Global Sales Data Analytics

PROJECT REPORT

Submitted By

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In Partial fulfilment for the award of the degree

of

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GOVERNMENT COLLEGE OFENGINEERING , BODI-625582
ANNA UNIVERSITY,CHENNAI

600025

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1. Introduction:

1.1 Project Overview:

Shopping online is currently the need of the hour. Because of this COVID, it's not easy to walk in a store randomly and buy anything you want. So, try to understand a few things like, Customer Analysis and Product Analysis of this Global Super Store.

1.2 Purpose:

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 visualizations to provide a suitable Solution

Able to create meaningful Visualizations and Dashboard(s).

2.LITRATURE SURVEY

2.1 Existing Problem:

Crafting a good sales pitch from sales data analysis can be difficult.

Getting the right data, hitting the right client pain points, crystallizing why your services are better than the competitors, all takes hard work. One of the best ways we've found to build a good sales pitch is to use data you already have.

In the digital world, there is no shortage of data, which translates into no shortage of potential competitive insights and advantages. With databases, data warehouses, corporate intranets, best practice sharing, web analytics, voice of the customer information, and QA or Six Sigma data, you are well-poised for discovering good information.

2.2 References:

1. Han Jiawei, Micheline Kamber and Jian Pei, "Data Mining Concepts and Techniques" in , MK Publications, 2009. Show in Context Google Scholar

2. M. Tennekes and E. de Jonge, "Top-down Data Analysis with Tree maps" Proceedings of the International Conference on Information Visualization Theory and Applications (IVAPP' 11), pp. 236-241, March 2011. Show in Context Google Scholar

3. P. Hoek, "Parallel Arc Diagrams: Visualizing Temporal Interactions",Journal of Social Structure, vol. 12, 2011. Show in Context Google Scholar

2.3 Problem Statement Definition:

Our goal is to design and create a Dashboard using the Superstore Sales data (which is really close to reality) to provide answers to the following questions:

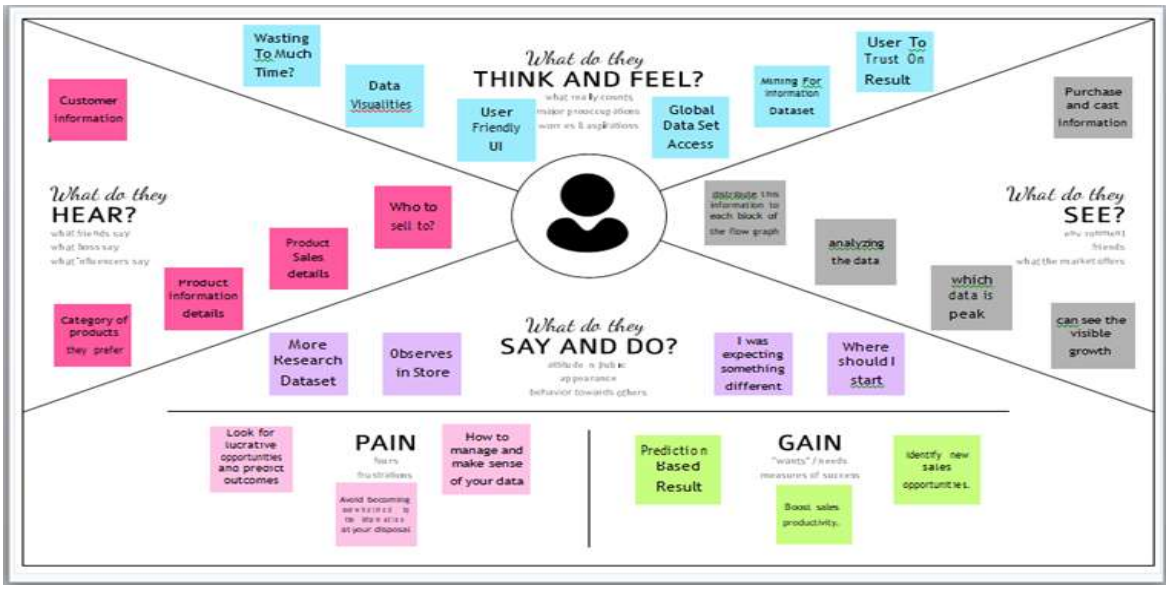
1. What are the performance indicators values for the past month? It's necessary for stocktaking and comparing it against the same period last year.

2. What key factors do affect profit growth?

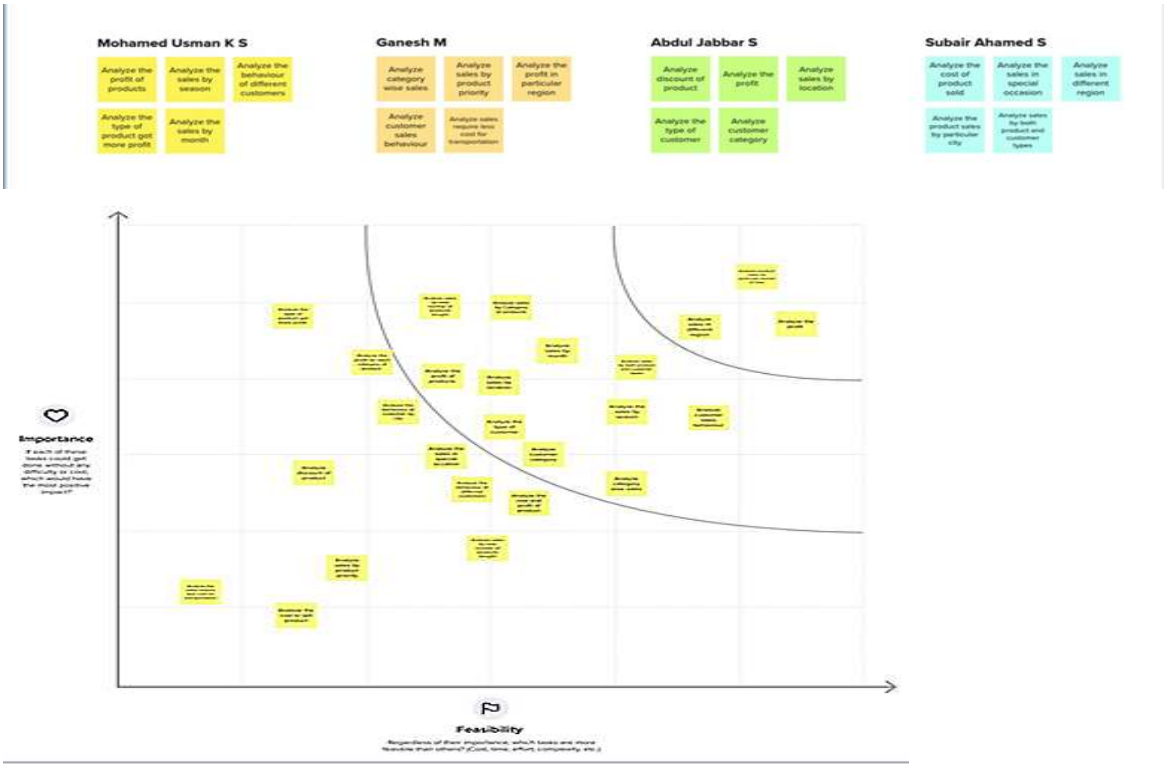
3. What categories, subcategories, products and clients generate more profits, and what ones that bring losses?

3. IDEATION & PROPOSED SOLUTION:

3.1 Empathy Map Canvas:



3.2 Ideation & Brainstorming:



3.3 Proposed Solution:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Customer problem statement outlines problemsthat your customers face. It helps you figure out how your product or service will solve this problem for them.
2.	Idea / Solution description	Increase penetration in your existing markets. ... Introduce new product lines. ... Open up new channels of distribution. ... Offer new services to your existing clients. ... Look out for new client segments. ... Target new export segments.
3.	Novelty / Uniqueness	Business models are important for both new and established businesses. They help new, developing companies attract investment, recruit talent, and motivate management and staff. Established businesses should regularly update their business model or they'll fail to anticipate trends and challenges ahead.
4.	Social Impact / Customer Satisfaction	When your customers are satisfied, they believe in the brand and become loyal. These loyal customers give brands repeat business and form a major part of the revenue. Losing customers takes a huge toll on your business revenue and customer churn numbers.
5.	Business Model (Revenue Model)	Business Analytics is the process by which businesses use statistical methods and technologies for analyzing data in order to gain insights and improve their strategic decision - making.
6.	Scalability of the Solution	In the world of finance, scalability refers to the ability of a company to sustain or better its performance in terms of profitability or efficiency when its sales volume increases.

