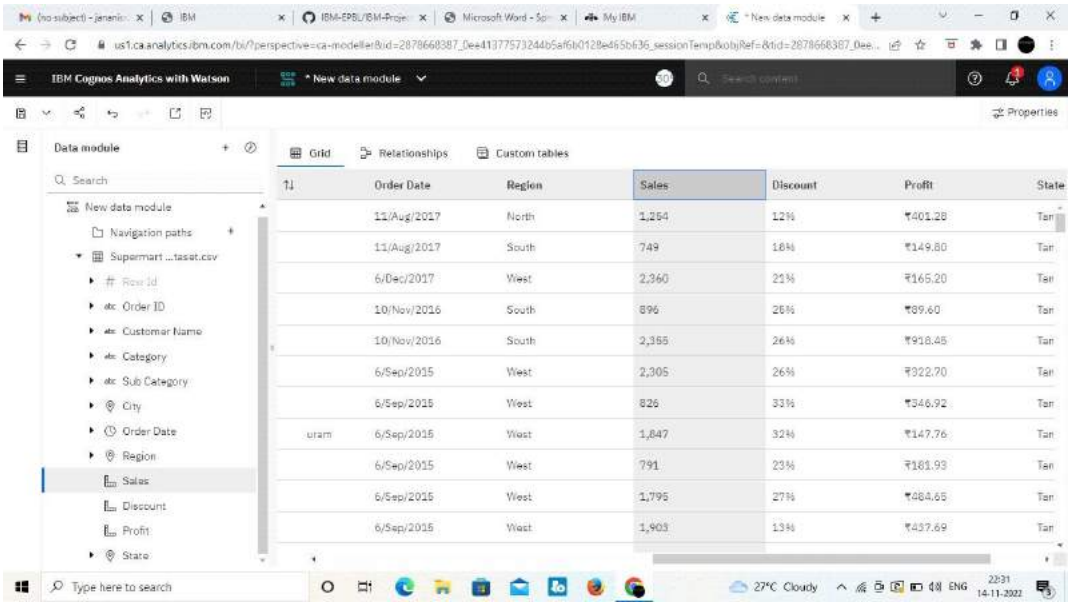
14-11-2022


IBM Cognos Analytics with Watson
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Properties
Data module
Search
New data module
Navigation paths
Supermart ...taset.csv
Row Id
Order ID
Customer Name
Category
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City
Order Date
Region
Sales
Discount
Profit
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Grid
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Custom tables
Order Date
Region
Sales
Discount
Profit
State
11/Aug/2017 North 1,254 12% ₹401.28
11/Aug/2017 South 749 18% ₹149.80
6/Dec/2017 West 2,360 21% ₹165.20
10/Nov/2016 South 896 26% ₹89.60
10/Nov/2016 South 2,355 26% ₹918.48
6/Sep/2015 West 2,305 26% ₹322.70
6/Sep/2015 West 826 33% ₹346.92
6/Sep/2015 West 1,847 32% ₹147.76
6/Sep/2015 West 791 23% ₹181.93
6/Sep/2015 West 1,795 27% ₹484.65
6/Sep/2015 West 1,903 13% ₹437.69
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ENG
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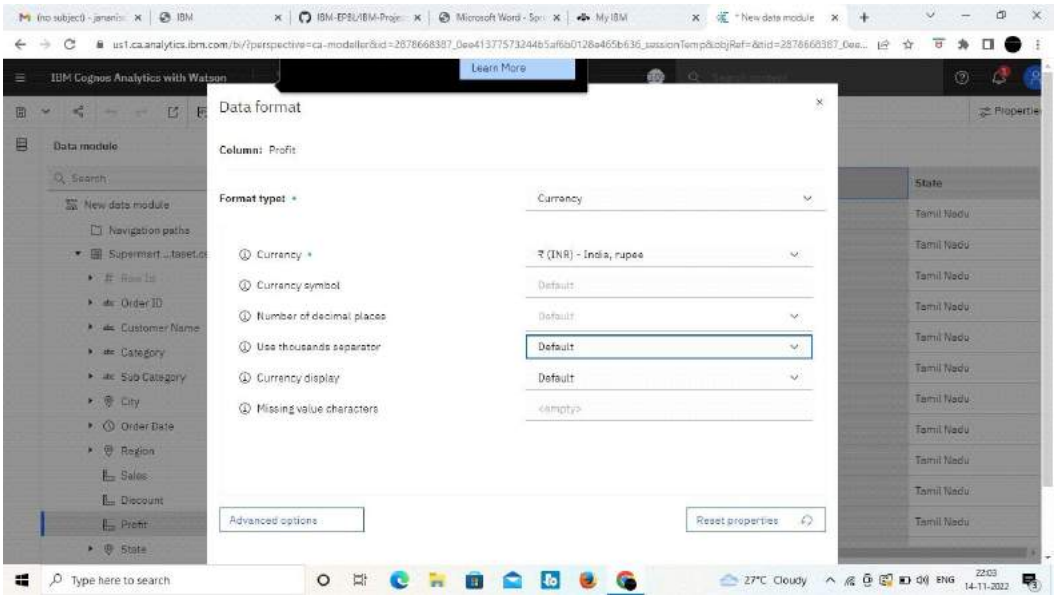
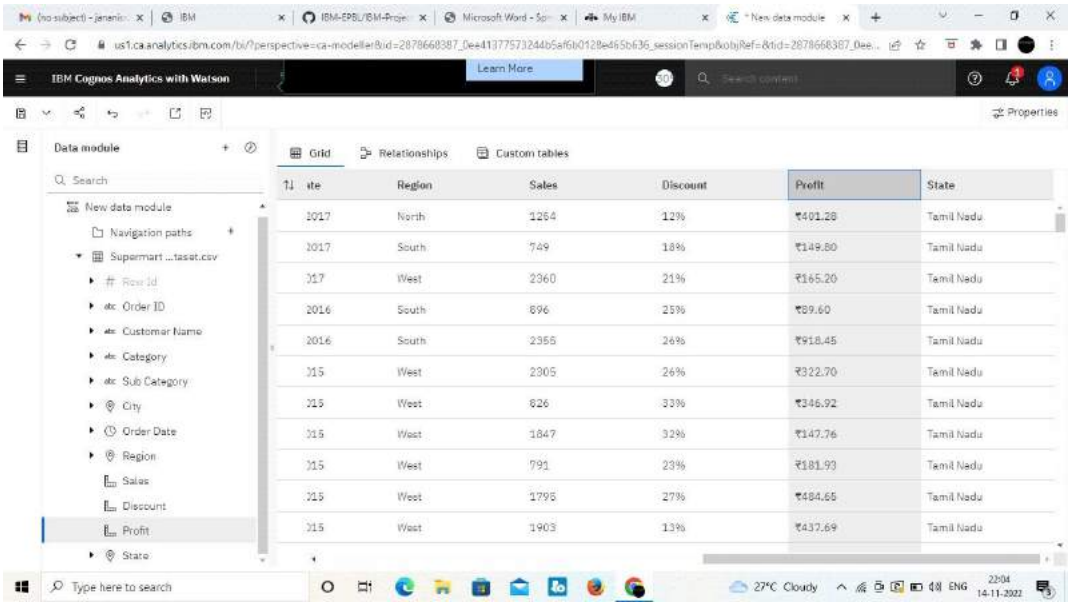
14-11-2022

Profit:





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7.2 DELIVERY OF SPRINT 2

SPRINT-2:

DATA EXPLORATION

➢ Load the Dataset

➢ Sales Compared to profit by sales

➢ Region compared to salses by sub category coloured by year

➢ Sales compared to profit by region & Sales compared to profit by month

➢ Region compared to sales by sub category coloured by category

➢ Stock by year

➢ Stock by month & Stock by category

➢ Profit by month coloured by month & Profit by year coloured by month

➢ Year hierarchy coloured by discount and sized by profit

➢ Year hierarchy coloured by month and sized by profit

➢ Sales,Profit,Stock

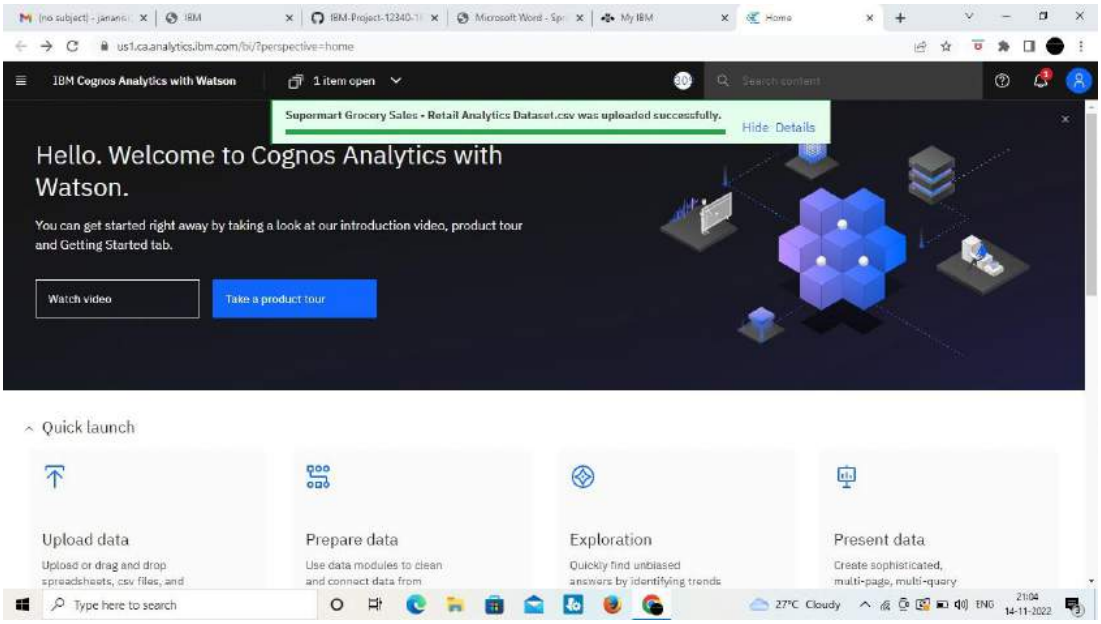
DATA COLLECTION:

Download the Dataset -Dataset Link:

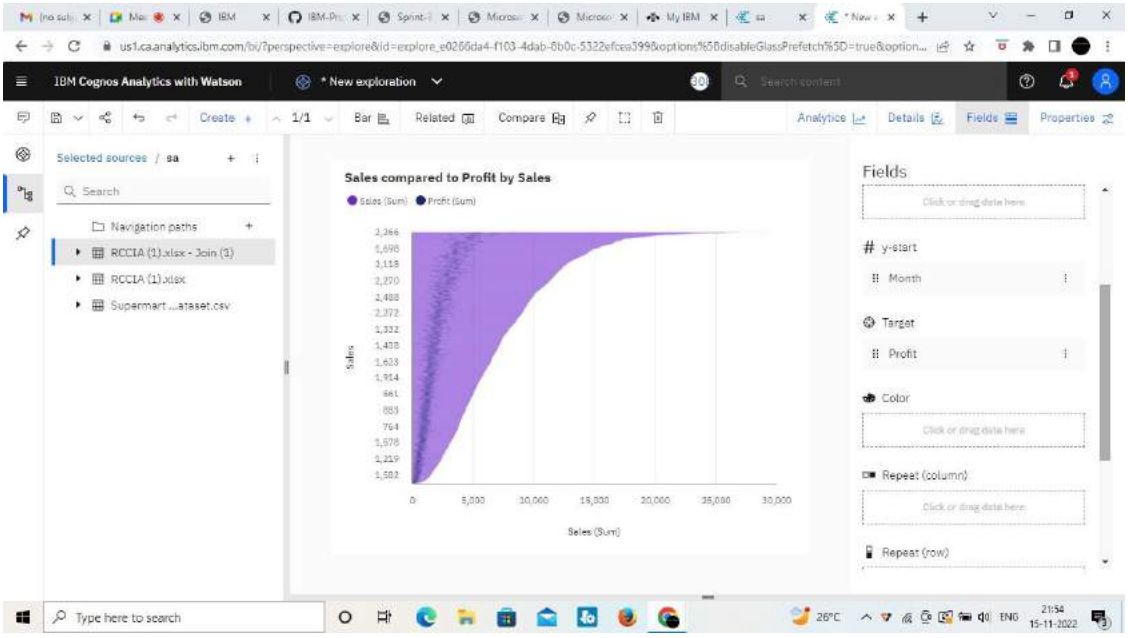
https://drive.google.com/file/d/1nQ7bn1iO1e97s9HF9TZAyBv5lGQgLrZ5/view?usp=drivesdk

LOAD THE DATASET:

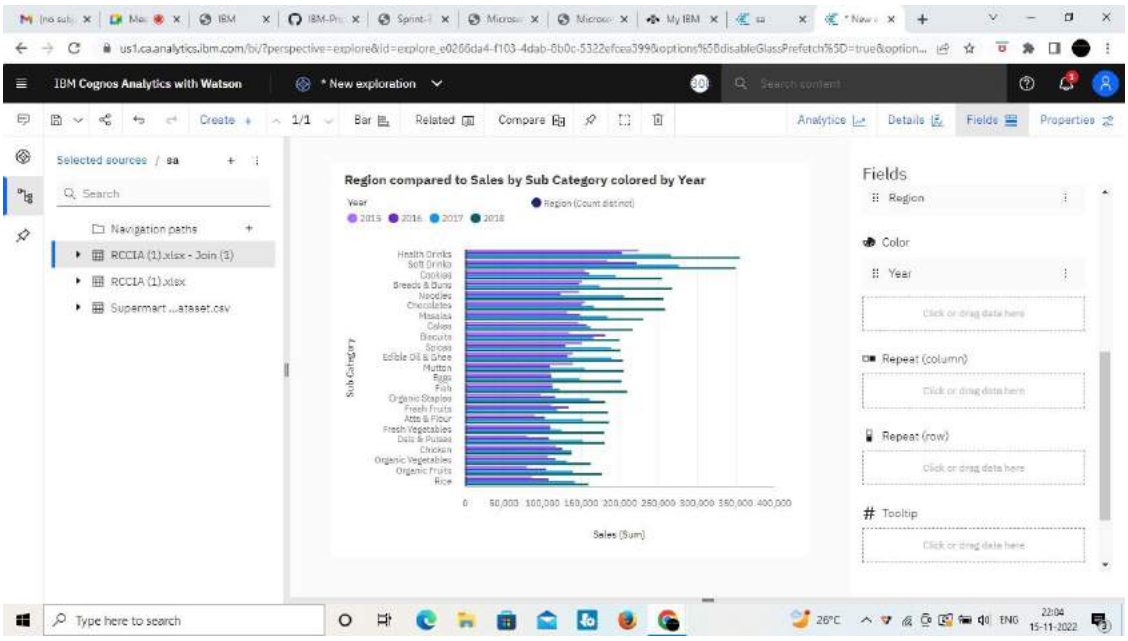
Tool used - IBM Cognos



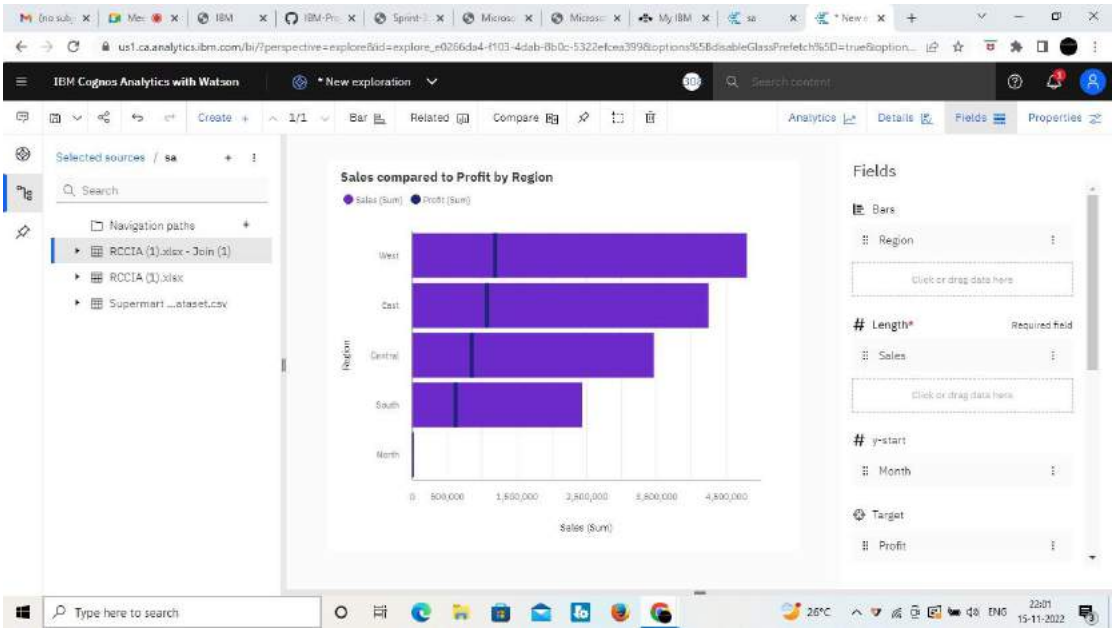
Sales Compared to profit by sales:



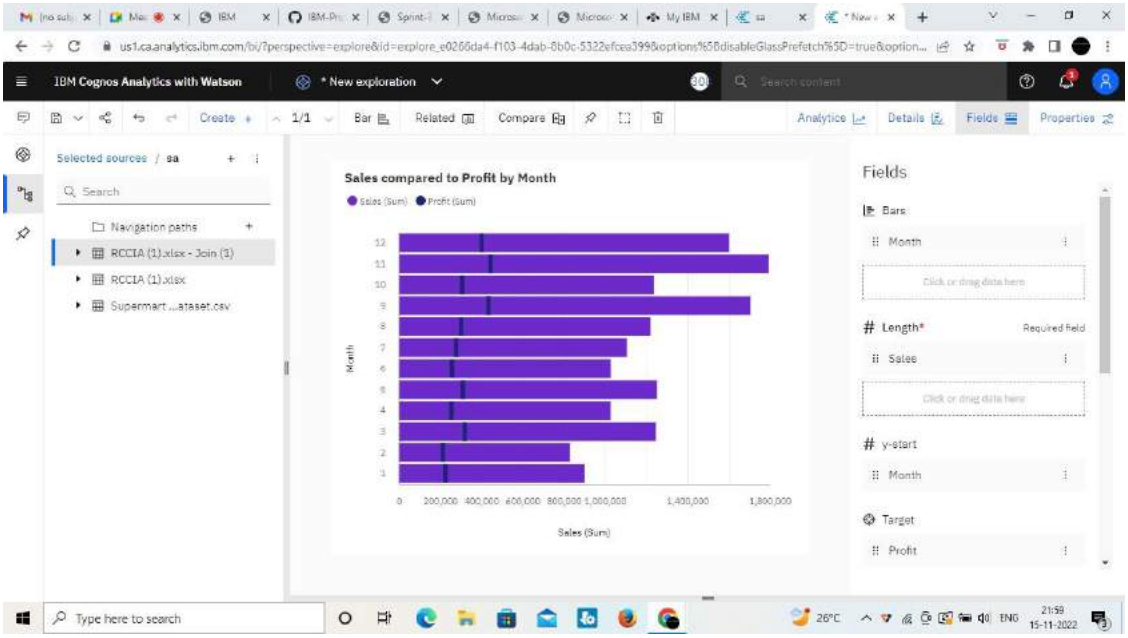
Region compared to salses by sub category coloured by year:



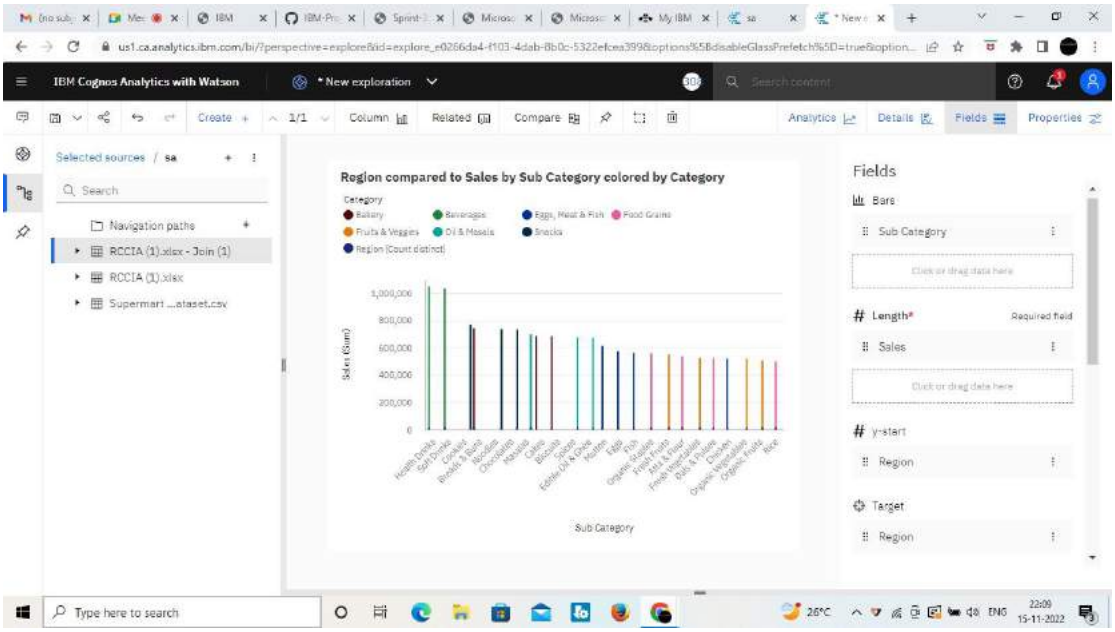
Sales compared to profit by region:



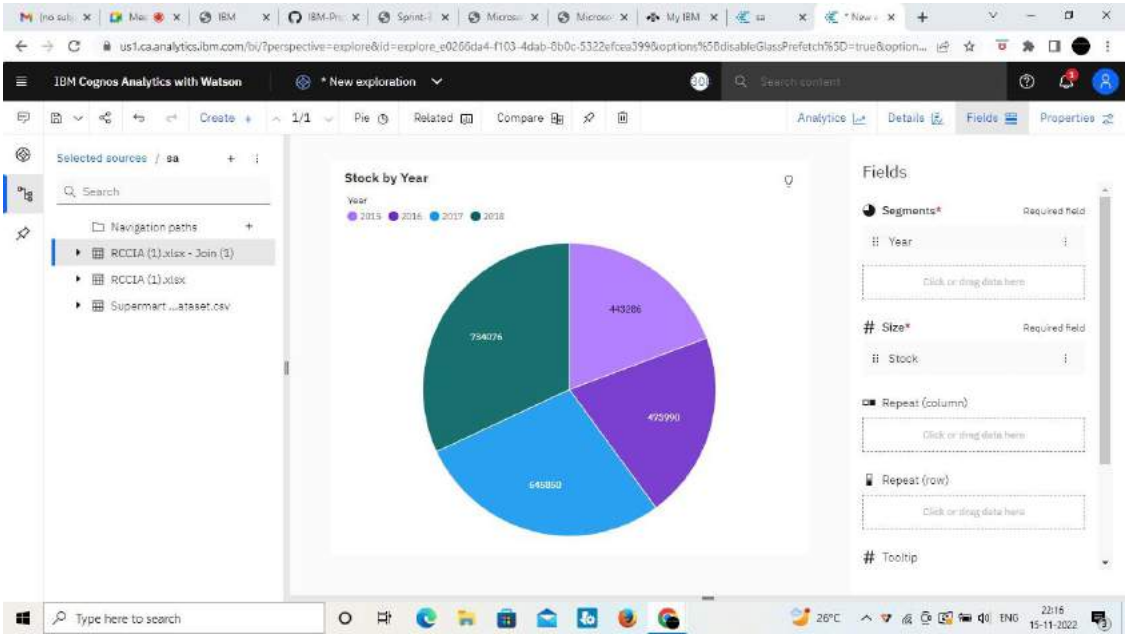
Sales compared to profit by month:



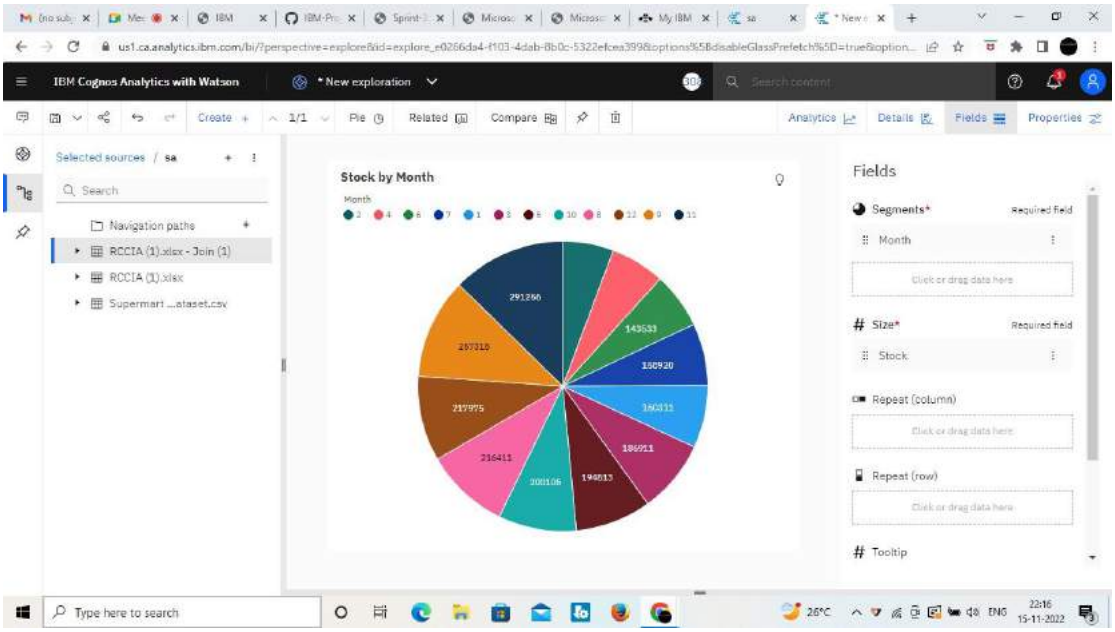
Region compared to sales by sub category coloured by category:



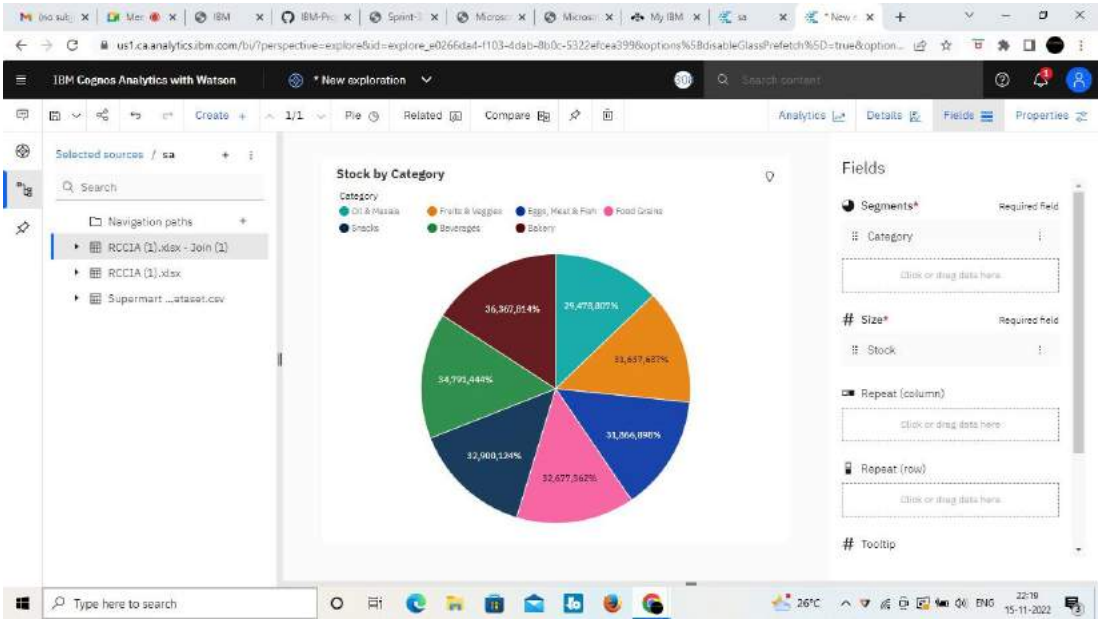
Stock by year:

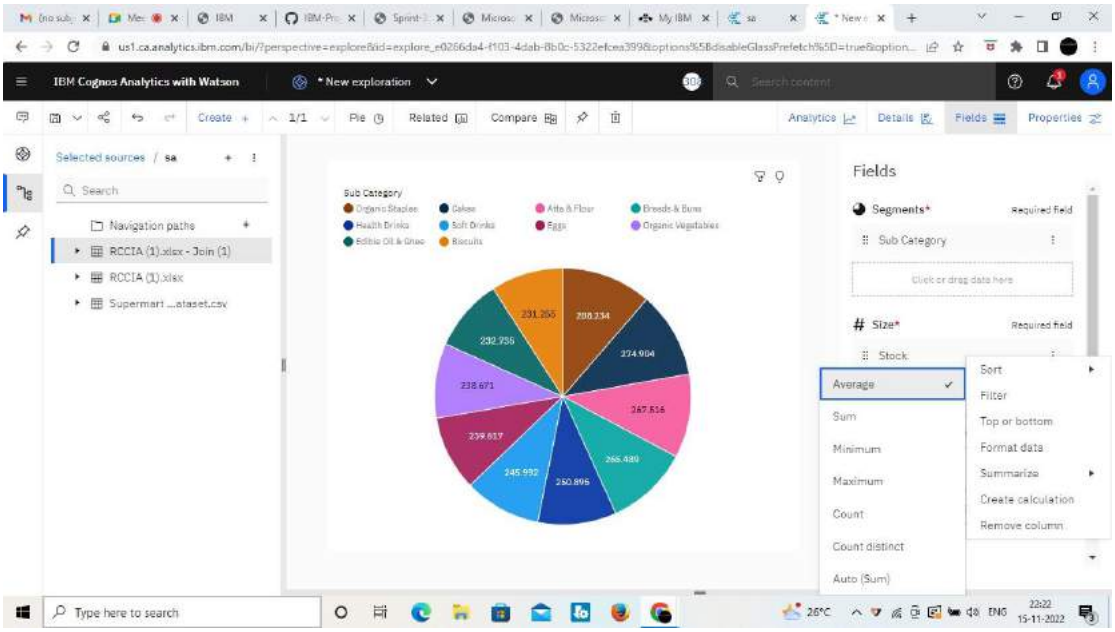


Stock by month:



Stock by category:




IBM Cognos Analytics with Watson
* New exploration
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Navigation paths
RCCIA (1).xlsx - Join (1)
RCCIA (1).xlsx
Supermart ...ataset.csv
Sub Category
Organic Staples
Cakes
Atta & Flour
Breads & Buns
Health Drinks
Soft Drinks
Eggs
Organic Vegetables
Edible Oil & Ghee
Biscuits
231.255
288.234
232.755
274.904
238.671
267.516
239.817
266.489
245.992
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Sub Category
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Required field
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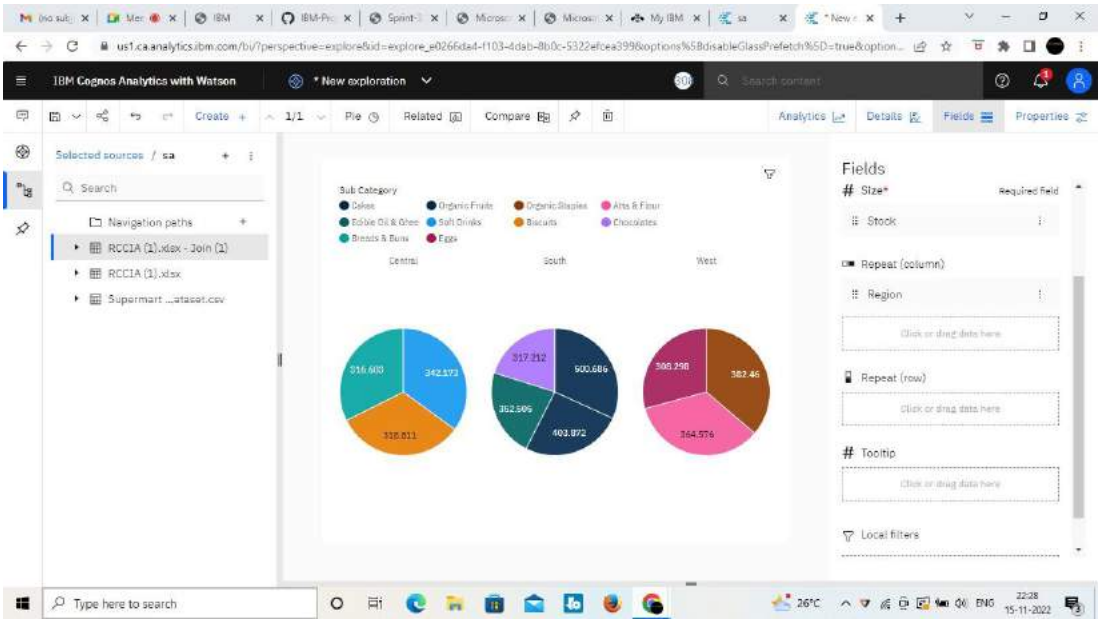
IBM Cognos Analytics with Watson
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RCCIA (1).xlsx - Join (1)
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Organic Staples
Atta & Flour
Edible Oil & Ghee
Soft Drinks
Biscuits
Chocolates
Breads & Buns
Eggs
Central
South
West
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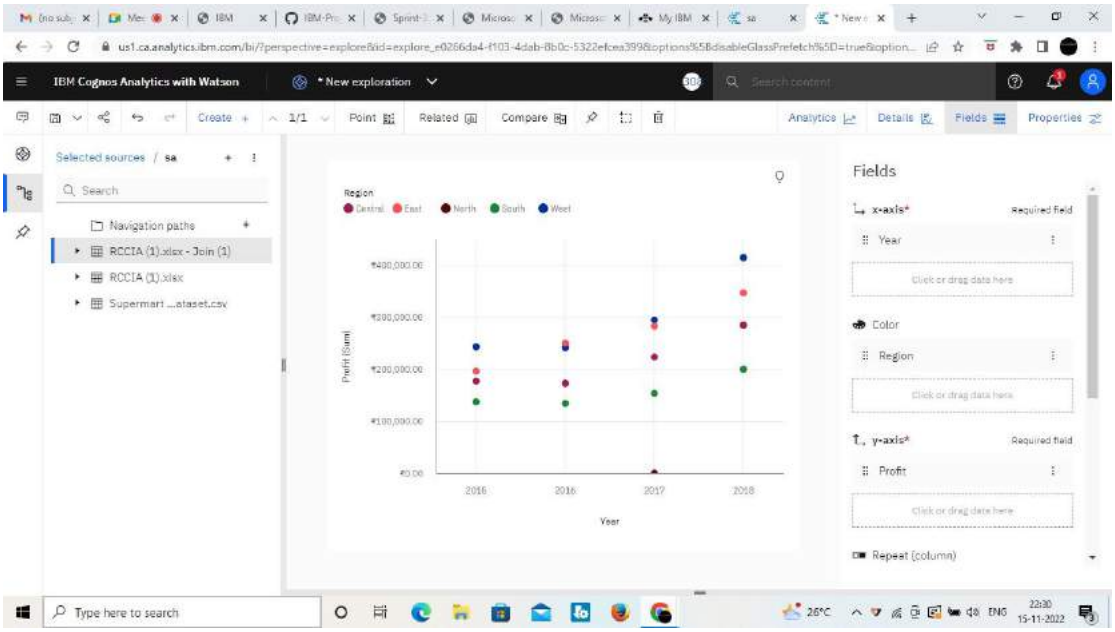
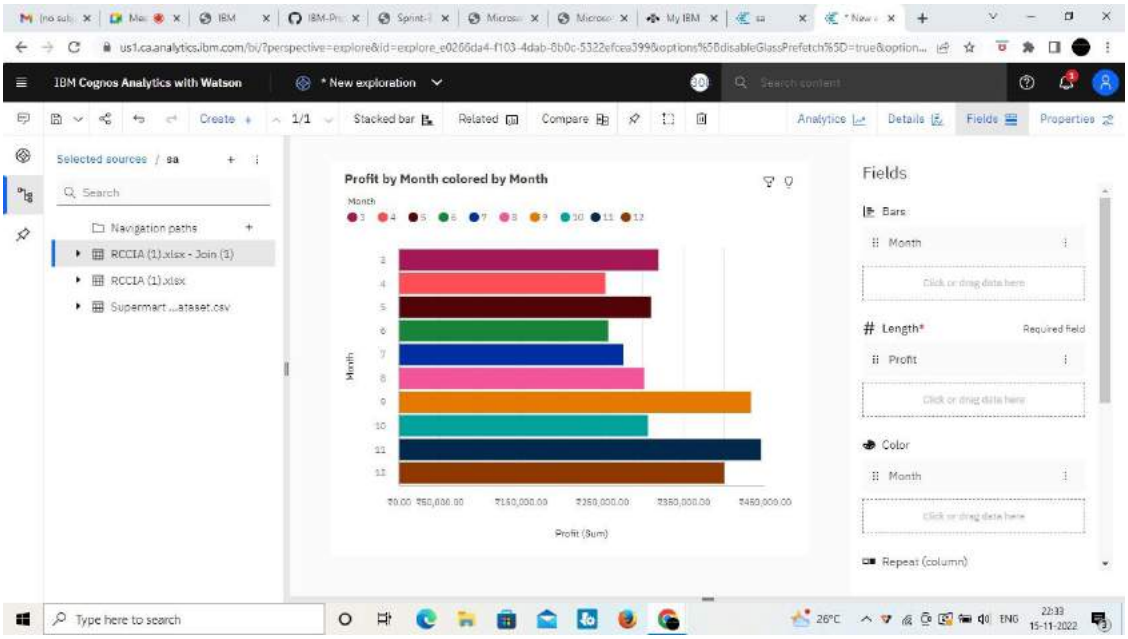
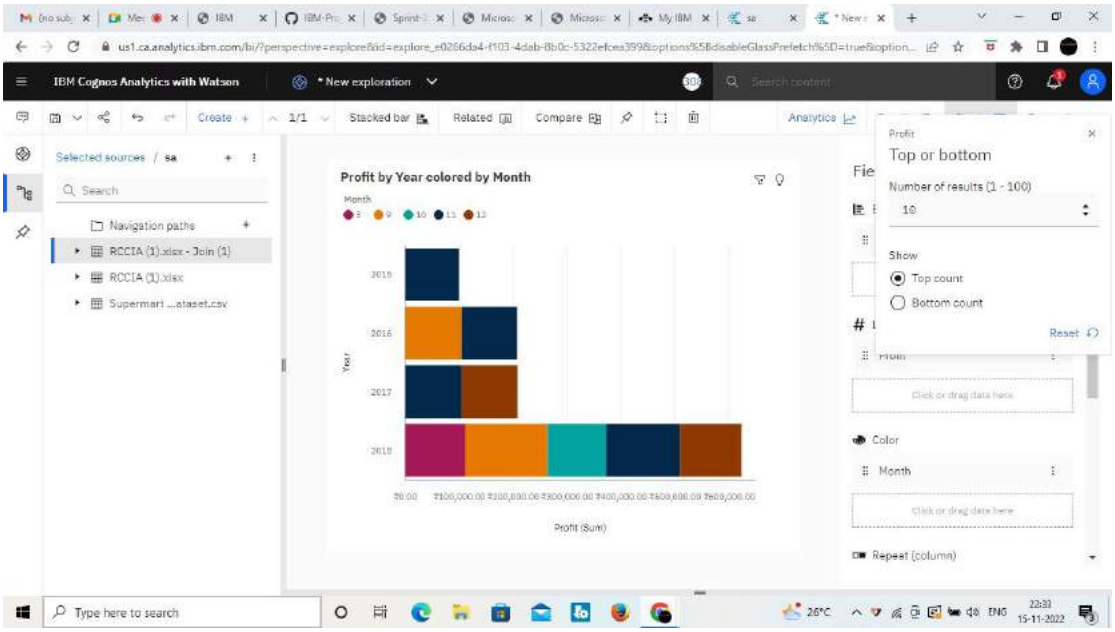
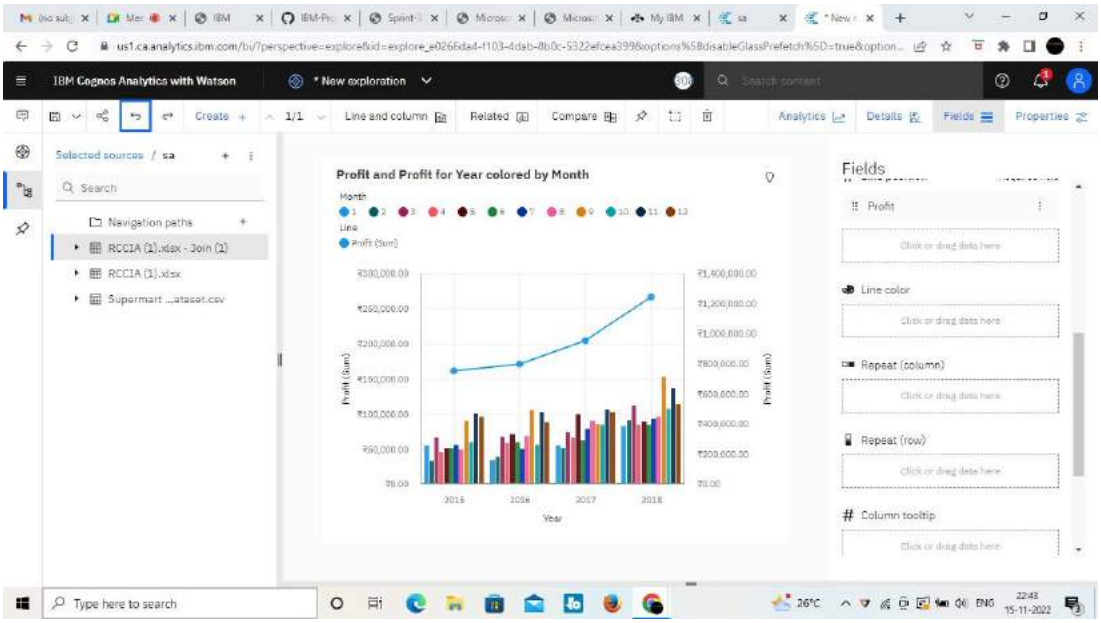


Profit by month coloured by month:

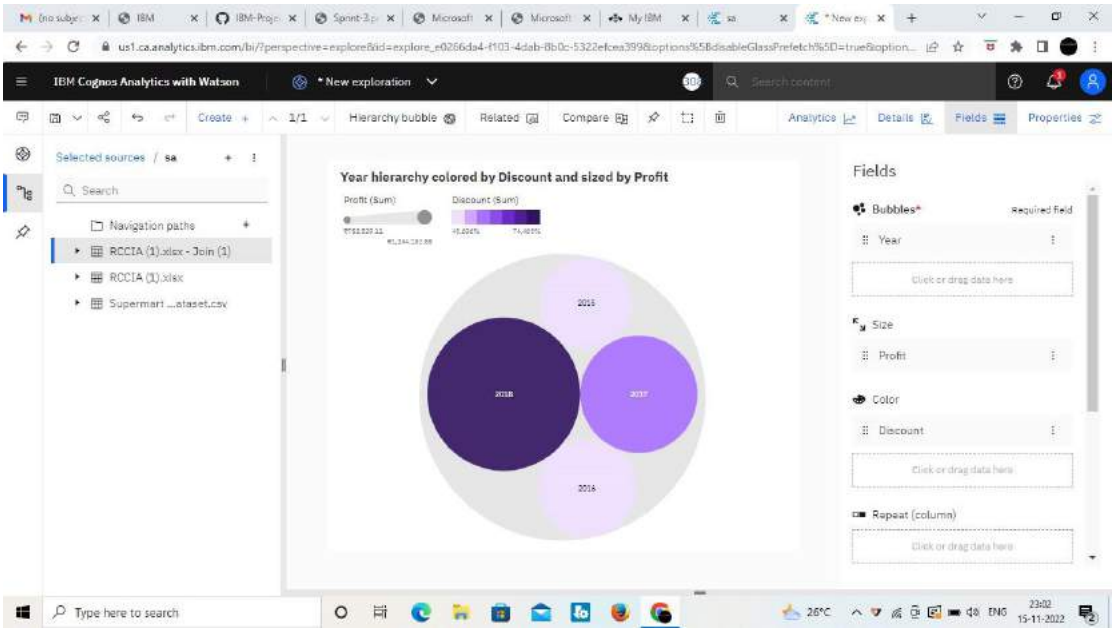


Profit by year coloured by month:

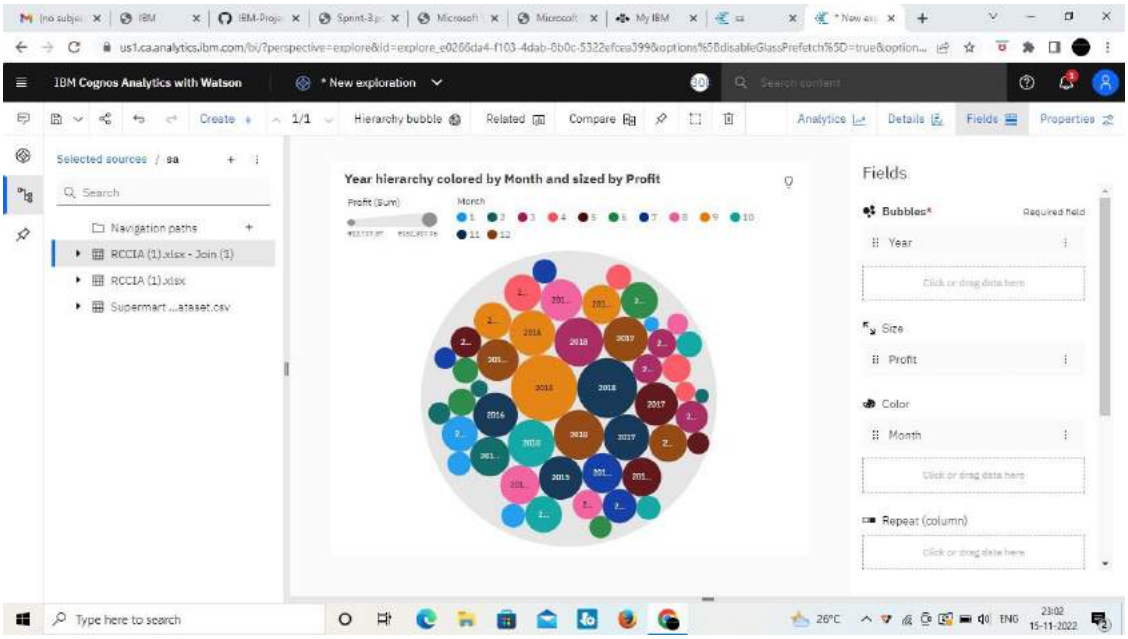




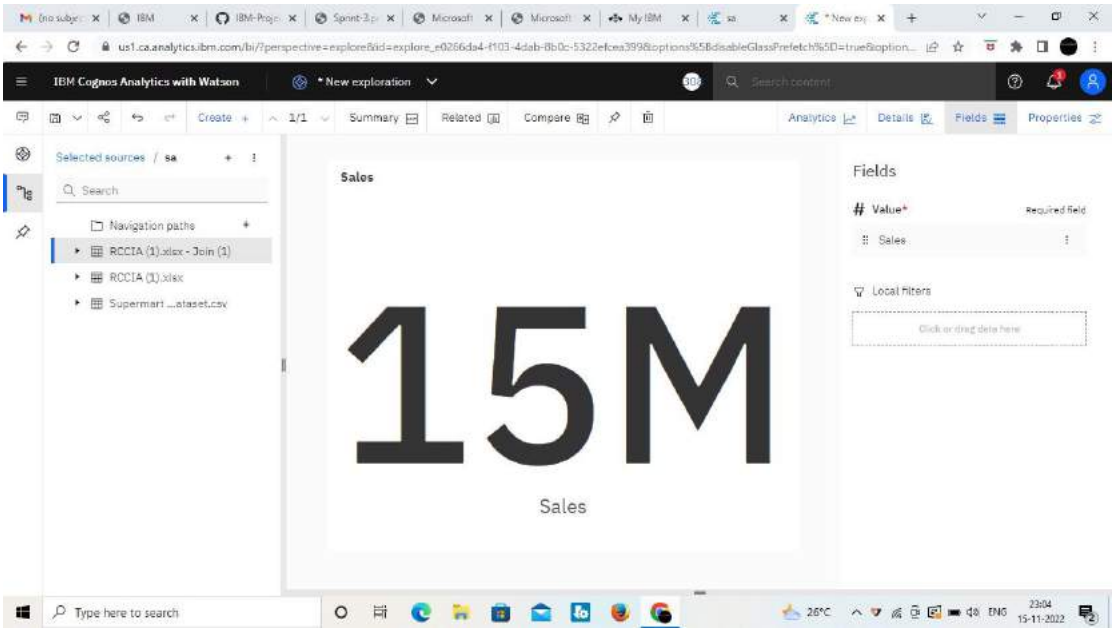
Year hierarchy coloured by discount and sized by profit:



Year hierarchy coloured by month and sized by profit:



Sales:



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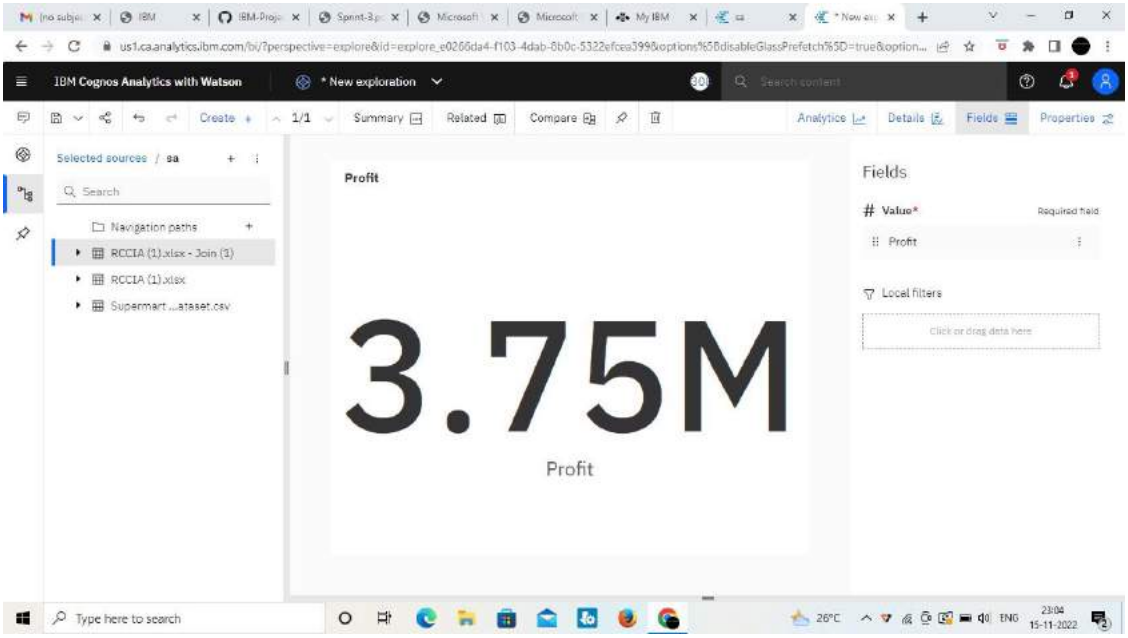

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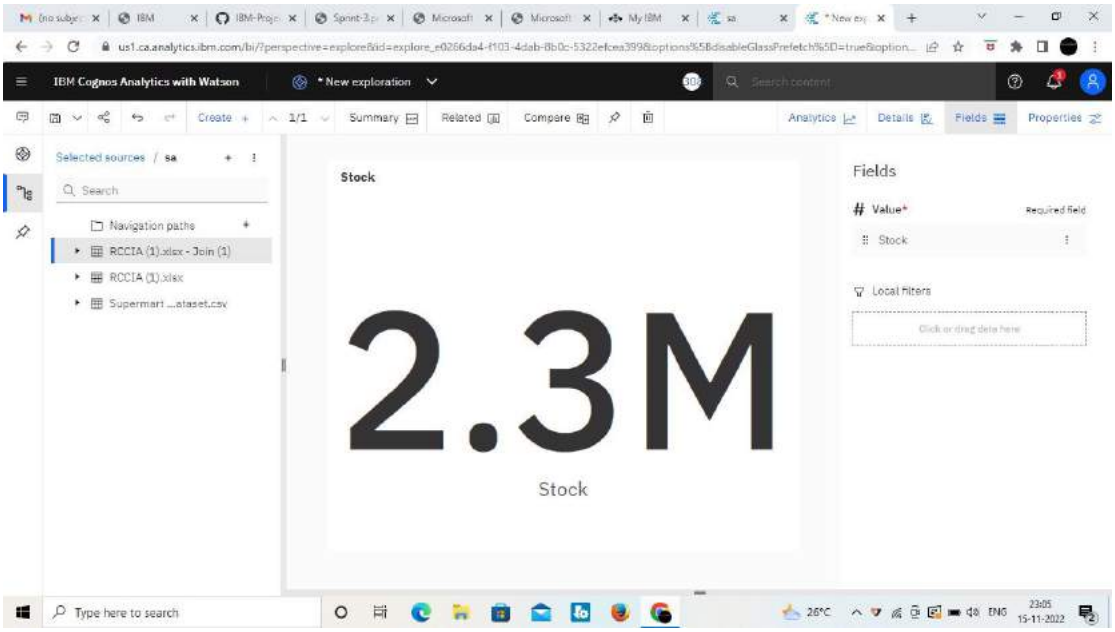
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Local filters
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7.3 DELIVERY OF SPRINT 3

Sprint 3:

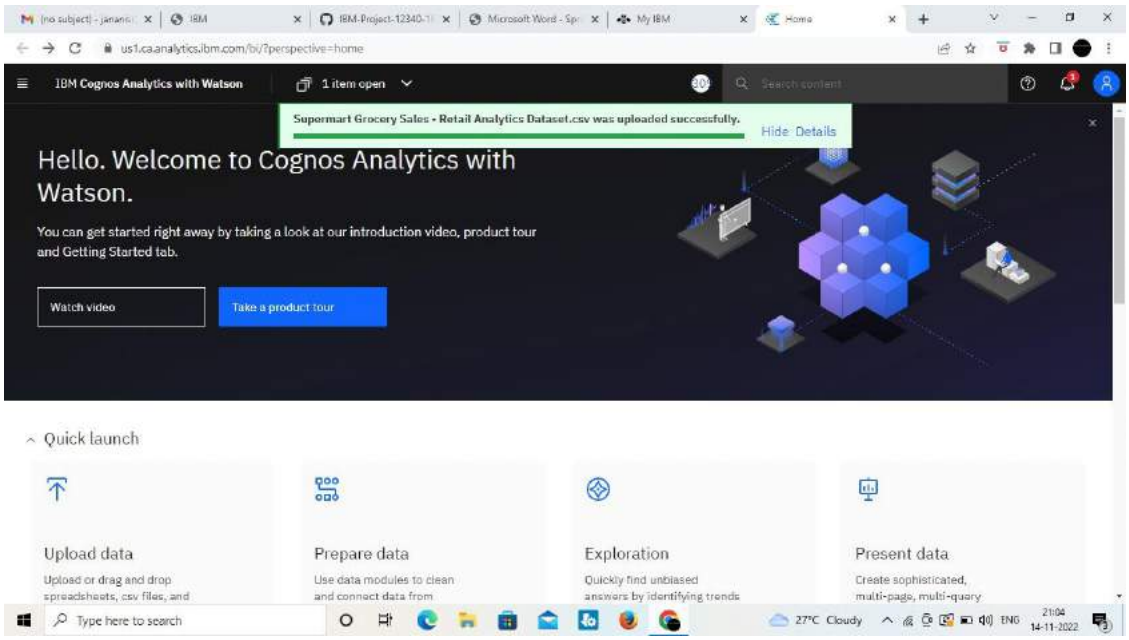
DATA COLLECTION:

Download the Dataset -Dataset Link:

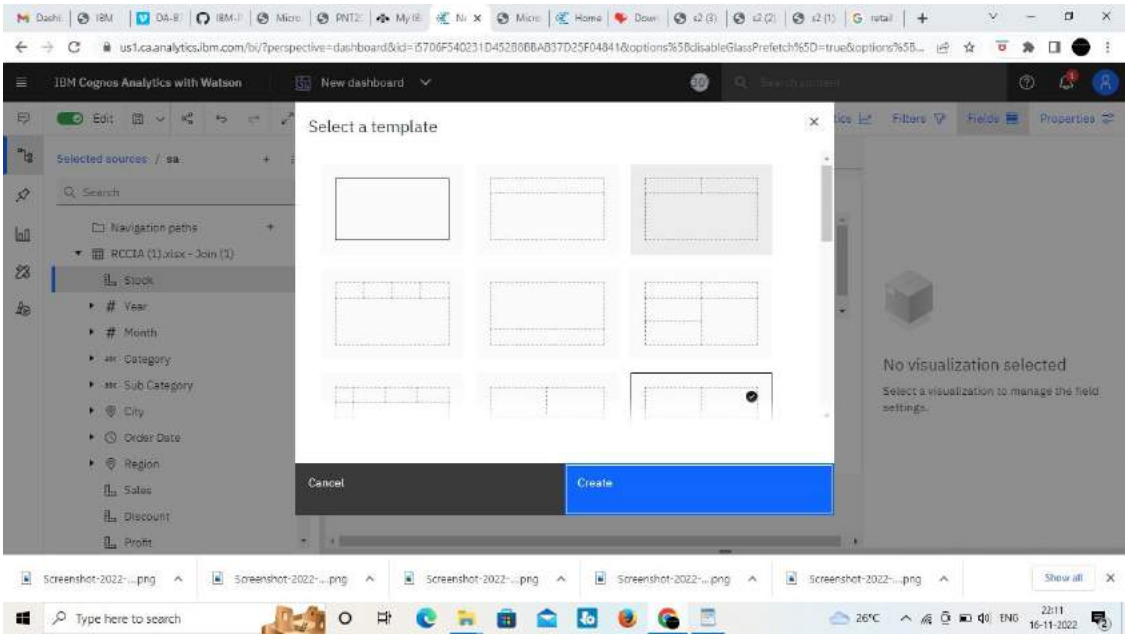
https://drive.google.com/file/d/1nQ7bn1iO1e97s9HF9TZAyBv5lGQgLrZ5/view?usp=drivesdk

