GLOBAL SALES DATA ANALYTICS

A PROJECT REPORT
SUBMITED BY

SURESH K

SARAN N

PONARASU K

NAVEEN BABU L

in partial fulfillment for the award of degree of

Bachelor of Engineering (B.E.) in
ELECTRONICS AND COMMUNICATION ENGINEERING

FRANCIS XAVIER
ENGINEERING COLLEGE
AN AUTONOMOUS INSTITUTION

Accredited BY NBA | AICTE Sponsored Margdarshan Mentor Institution
DST-FIST Supported Institution | ISO 9001:2015 Certified
Recognized under Section 2(f) & 12(B) of the UGC Act. 1950

FRANCIS XAVIER ENGINEERING COLLEGE
ANNA UNIVERSITY NOVEMBER 2022

ACKNOWLEDGEMENT

We would like to express our special thanks of gratitude to our **Faculty Mentor** and **Industry Mentor** for their support and guidance in completing our project on the Smart Fashion Recommender Application

We would like to extend our gratitude to the **IBM** for **Nalaiya Thiran** project for providing us with all the facility that was required.

It was a great learning experience.We would like to take this opportunity to express our gratitude.

DATE: TEAM MEMBERS:

16/11/2022   SURESH K
                                                               SARAN N
                                                               PONARASU K
                                                               NAVEEN BABU L

TITLE

1. INTRODUCTION

2. LITERATURE SURVEY

   a) Existing Problem
   b) Reference
   c) Problem Statement Definition

3. IDEATION AND PROPOSED SOLUTION

   a) Empathy Map
   b) Ideation and Brainstorming
   c) Proposed Solution
   d) Problem Solution Fit

4. REQUIREMENT ANALYSIS

   a) Functional Requirements
   b) Non- Functional Requirements

5. PROJECT DESIGN

   a) Data Flow Diagram
   b) Solution & Technical Architecture
   c) User Stories

6. PROJECT PLANNING & SCHEDULING

   a) Sprint Planning & Estimation
   b) Sprint Delivery Schedule

7. CODING & SOLUTIONING

8. RESULT

9. ADVANTAGES & DISADVANTAGES

10. FUTURE SCOPE

11. CONCLUSION

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, this project is done to try to understand a few things like, Customer Analysis and Product Analysis of this Global Super Store.

If you want to achieve your sales goals month after month, then guesswork and intuition aren't your best friends. You need to perform a strategic sales analysis and get cold, hard data.

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).

Regular sales data analysis provides an understanding of the products that your customers are buying and helps you dissect why they are behaving in a certain way. You can also find patterns in your lead conversions and drop offs. All of these aspects enable you to optimize you.

2 LITERATURE SURVEY

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. Honing your sales pitch to an art takes time, and even with a perfect picture, new clients take time to acquire. 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.