3.4 Problem Solution fit:

Problem-Solution fit

4. REQUIREMENT ANALYSIS:

Functional Requirements:

Following are the functional requirements of the proposed solution.

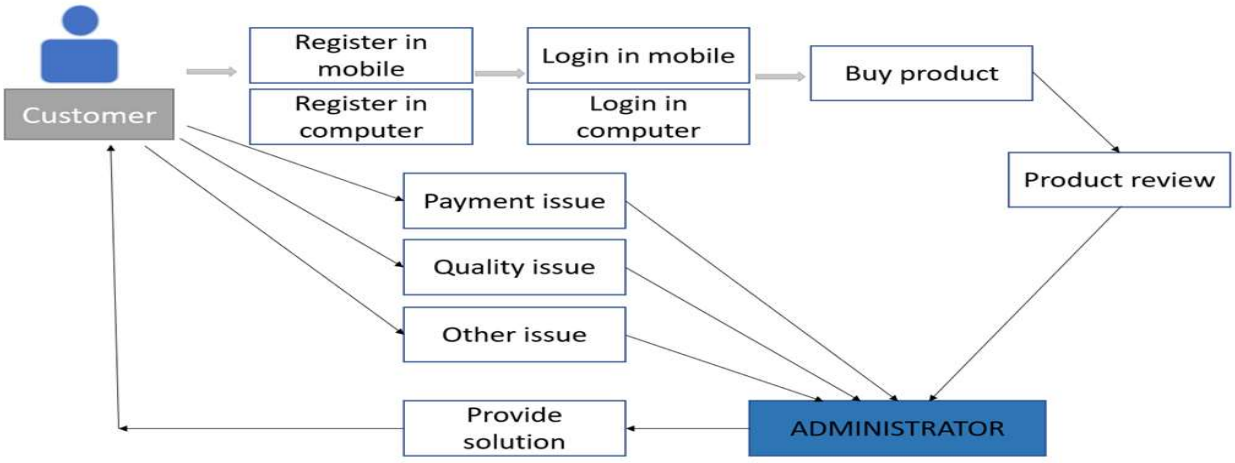
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIn
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User rating	Via message Via Star Via thumbs up
FR-4	Payment mode	Via COD Via UPI Via Credit card Via Debit card

Non-functional Requirements:

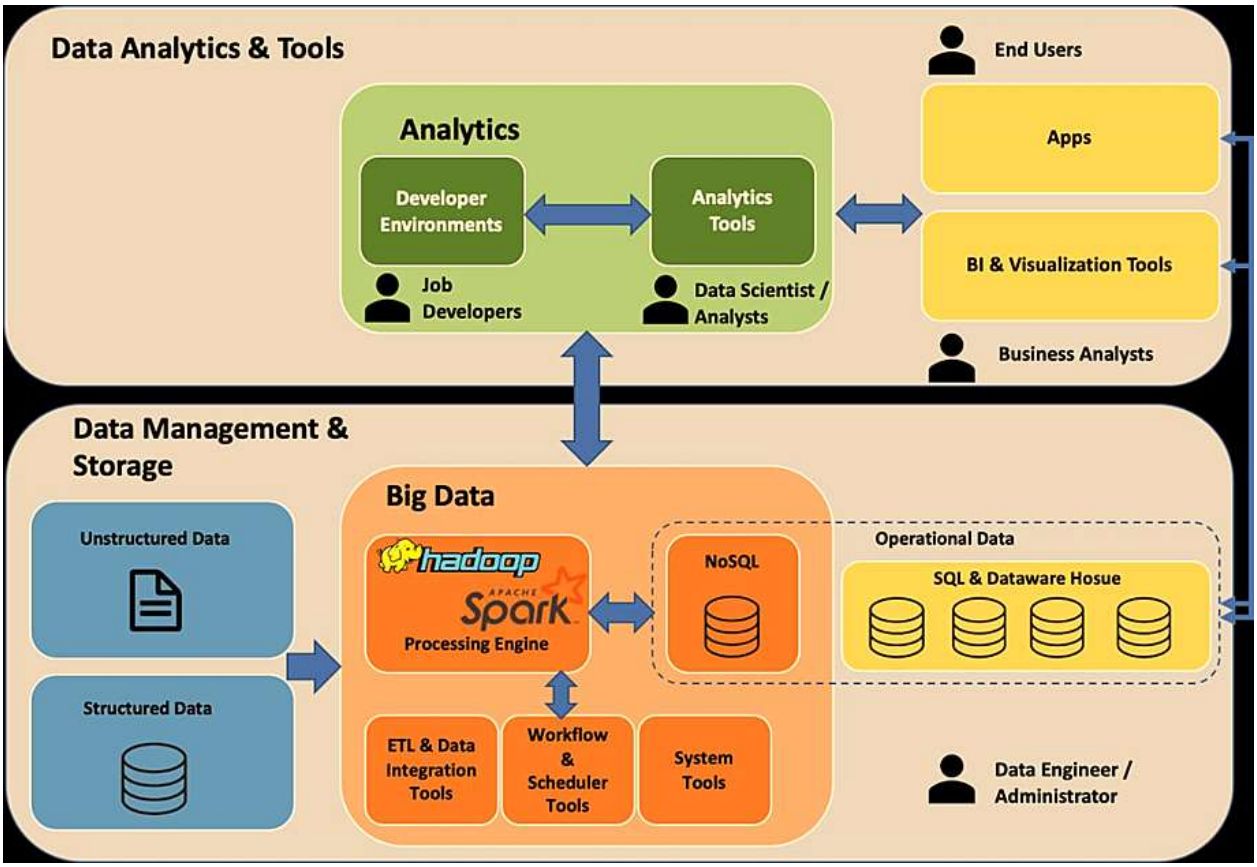
FR No	Non-Functional Requirement	Description
NFR-1	Usability	Easily accessible to all users
NFR-2	Security	Since it has one to one authentication this secured.
NFR-3	Reliability	It is highly reliable
NFR-4	Performance	The performance rate and efficiency rate is high.
NFR-5	Availability	It is available in all platforms 24/7.
NFR-6	Scalability	The ability of a hardware and software parallel system to exploit increasing computing resources efficiency in the analysis of the large datasets

5. PROJECT DESIGN:

5.1 Data Flow Diagrams:



5.2 Solution & Technical Architecture:



5.3 User Stories:

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, 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
	Login	USN-1	As a user, I can log into the application by entering email & password		High	Sprint-1
		USN-2	As a user, I can log into the application by entering mobile & password		High	Sprint-1
Customer (Web 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
	Login	USN-1	As a user, I can log into the application by entering email & password		High	Sprint-1
		USN-1	As a user, I can log into the application by entering mobile & password		High	Sprint-1
Customer Care Executive	Difficulties	USN-1	Change the product	I can be done by single click in customer support option	Medium	Sprint-1
		USN-2	Make the payment method change	I can change the payment mode easily and many possibilities are available	Medium	Sprint-1
'Administrator	Product Quality Issue	USN-1	Product received is damaged	After I put the product status in web, the administrator contacts me and resolve the issue	Medium	Sprint-1
		USN-2	Product not able to track	Using the support option I rise the query, and my problem will be noticed and resolved	Medium	Sprint-1