LOAD THE DATASET:

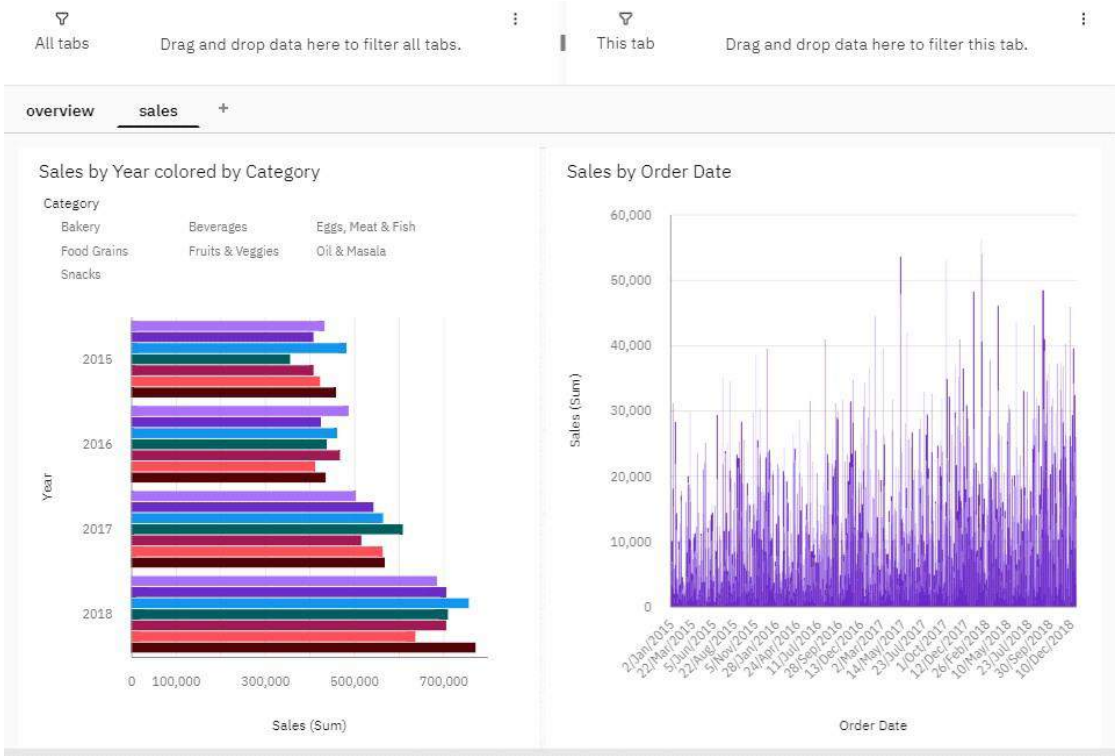
Tool used - IBM Cognos



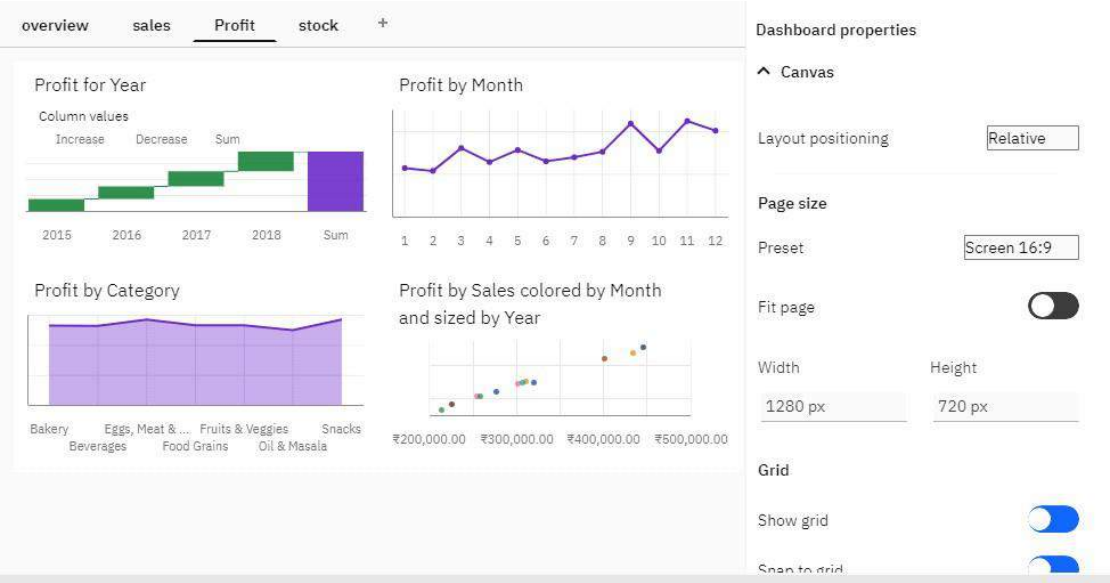
Create a dashboard:



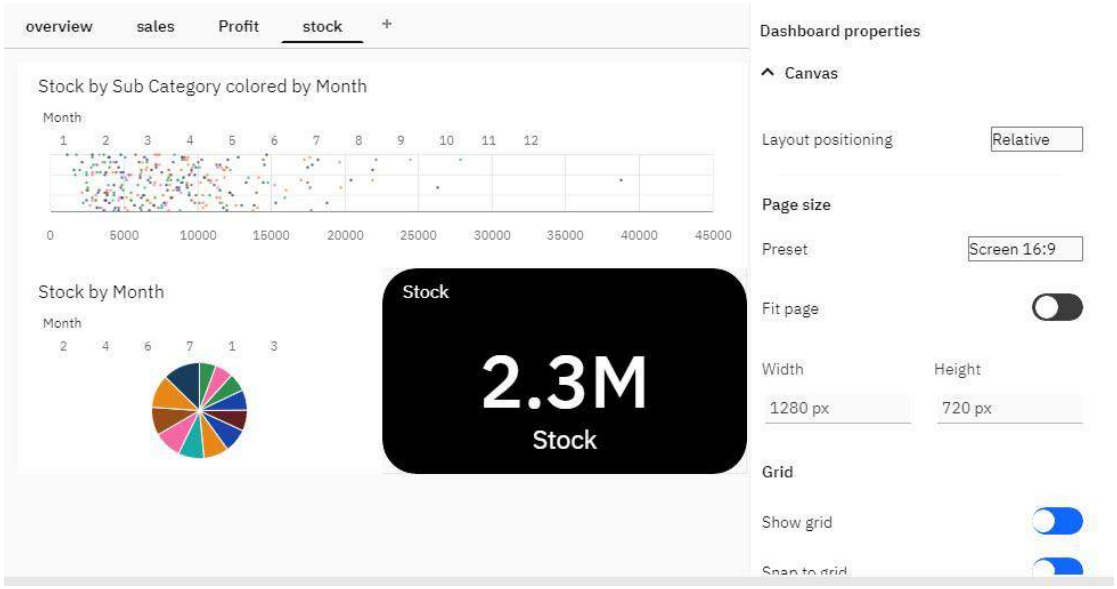
Salse Dashboard:



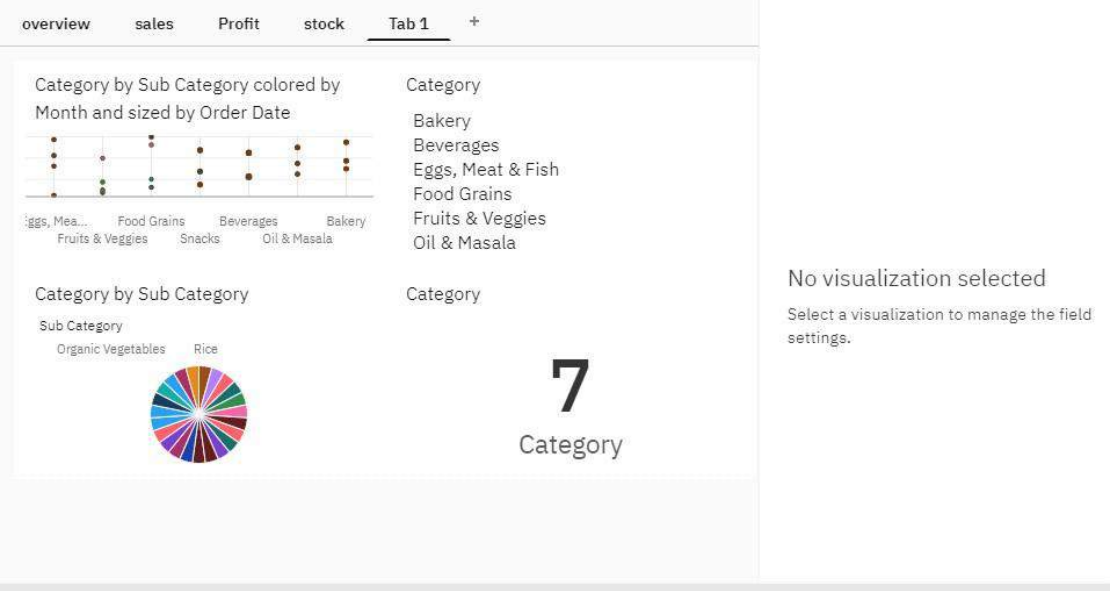
Profit Dashboard:



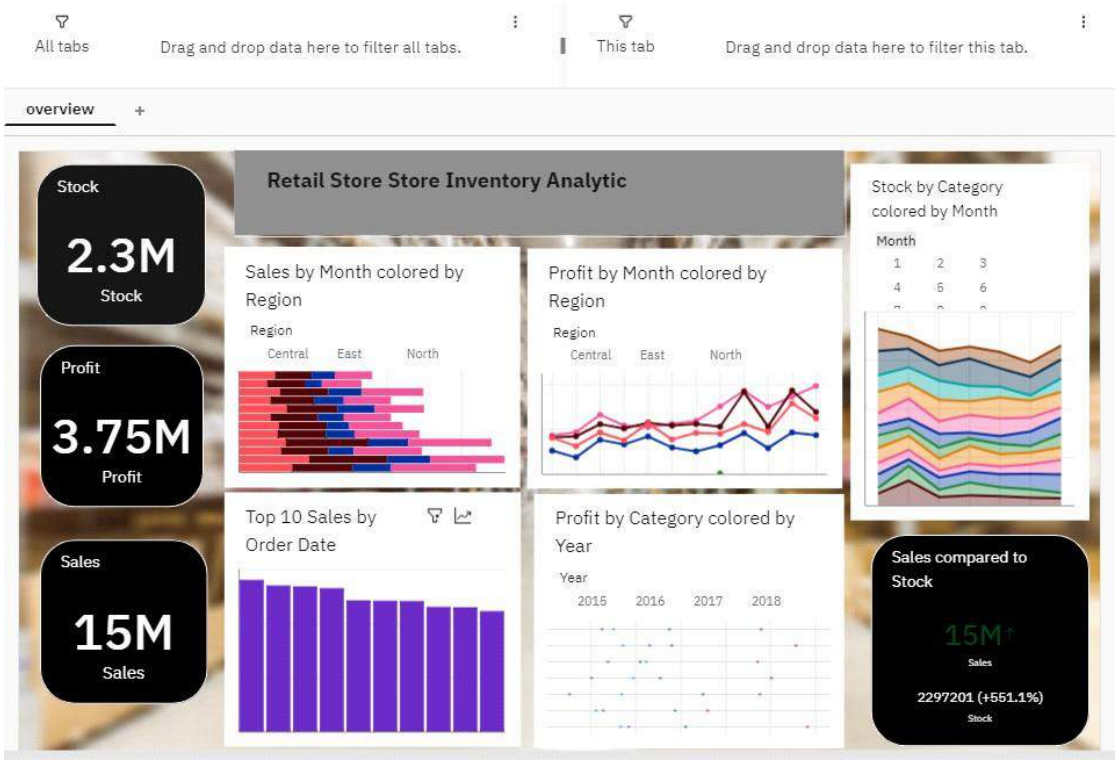
Stock Dashboard:



Category Dashboard:



Retail Store Stock Inventory Analytic Dashboard:



Prepared Data Link:

https://us1.ca.analytics.ibm.com/bi/?perspective=ca-modeller&id=i75BE85C978D3441BB6A7E67B7835172F&objRef=i75BE85C978D3441BB6A7E67B7835172F&tid=2878668387_0ee41377573244b5af6b0128e465b636_sessionTemp

7.4 DELIVERY OF SPRINT-4

SPRINT-4:

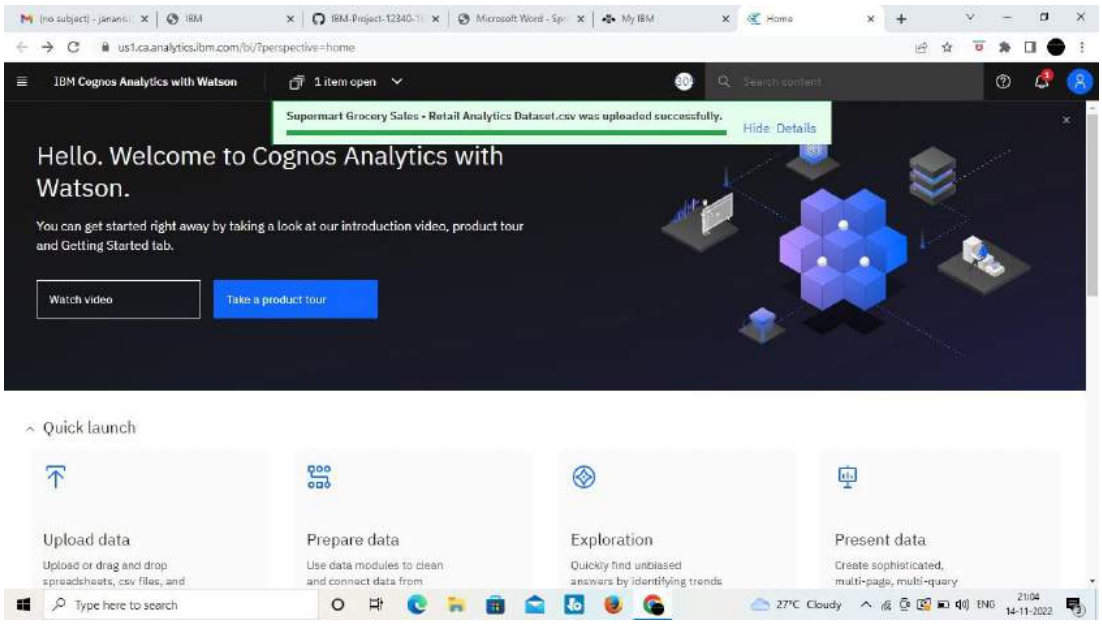
REPORT CREATION:

Download the Dataset -Dataset Link:

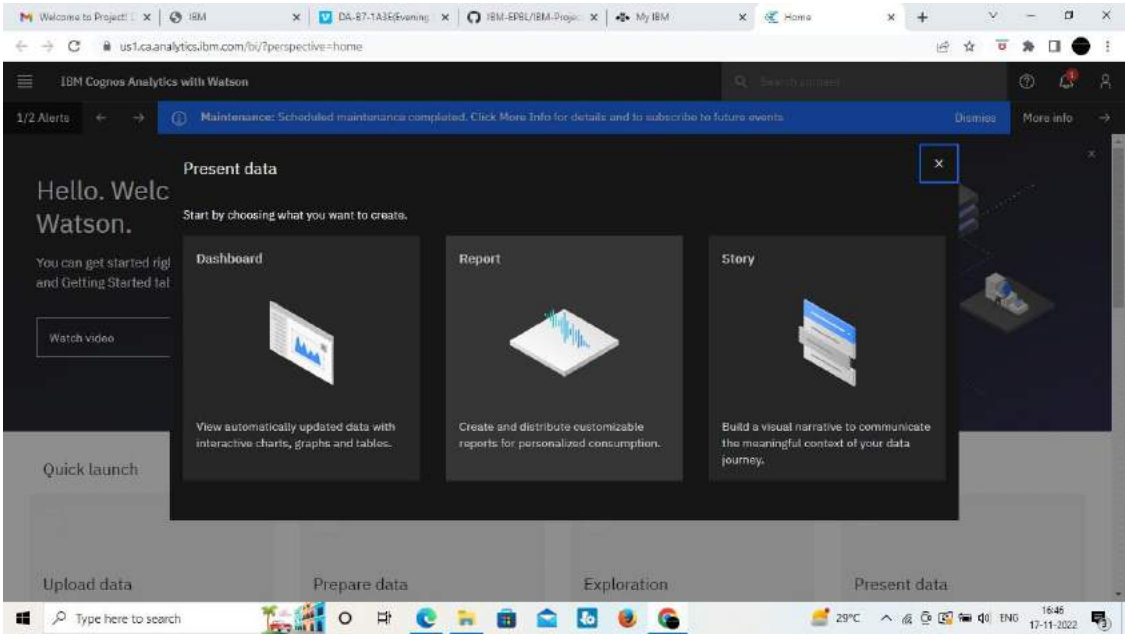
https://drive.google.com/drive/folders/1kiL5CHJmQvbk9VyFsuUs-myAupBZ

ESZqOLFRhFp14Jn

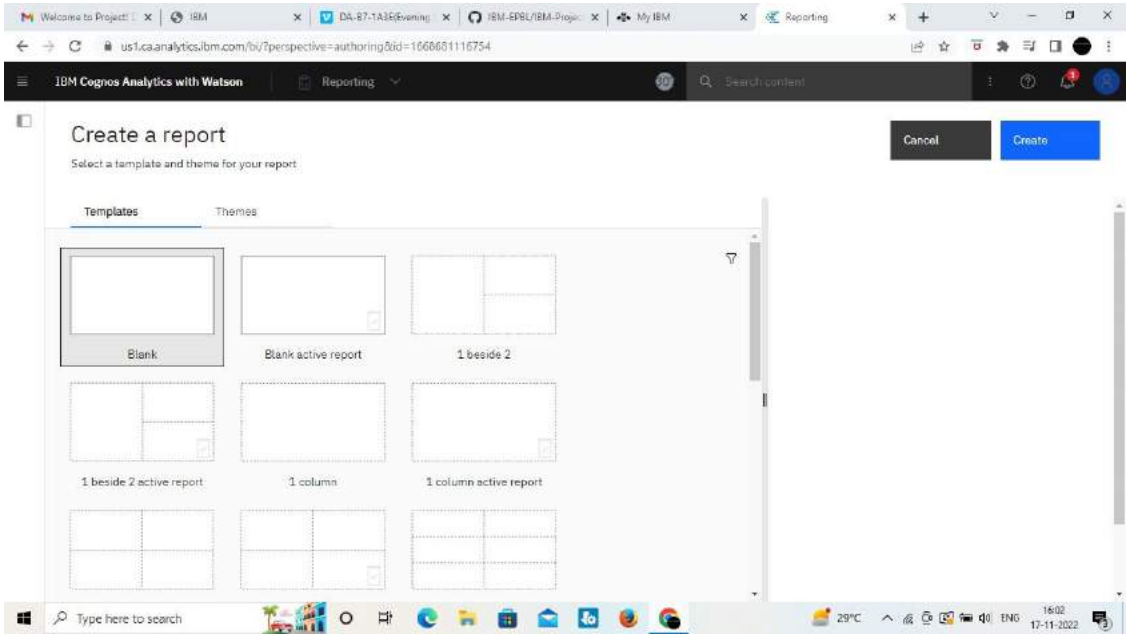
Load the Dataset:
Tool used - IBM Cognos



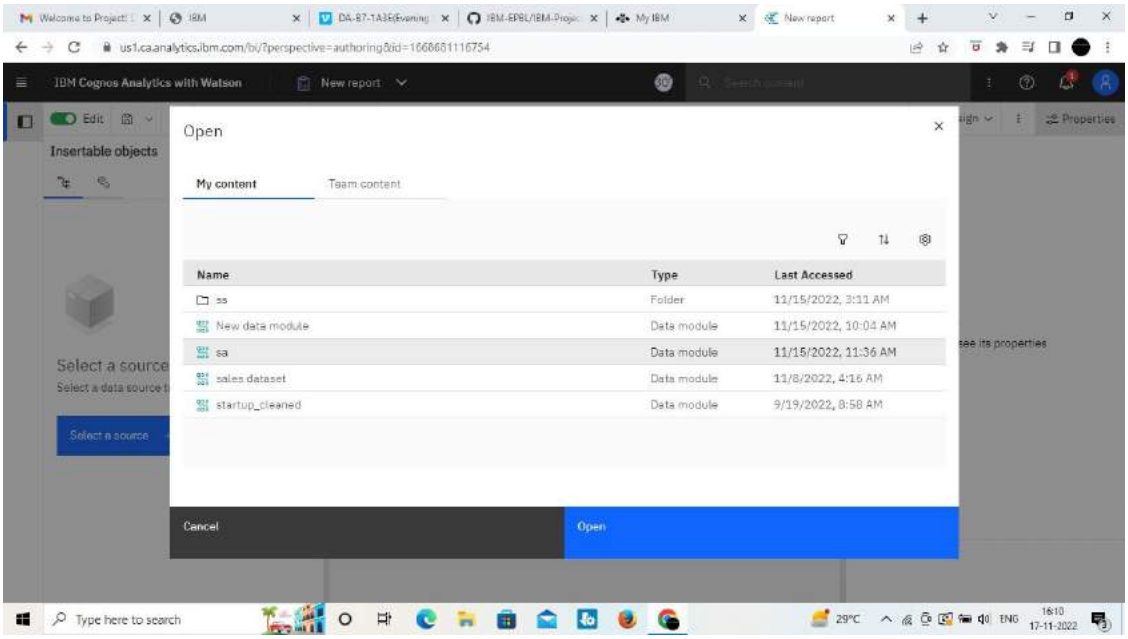
Choose Report:



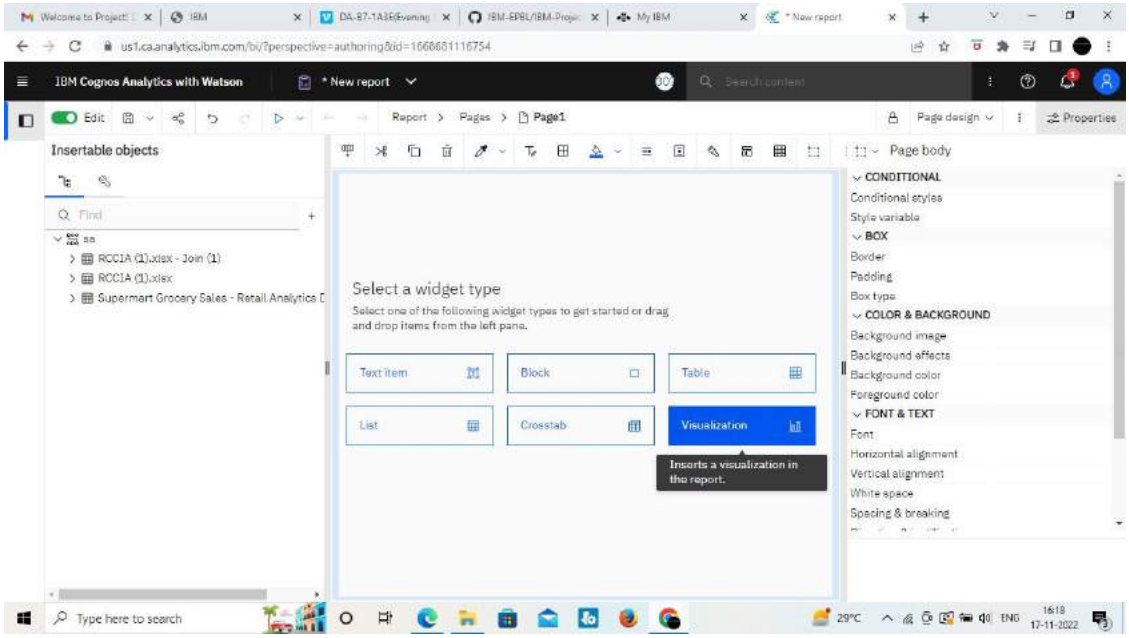
Choose Templet:

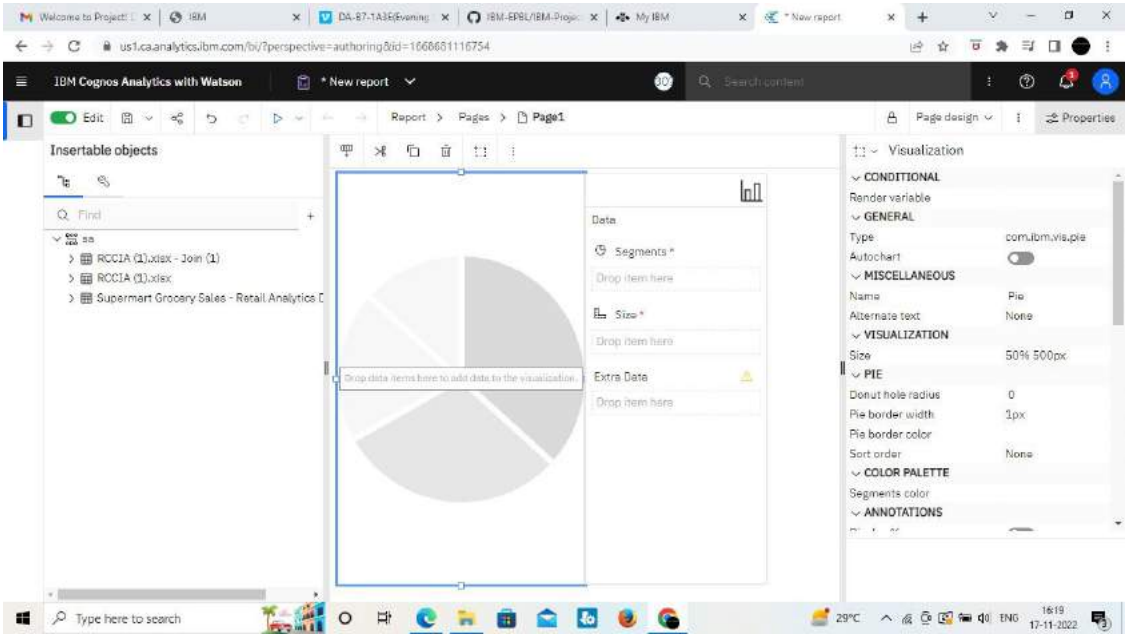


Open the data set:

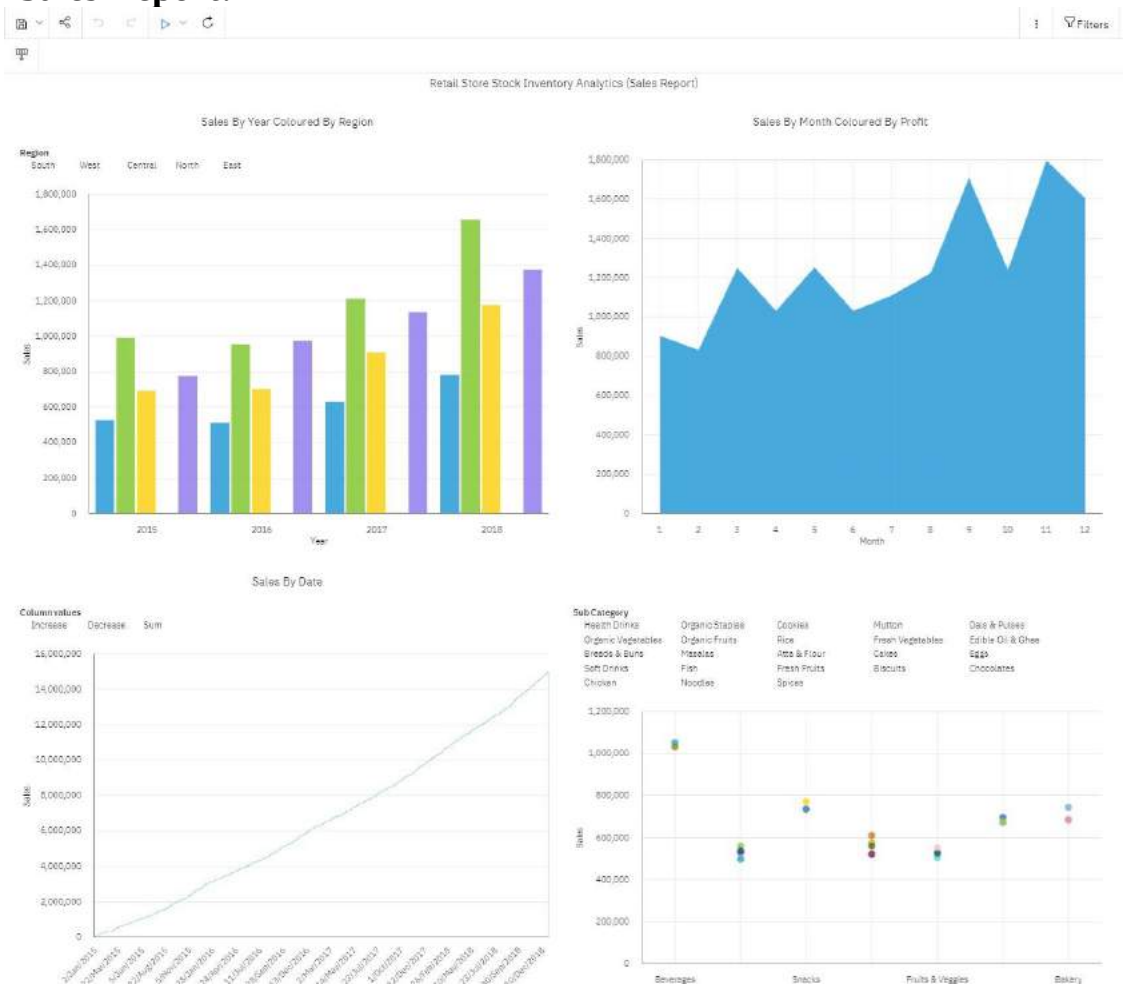


Select widget type-visualization:

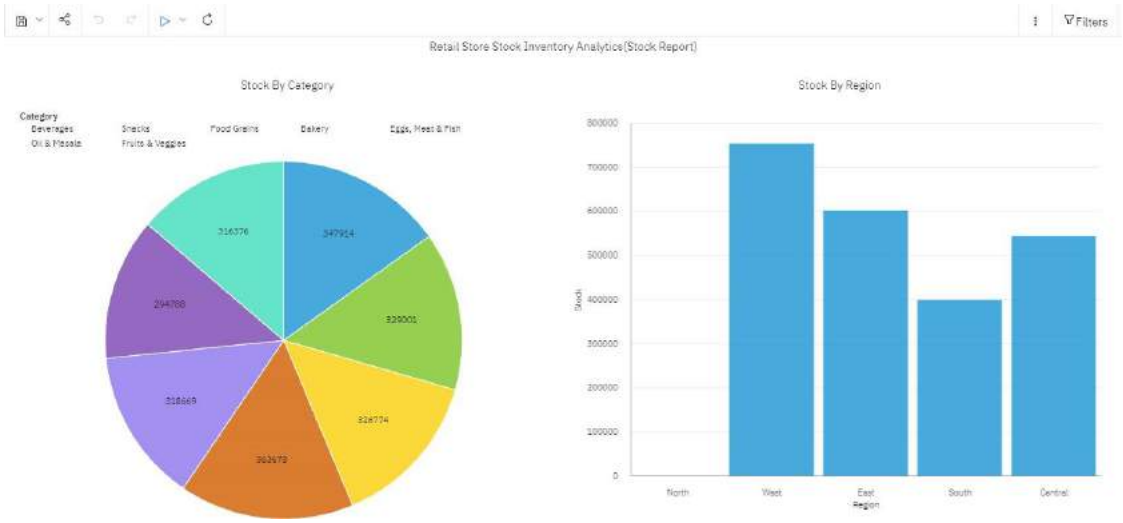




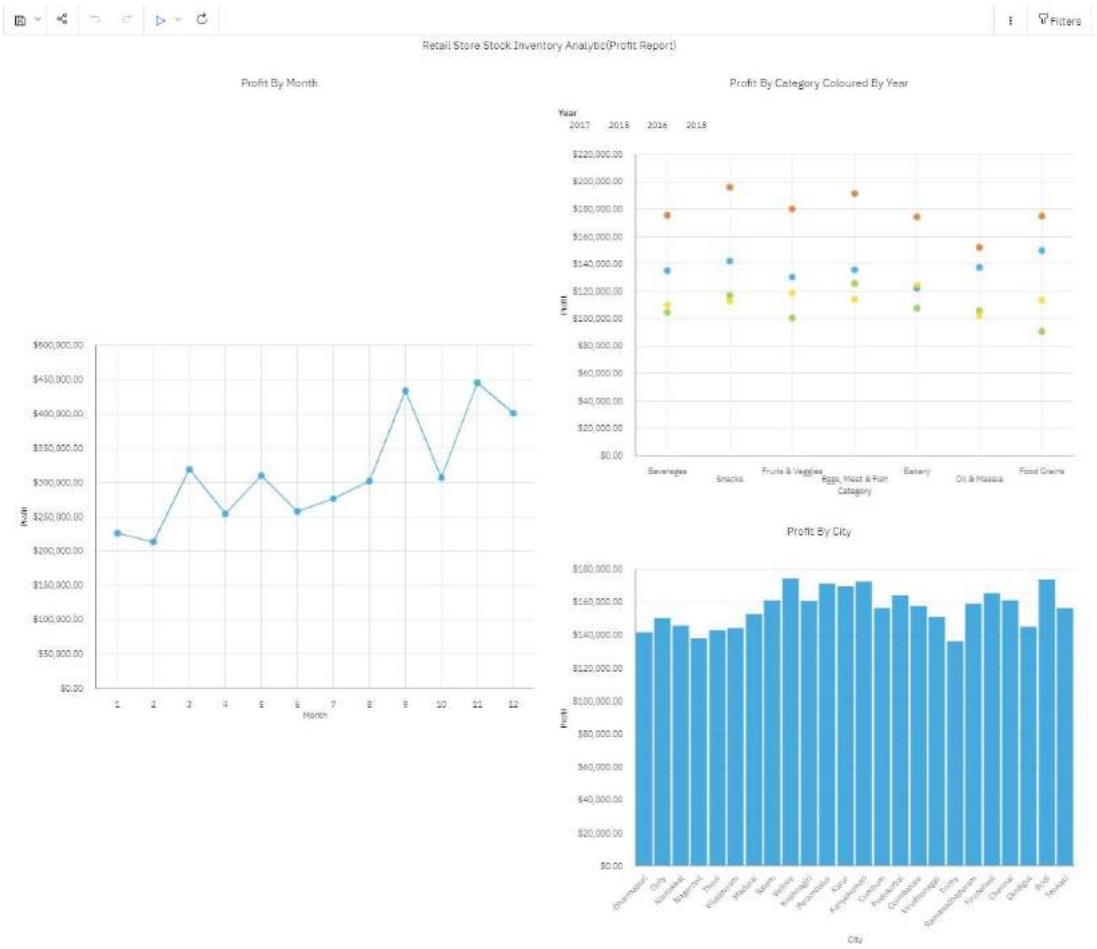
Sales Report:



Stock Report:



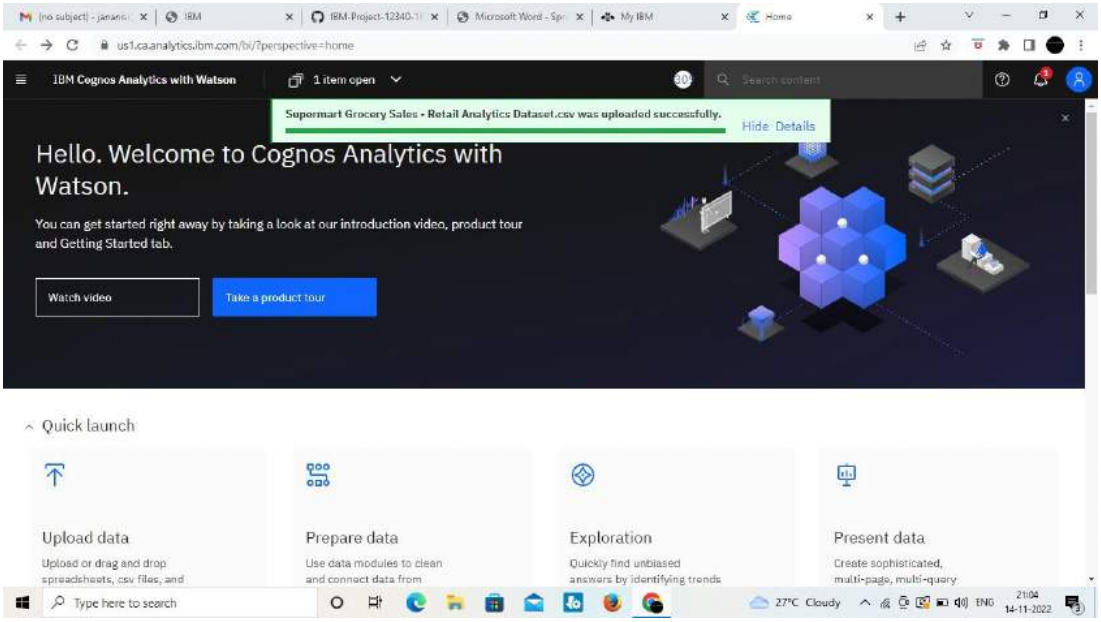
Profit Report:



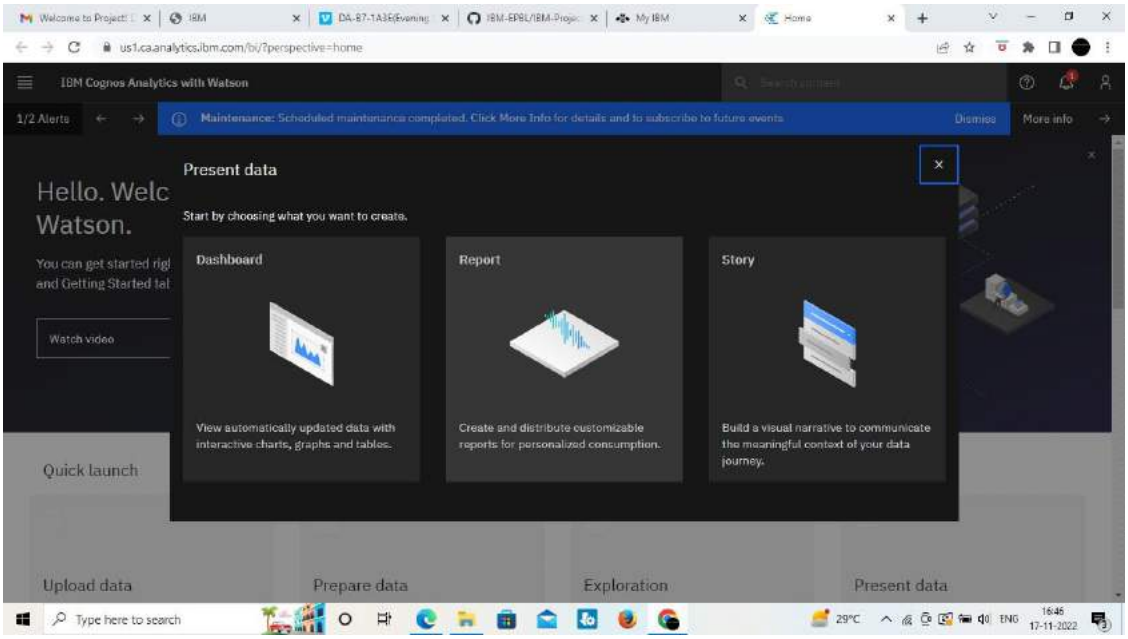
SPRINT-4 STORY

Load the Dataset:

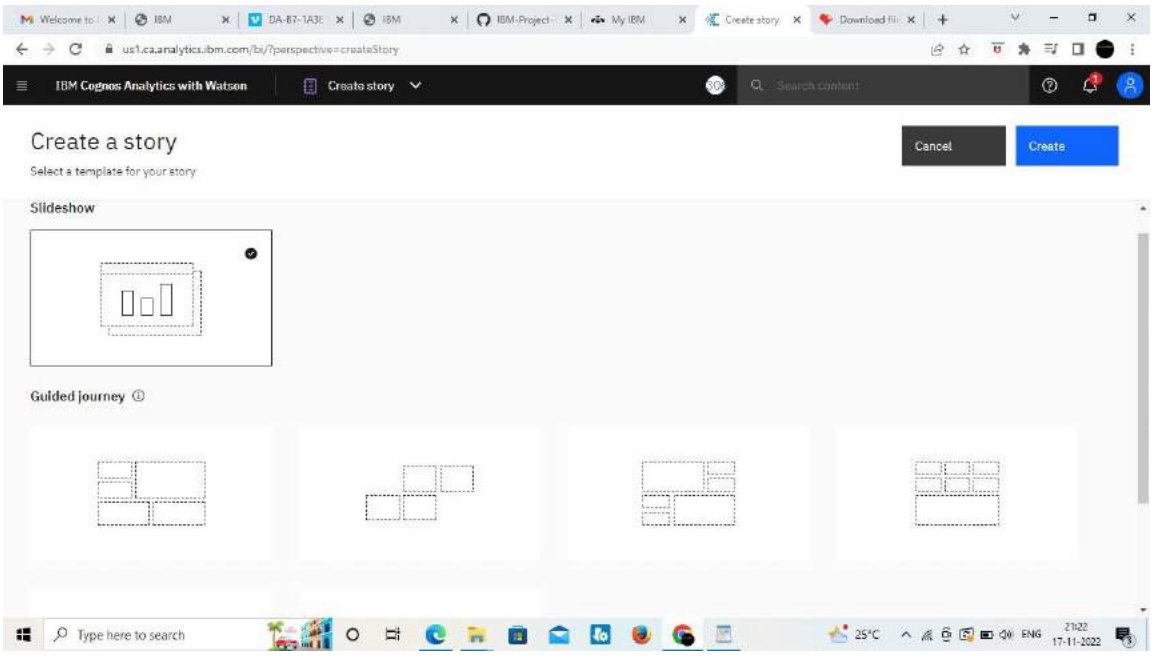
Tool used - IBM Cognos



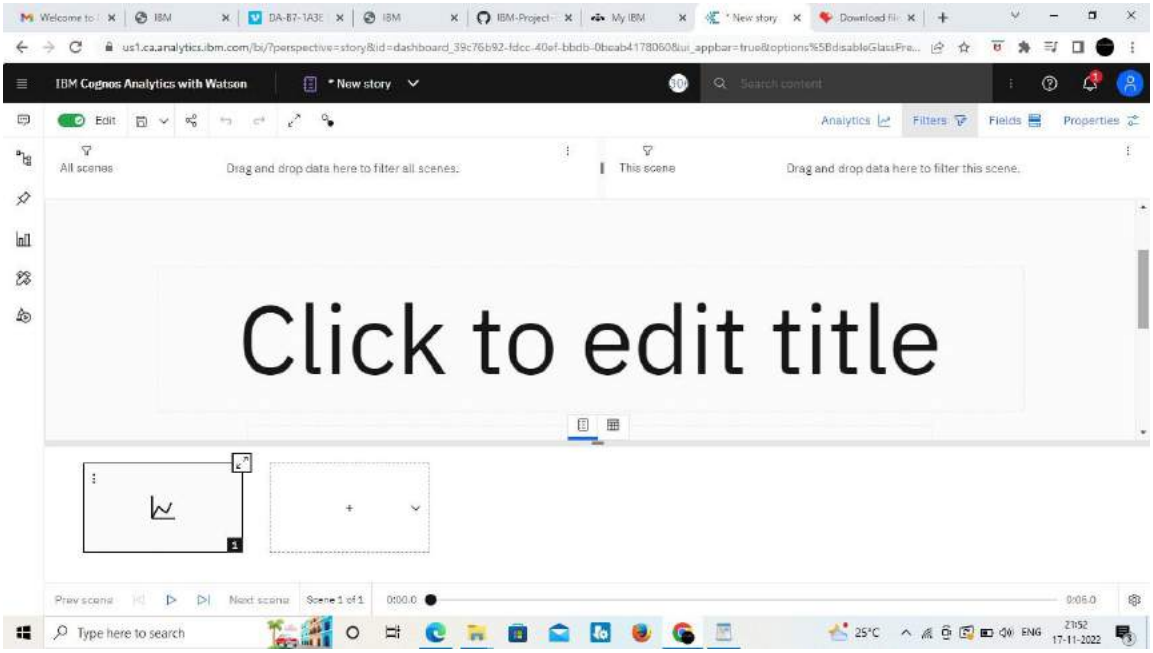
Choose Story:



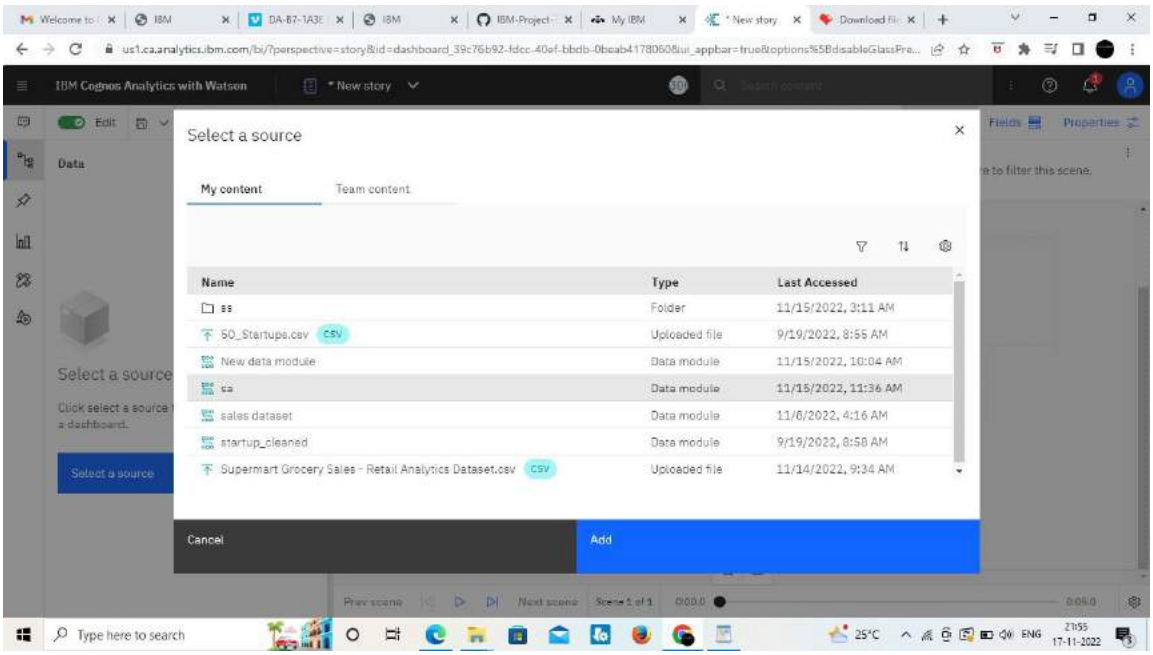
Create A Story:



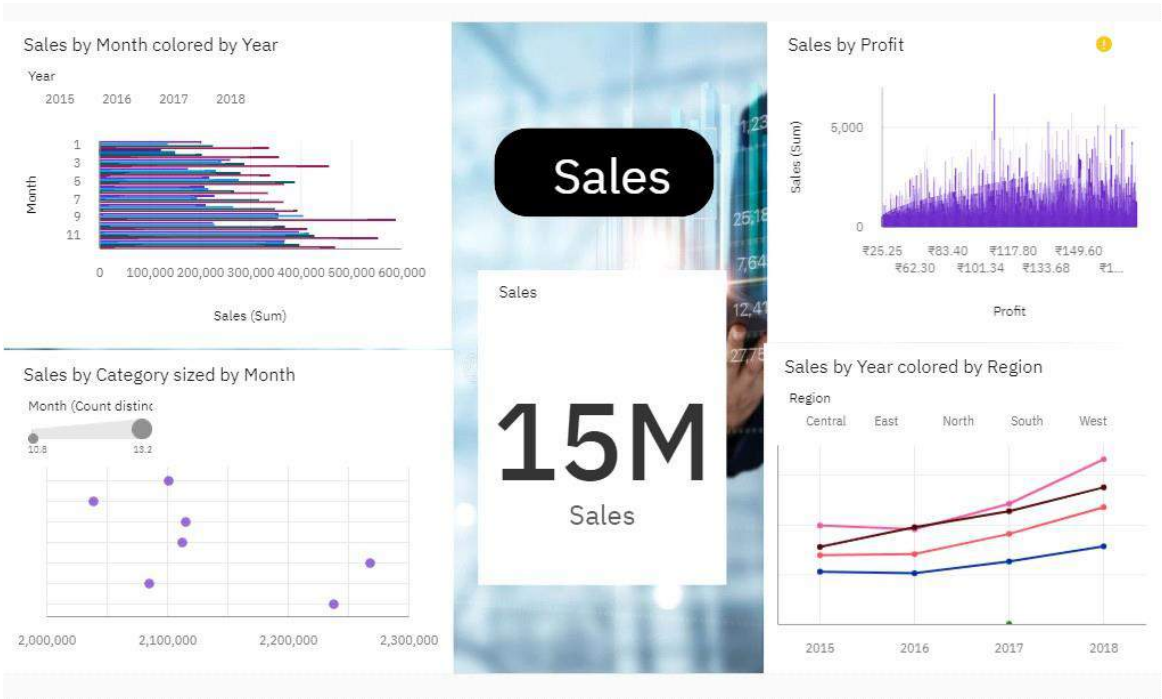
Select Visualization:



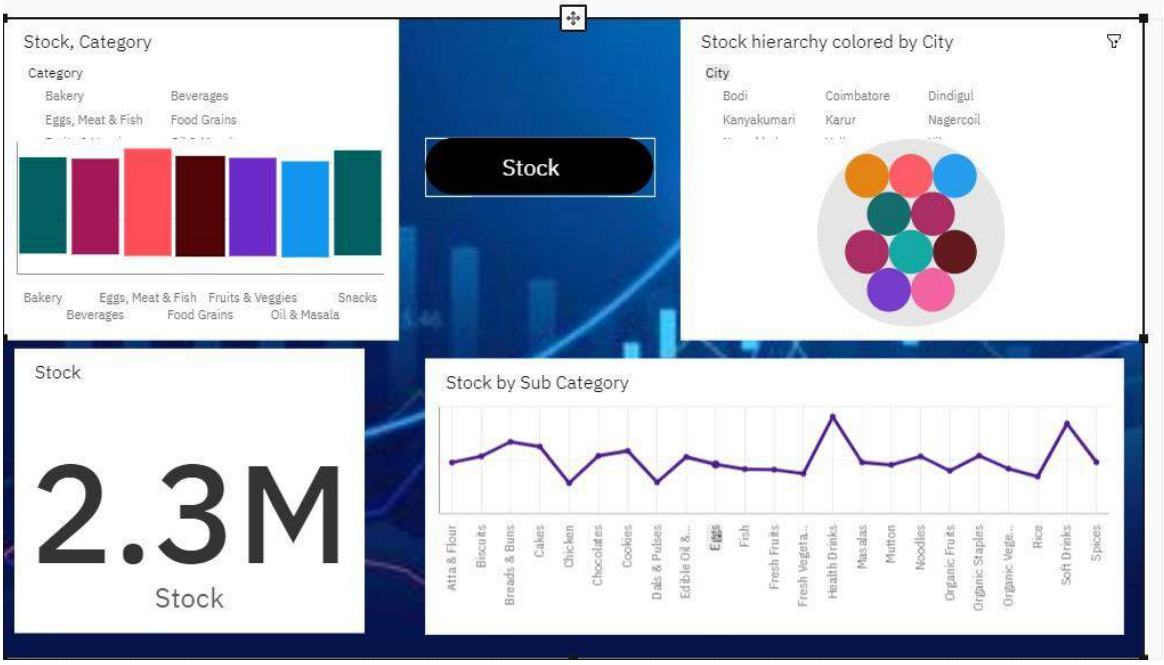
Select Sources:



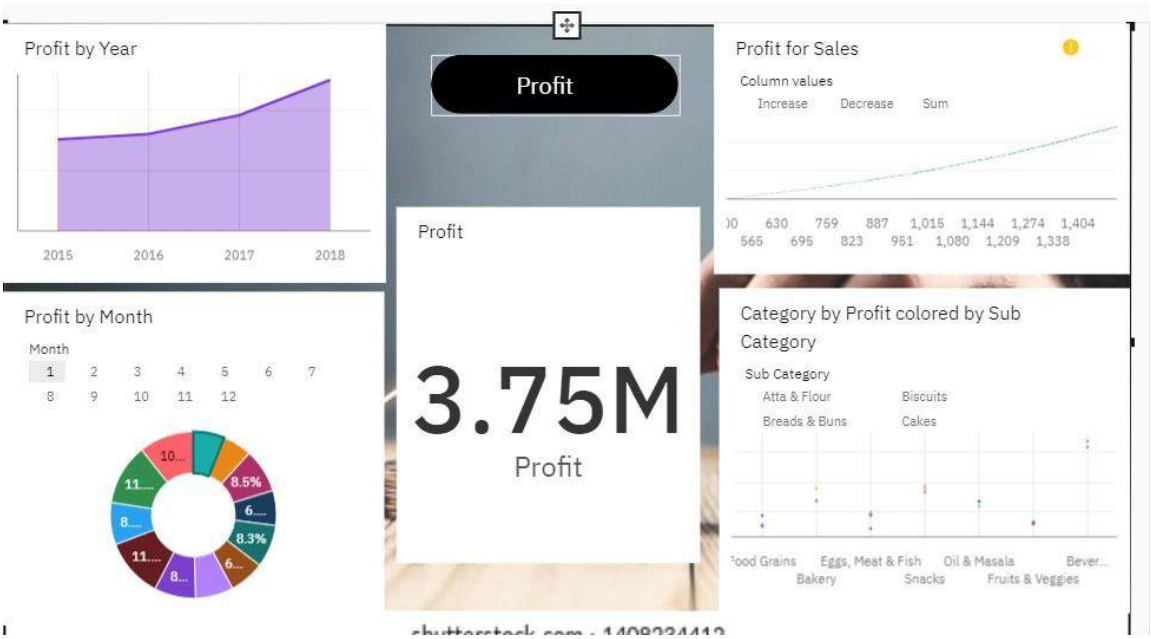
Sales Story:



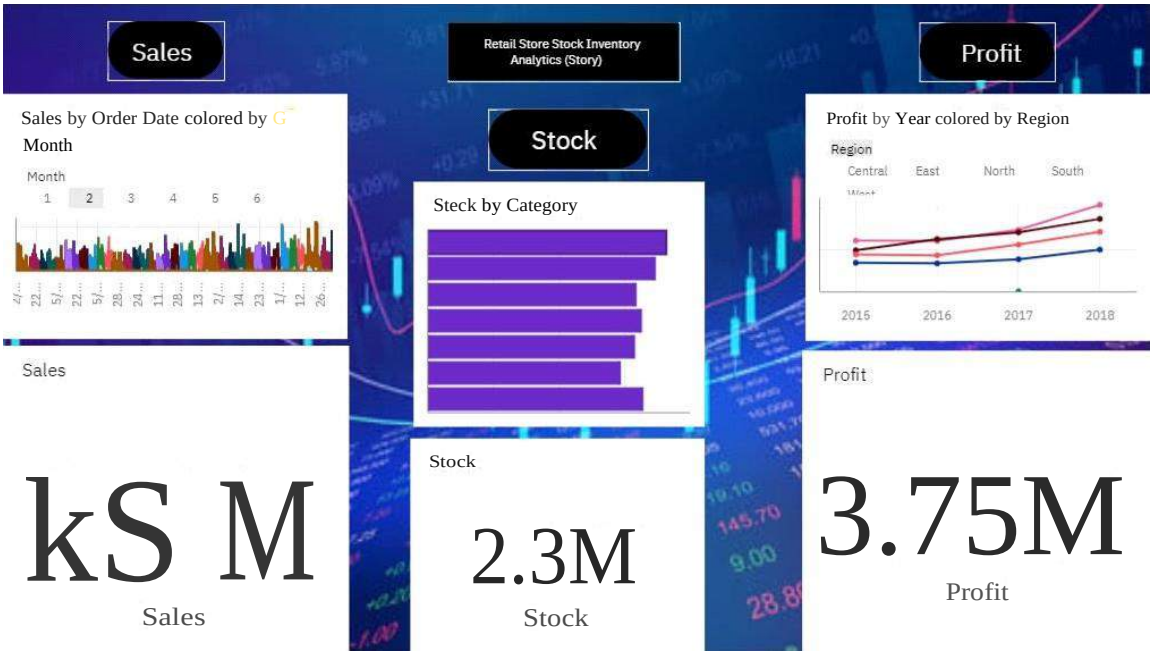
Stock Story:



Profit Story:



Overview:


Sales
Retail Store Stock Inventory Analytics (Story)
Profit
Stock
Sales by Order Date colored by
Month
Month
1
2
3
4
5
6
Steck by Category
Profit by Year colored by Region
Region
Central
East
North
South
2015
2016
2017
2018
Sales
kS M
Sales
Stock
2.3M
Stock
Profit
3.75M
Profit

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.

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