6. PROJECT PLANNING & SCHEDULING:

6.1 Sprint Planning & Estimation:

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

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Ganesh M, Abdul Jabbar S, Mohamed Usman K S, Subair Ahamed S
Sprint-1	Login	USN-2	As a user, I need valid credentials to log in to my application.	1	High	Ganesh M, Abdul Jabbar S, Mohamed Usman K S, Subair Ahamed S
Sprint-1	Data Collection	USN-3	As a user, I need to gather the data in the form of CSV/XLS and clean the data	2	High	Ganesh M, Abdul Jabbar S, Mohamed Usman K S, Subair Ahamed S
Sprint-2	Upload dataset	USN-4	As a user, I can view the data of the products	1	Low	Ganesh M, Abdul Jabbar S, Mohamed Usman K S, Subair Ahamed S

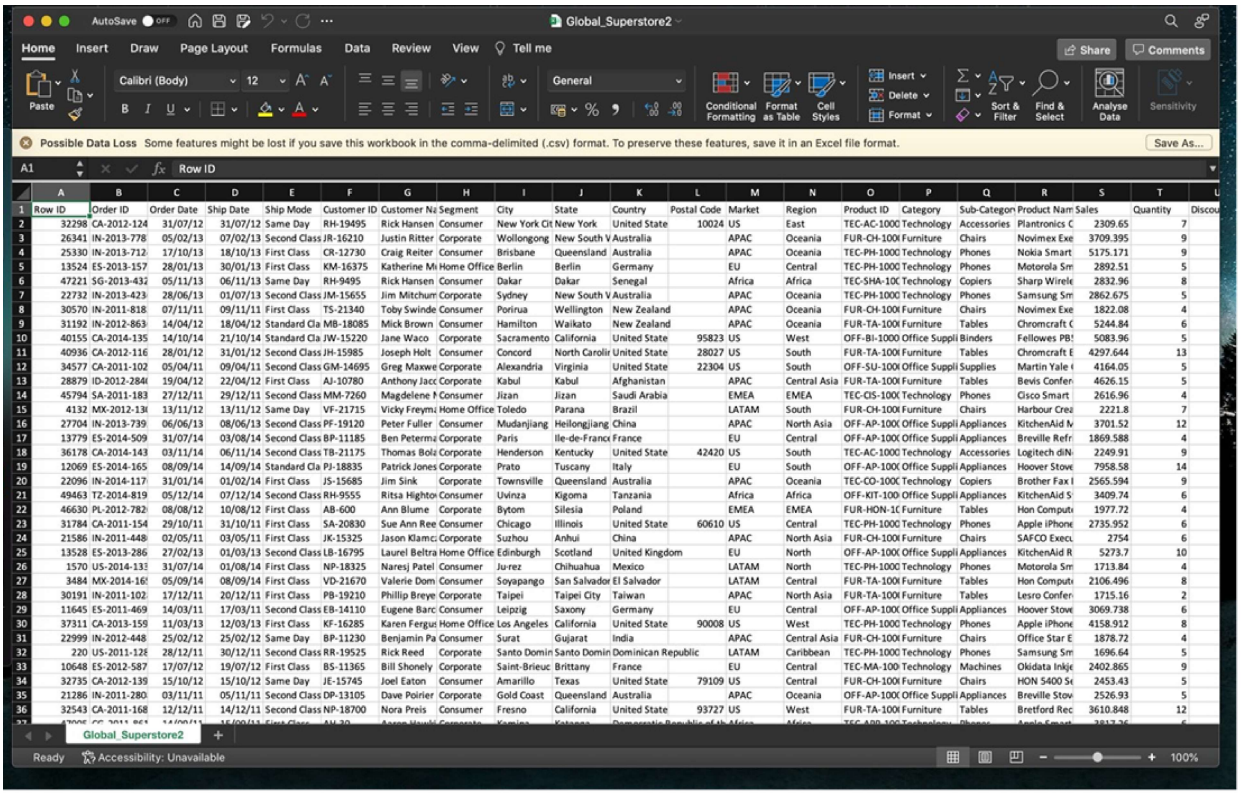
6.2 Sprint Delivery Schedule:

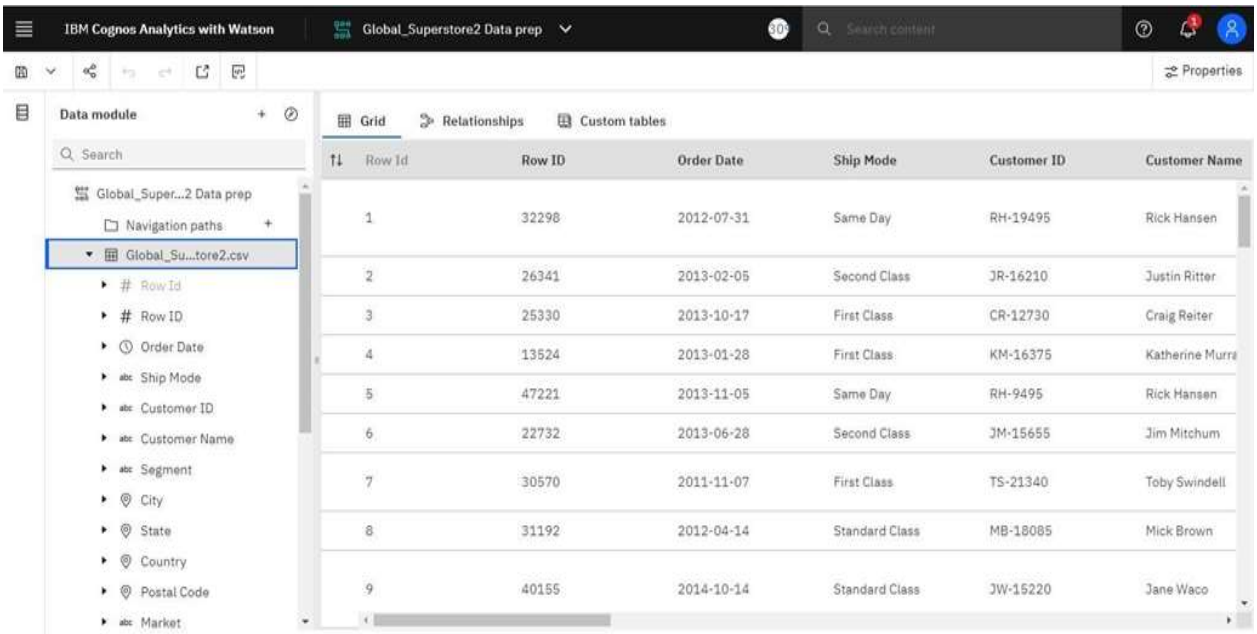
Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprints	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	04 Nov 2022	11 Nov 2022	7	11 Nov 2022
Sprint-2	20	6 Days	05 Nov 2022	12 Nov 2022	7	12 Nov 2022
Sprint-3	20	6 Days	06 Nov 2022	13 Nov 2022	7	13 Nov 2022
Sprint-4	20	6 Days	07 Nov 2022	14 Nov 2022	7	14 Nov 2022

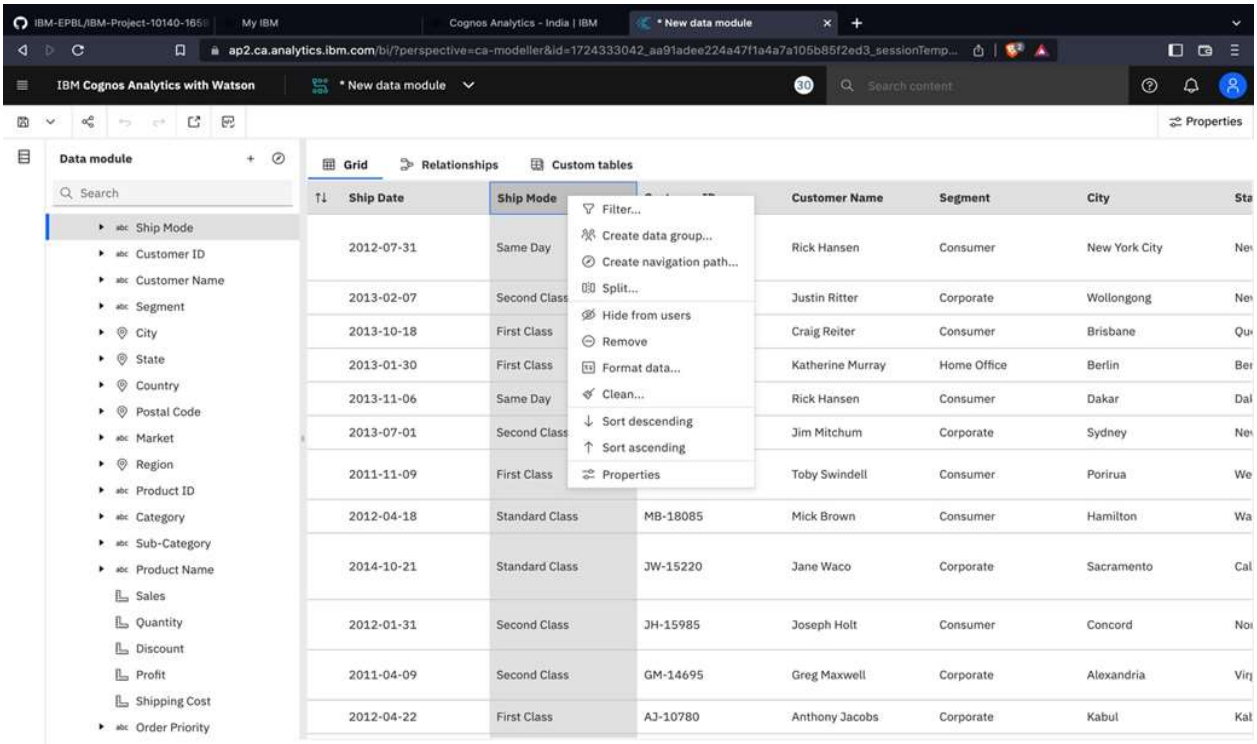
6.3 Sprint

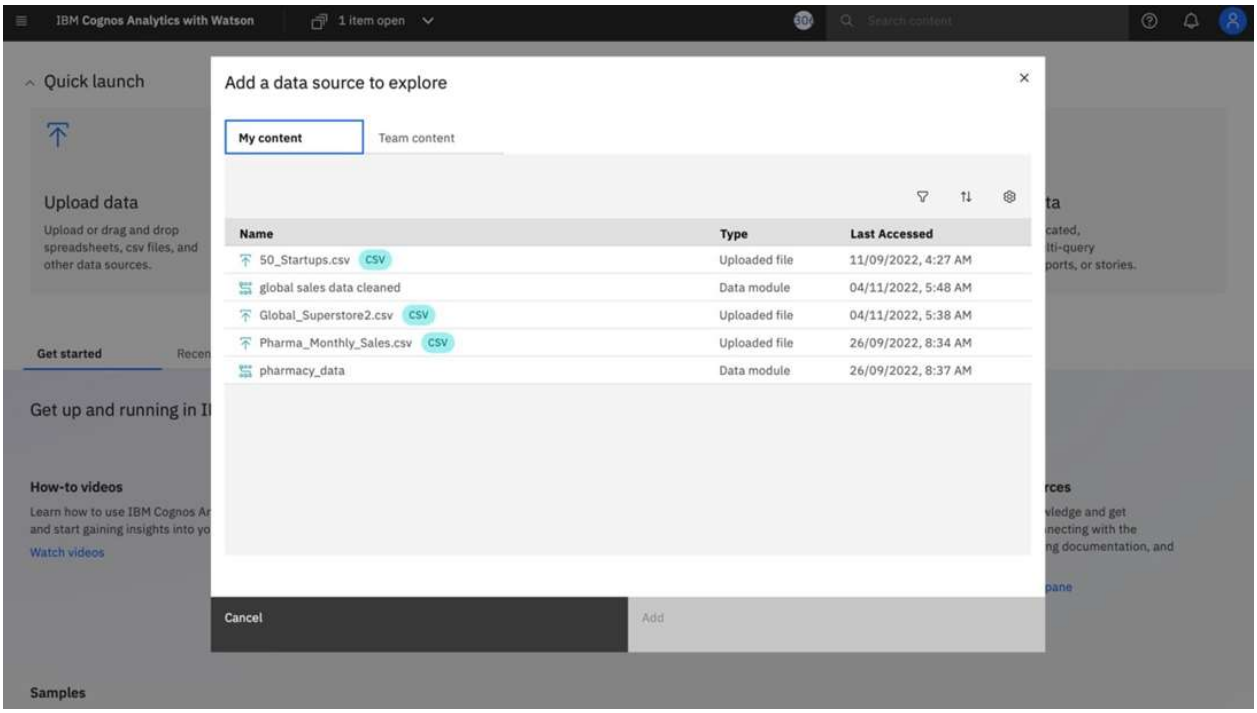
Sprint 1:

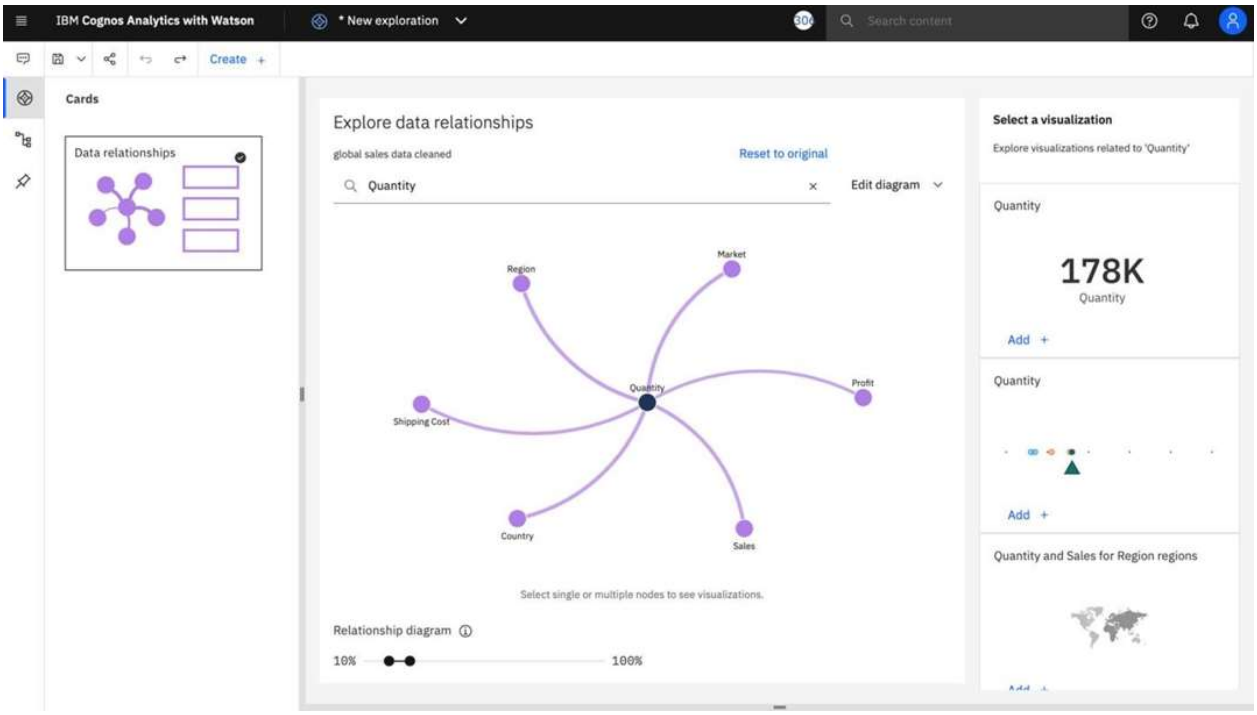


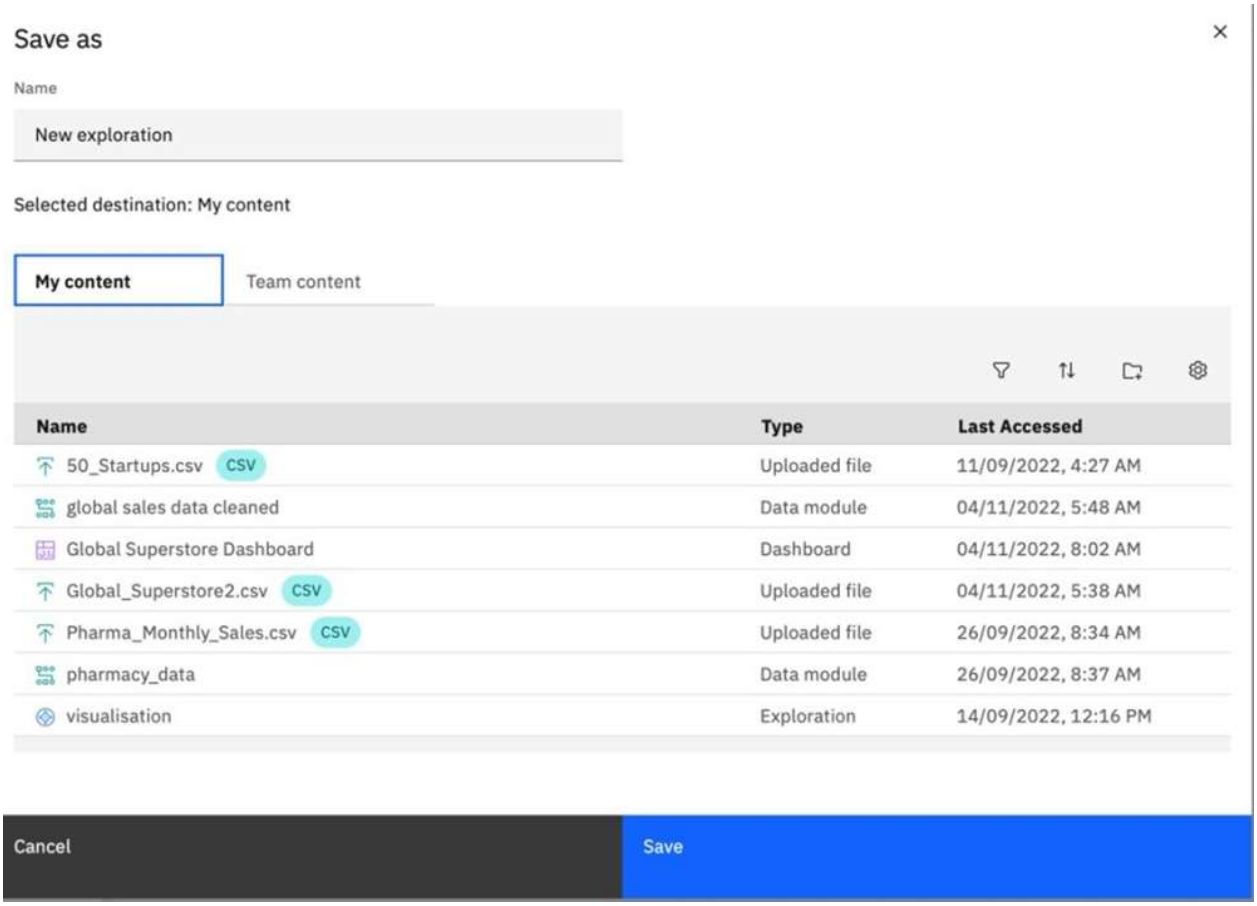


Sprint 2:

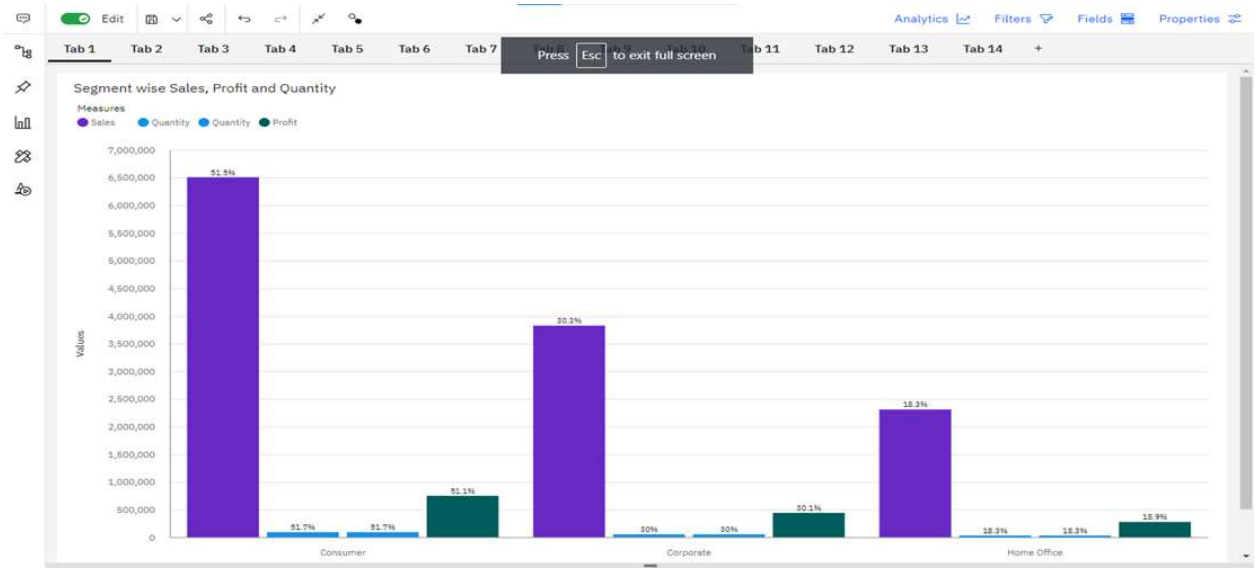

IBM Cognos Analytics with Watson
* New data module
Data module
Search
Ship Mode
Customer ID
Customer Name
Segment
City
State
Country
Postal Code
Market
Region
Product ID
Category
Sub-Category
Product Name
Sales
Quantity
Discount
Profit
Shipping Cost
Order Priority
Grid
Relationships
Custom tables
Ship Date
Ship Mode
Customer Name
Segment
City
Filter...
Create data group...
Create navigation path...
Split...
Hide from users
Remove
Format data...
Clean...
Sort descending
Sort ascending
Properties
2012-07-31 Same Day Rick Hansen Consumer New York City
2013-02-07 Second Class Justin Ritter Corporate Wollongong
2013-10-18 First Class Craig Reiter Consumer Brisbane
2013-01-30 First Class Katherine Murray Home Office Berlin
2013-11-06 Same Day Rick Hansen Consumer Dakar
2013-07-01 Second Class Jim Mitchum Corporate Sydney
2011-11-09 First Class Toby Swindell Consumer Porirua
2012-04-18 Standard Class MB-18085 Mick Brown Consumer Hamilton
2014-10-21 Standard Class JW-15220 Jane Waco Corporate Sacramento
2012-01-31 Second Class JH-15985 Joseph Holt Consumer Concord
2011-04-09 Second Class GM-14695 Greg Maxwell Corporate Alexandria
2012-04-22 First Class AJ-10780 Anthony Jacobs Corporate Kabul

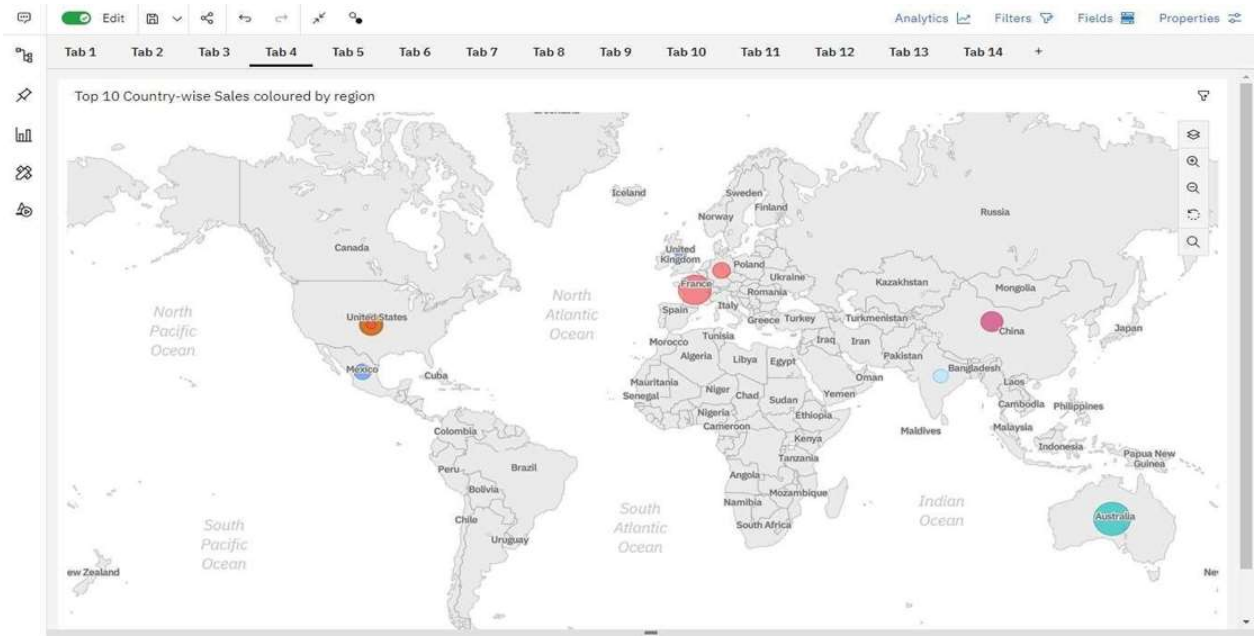

IBM Cognos Analytics with Watson
1 item open
Quick launch
Upload data
Upload or drag and drop spreadsheets, csv files, and other data sources.
Get started
Add a data source to explore
My content
Team content
Name
Type
Last Accessed
50_Startups.csv CSV Uploaded file 11/09/2022, 4:27 AM
global sales data cleaned Data module 04/11/2022, 5:48 AM
Global_Superstore2.csv CSV Uploaded file 04/11/2022, 5:38 AM
Pharma_Monthly_Sales.csv CSV Uploaded file 26/09/2022, 8:34 AM
pharmacy_data Data module 26/09/2022, 8:37 AM
Cancel
Add
How-to videos
Watch videos
Samples


IBM Cognos Analytics with Watson
* New exploration
Search content
Create
Cards
Data relationships
Explore data relationships
global sales data cleaned
Reset to original
Quantity
Edit diagram
Region
Market
Quantity
Profit
Shipping Cost
Country
Sales
Select single or multiple nodes to see visualizations.
Relationship diagram
10%
100%
Select a visualization
Explore visualizations related to 'Quantity'
Quantity
178K
Quantity
Add
Quantity
Add
Quantity and Sales for Region regions

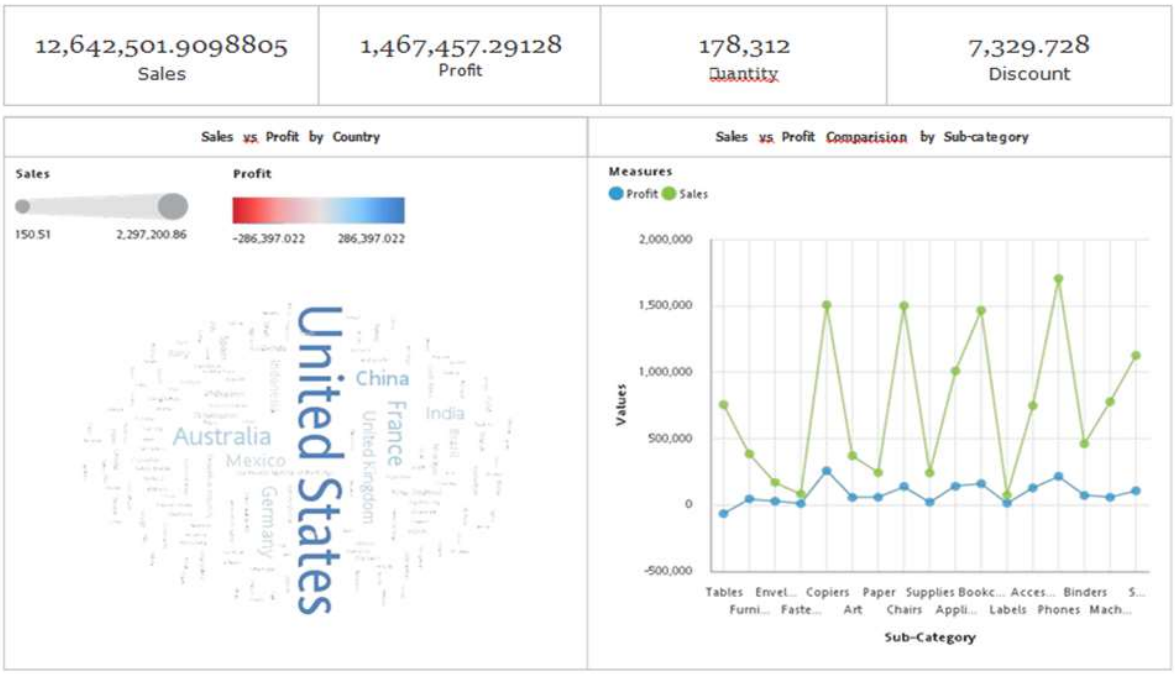

Save as
Name
New exploration
Selected destination: My content
My content
Team content
Name
Type
Last Accessed
50_Startups.csv CSV
Uploaded file
11/09/2022, 4:27 AM
global sales data cleaned
Data module
04/11/2022, 5:48 AM
Global Superstore Dashboard
Dashboard
04/11/2022, 8:02 AM
Global_Superstore2.csv CSV
Uploaded file
04/11/2022, 5:38 AM
Pharma_Monthly_Sales.csv CSV
Uploaded file
26/09/2022, 8:34 AM
pharmacy_data
Data module
26/09/2022, 8:37 AM
visualisation
Exploration
14/09/2022, 12:16 PM
Cancel
Save

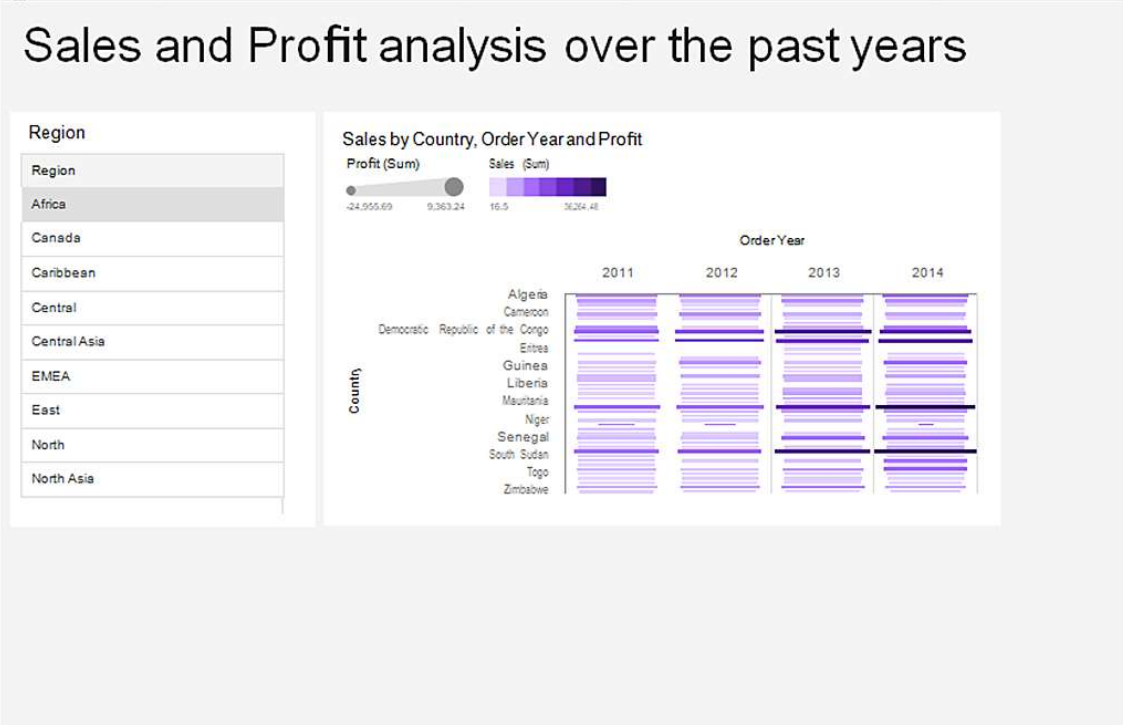
Sprint 3:


Edit
Analytics
Filters
Fields
Properties
Tab 1
Tab 2
Tab 3
Tab 4
Tab 5
Tab 6
Tab 7
Tab 11
Tab 12
Tab 13
Tab 14
Press Esc to exit full screen
Segment wise Sales, Profit and Quantity
Measures
Sales
Quantity
Quantity
Profit
Values
Consumer
Corporate
Home Office


Edit
Analytics
Filters
Fields
Properties
Tab 1
Tab 2
Tab 3
Tab 4
Tab 5
Tab 6
Tab 7
Tab 8
Tab 9
Tab 10
Tab 11
Tab 12
Tab 13
Tab 14
Top 10 Country-wise Sales coloured by region
Iceland
Sweden
Finland
Norway
Russia
Canada
United Kingdom
Poland
Ukraine
France
Romania
Kazakhstan
Mongolia
Spain
Italy
Greece
Turkey
Turkmenistan
China
Japan
United States
Morocco
Tunisia
Algeria
Libya
Egypt
Iraq
Iran
Pakistan
Bangladesh
Mexico
Cuba
Mauritania
Senegal
Niger
Chad
Sudan
Oman
Yemen
Laos
Cambodia
Philippines
Nigeria
Cameroon
Ethiopia
Maldives
Malaysia
Kenya
Indonesia
Tanzania
Papua New Guinea
Colombia
Peru
Brazil
Angola
Bolivia
Mozambique
Namibia
Chile
South Africa
Uruguay
Australia
North Pacific Ocean
North Atlantic Ocean
South Pacific Ocean
South Atlantic Ocean
Indian Ocean
ew Zealand

Sprint 4 :

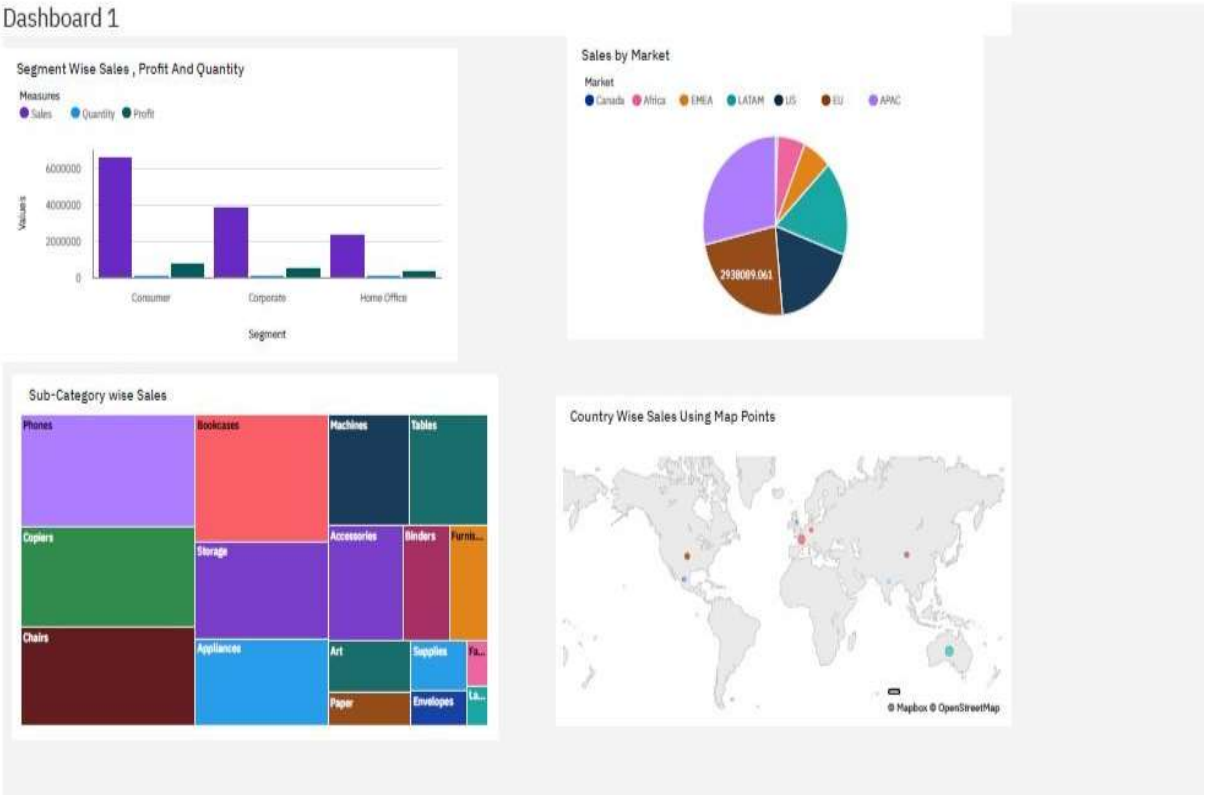

12,642,501.9098805
Sales
1,467,457.29128
Profit
178,312
Quantity
7,329.728
Discount
Sales vs Profit by Country
Sales
150.51
2,297,200.86
Profit
-286,397.022
286,397.022
United States
China
India
France
Australia
Mexico
Germany
United Kingdom
Sales vs Profit Comparision by Sub-category
Measures
Profit
Sales
2,000,000
1,500,000
1,000,000
500,000
0
-500,000
Values
Tables
Furni...
Envel...
Faste...
Copiers
Art
Paper
Chairs
Supplies
Appli...
Bookc...
Labels
Acces...
Phones
Binders
Mach...
Sub-Category


Sales and Profit analysis over the past years
Region
Region
Africa
Canada
Caribbean
Central
Central Asia
EMEA
East
North
North Asia
Sales by Country, Order Year and Profit
Profit (Sum)
-24,955.69
9,363.24
Sales (Sum)
16.5
3624.48
Order Year
2011
2012
2013
2014
Country
Algeria
Cameroon
Democratic Republic of the Congo
Eritrea
Guinea
Liberia
Mauritania
Niger
Senegal
South Sudan
Togo
Zimbabwe

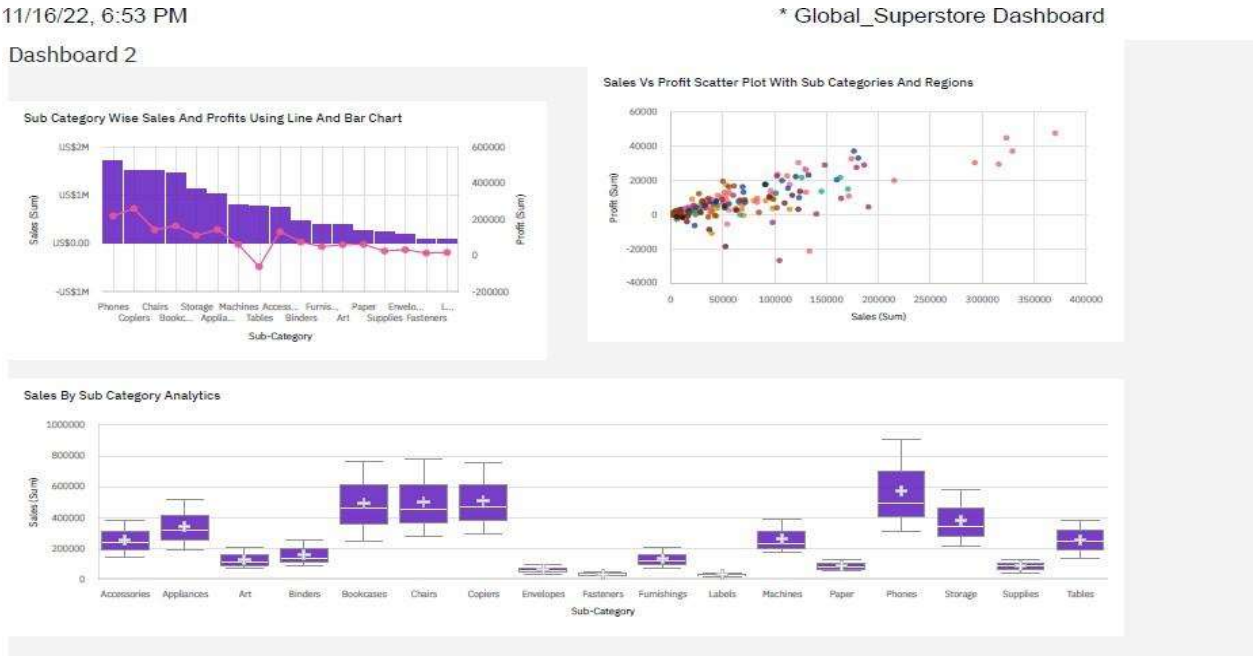
9.RESULTS:

9.1 Performance Metrics:

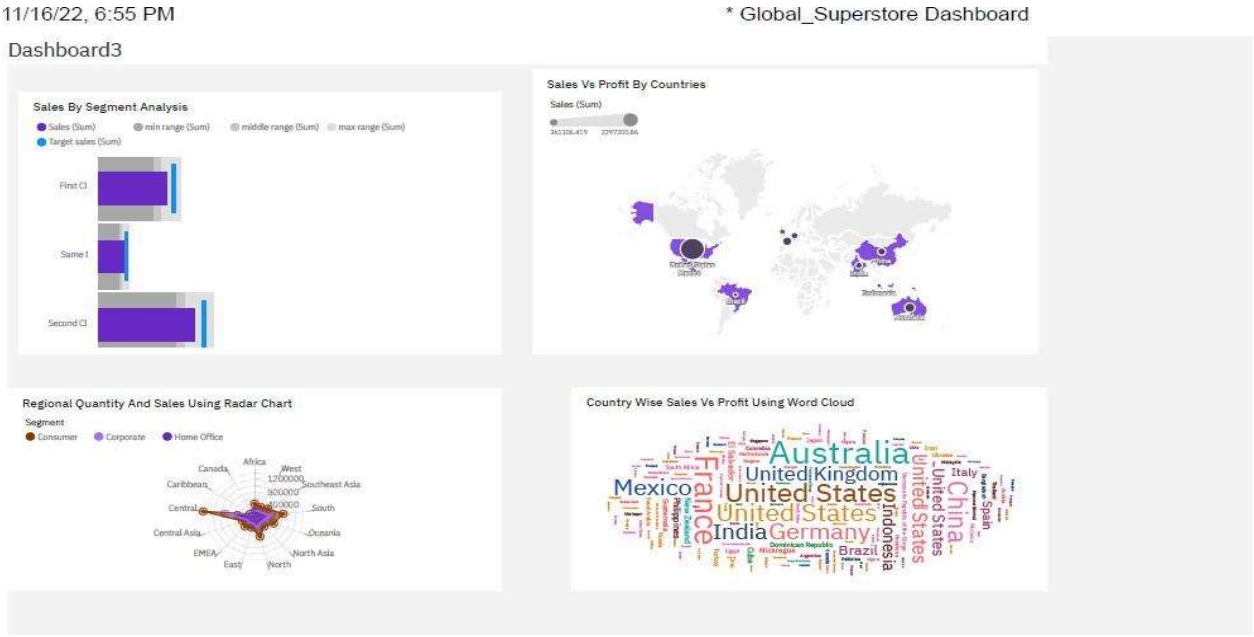
Dashboard 1



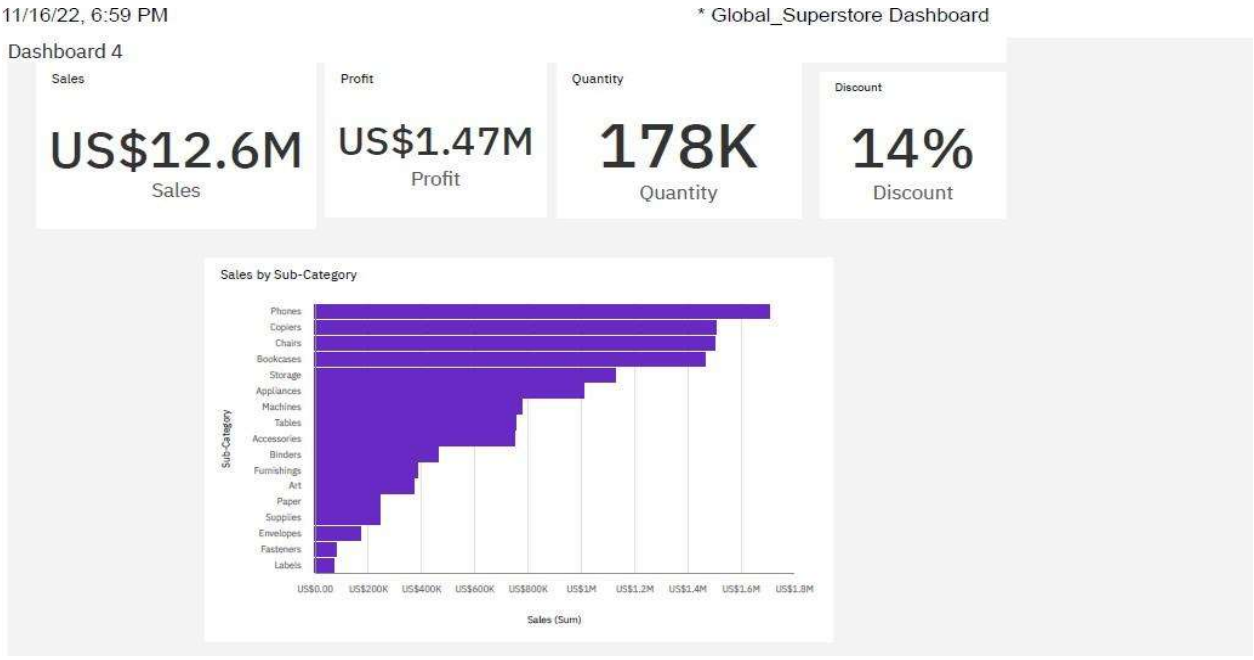
Dashboard 2:



Dashboard 3



Dashboard 4:



8. ADVANTAGES & DISADVANTAGES:

ADVANTAGES:

i) It was the cost efficiency project.
ii) Receive full-scale services Maximize presentation.
iii) It was the timing saving project for peoples.

DISADVANTAGES:

i) The lack of data security is the big disadvantages in this project.
ii) Risk of choosing the wrong provider .

9. CONCLUSION:

By implementing this analytics solution, the company brought their competitive and sales data reporting in-house, cut costs and increased the accuracy of their reporting and analysis. As the company moves forward with this new solution, their sales reporting costs will most likely be reduced by 50 to 70%.

They are now able to analyse raw data themselves, respond more quickly to changes in market trends and perform root cause analysis to determine those shifts in the market. By securing quicker access to their data with the new solution, the company was also able to reduce the risk associated with delayed responses to changes in their markets.

With the new solution, the company can now process sales reports faster than the outsourced solution, reducing turnaround time between 50% to 60%. The reporting needs of the company have been streamlined, consolidating over 10 reports into the centralized dashboard solution.

The company's competitive analysis group is also able to more quickly respond to internal data requests given they have the ability to pull the information themselves. With this quicker response, the company is better able to react to changes in the market and predict opportunities for its sales force.

The business also experienced an increase in the overall understanding of their sales data throughout the organization. The company now has great flexibility in the presentation of their sales and competitive data, while also being able to integrate sales data with other key data points for the organization.

10. FUTURE SCOPE:

Sales analytics refers to the use of technology to collect and use sales data to derive actionable insights. It is used to identify, optimize, and forecast sales. It uses different metrics and KPIs to plan an efficient sales model that generates higher revenue for the business.

GitHub & Project :

Github Link: https://github.com/IBM-EPBL/IBM-Project-5152-165