References

1.Data analysis and visualization of sales data 2016

2.Walmart's Sales Data Analysis - A Big Data Analytics Perspective - Dec2017

3.Research on Refined Sales Management, Data Analysis and Forecasting under Big
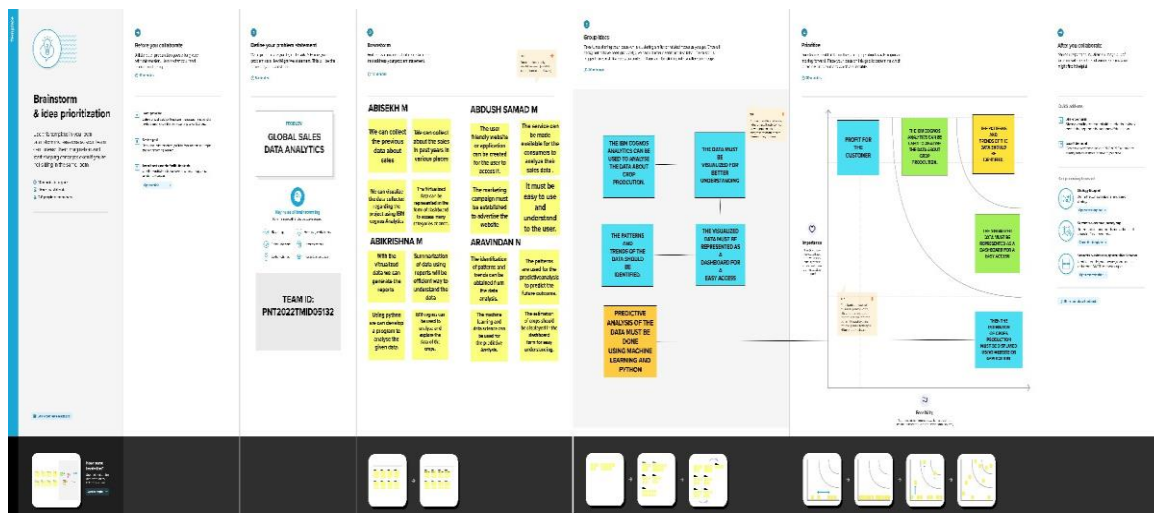
Problem Definition Statement

The overall purchase power of the consumer and also sales capacity of company. Unavailability of products equally between the consumers. There is no proper distribution of products among the customer The customers are not getting the products they prefer. By hearing out to the consumers and collecting their user preference data. Data analytics and data visualization is used for this.

3 IDEATION & PROPOSED SOLUTION

Empathy Map Canvas
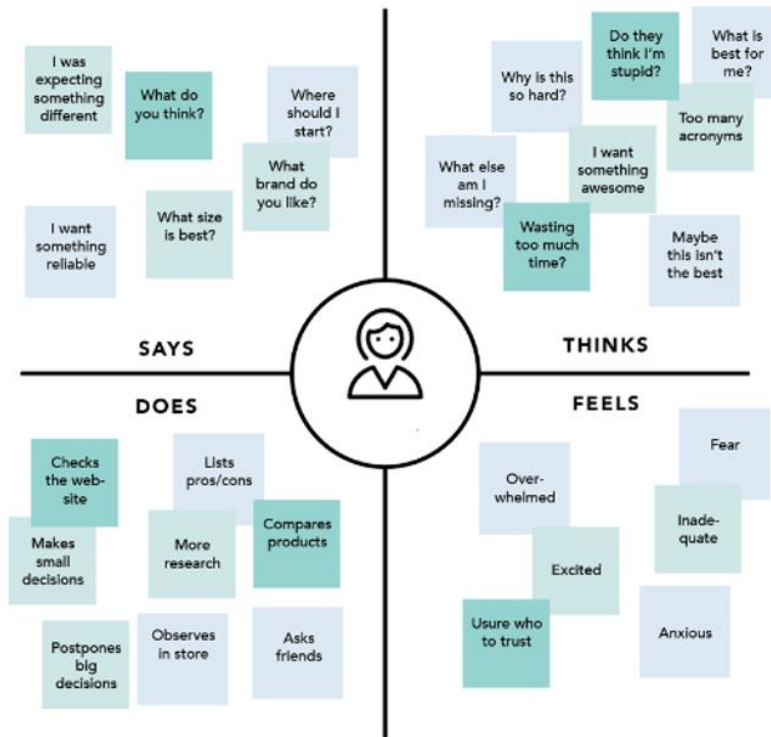
Ideation & Brainstorming

Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The user needs a way to track and maintain overall sales data so that he can make more profit. The user needs a strategy to market the products so that it reaches all people through media. The user finds the key performance indicators so that he can boost the annual sales and reduces customer churn.
2.	Idea / Solution description	A good sales dashboard is the solution. We can monitor the sales by its geographic location and track order purchases. We can monitor the monthly sales and stocks retained on each product. Create and approve sales orders, track order purchases, improve sales tracking and optimization of goods delivery.
3.	Novelty / Uniqueness	Provides Real-Time Data, Can Help the Team Set Goals, Gives a Clear Overview of Sales Activity, Allows for the Identification sales of growth opportunities and Identifies opportunities for improvement.
4.	Social Impact / Customer Satisfaction	Ensures sustainability in global market. Creates meaningful change in business approach. Trying to attract customers of all range.
5.	Business Model (Revenue Model)	A Sales dashboard enables direct insight into your revenue driving force, allowing yo u to plan, implement and improve with data-based decisions.
6.	Scalability of the Solution	The great thing about Sales Analytics is that it gives you answers, and you need to ask the right questions. With accurate insight into current customers, a higher retention rate, as well as increasing revenue, can be achieved. Having real-time insight into increasing and decreasing customers will allow your Sales Team to focus on the right clients at the right time and efforts are driven towards suitable clients. A Sales Dashboard helps you visualize your Sales data, which is helpful for efficient decision-making and analysis performance.

Problem Solution fit

1. CUSTOMER SEGMENT(S) — CS
Define CS, fit into CC

- ✓ A Bussiness owner who would like to understand more about his bussiness performance in global scale.

6. CUSTOMER CONSTRAINTS — CC

- ✓ No online payments available buy directly from us.
- ✓ Need to check input file structure before uploading.

5. AVAILABLE SOLUTIONS — AS
Explore AS, differentiate

- ✓ The competition perform analytics and display Dashboard with autogenerated insights.
- ✓ Out product provides facility to add manual insight to the analytics performed.

2. JOBS-TO-BE-DONE / PROBLEMS — J&P
Focus on J&P, tap into BE, understand RC

- ✓ Determine input file structure.
- ✓ What analysis to perform to be useful and how to perform them ?

9. PROBLEM ROOT CAUSE — RC

- ✓ Customer satisfaction
- ✓ Product rating
- ✓ Product prices
- ✓ Availability

7. BEHAVIOUR — BE
Focus on J&P, tap into BE, understand RC

- ✓ Collecting sales data and using office software to analyze it
- ✓ Un-intuitive way of analyzing data and lot of manual labour

3. TRIGGERS — TR
Identify strong TR & EM

- ✓ Have you ever felt that you are unwaer of how your bussiness is performing ?
- ✓ Have you ever had a decision fatigue ?

4. EMOTIONS: BEFORE / AFTER — EM

- ✓ BEFORE : Anxiety, Decision fatigue, Lazyness
- ✓ AFTER : Clear mind, Peacefullness

10. YOUR SOLUTION — SL

- ✓ Creating an Interactive Dashboard.
- ✓ Providing details about the sales
- ✓ Responsive Design for every screen size.
- ✓ Manual insight for each interaction.

  One time payment.

8. CHANNELS of BEHAVIOUR — CH
Identify strong TR & EM

8.1 ONLINE
- ✓ Using third party services with automated insights and subscription based service to analyze data

8.2 OFFLINE
- ✓ Using office software to analyze complex data in un-intuitive way

4 REQUIREMENT ANALYSIS

Functional requirement

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	Collects Data	Providing CSV file Authentic Datasets
FR-4	Cleans the given Data	Prepares data for EDA purpose
FR-5	Visualisation of Data	Identifying trends in given data Accurate visualisation of provided numbers
FR-6	Create Dashboard	Analysation of the dataset's Key performance indicator
FR-7	Reporting	The reporting function helps users have complete control over their business. The real-time reporting collects current information and displays the data on an intuitive user interface.

Non-Functional requirements

Following are the Non functional requirements of the proposed solution

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	It should be easier to understand the insights for the customers.
NFR-2	Security	The data is protected from unauthorized access.
NFR-3	Reliability	App could be run offline while server maintenance takes place. Server traffic would not be an issue.
NFR-4	Performance	Requires minimum system requirements, hence could be accessible in many devices with faster loading time.
NFR-5	Availability	Server is online 24/7 hence users could use the app at any time. App will work offline as well/
NFR-6	Scalability	Dashboards/Templates are very much Scalable, the user can modify the metrics whenever they want.

5 PROJECT DESIGN

Data Flow Diagrams
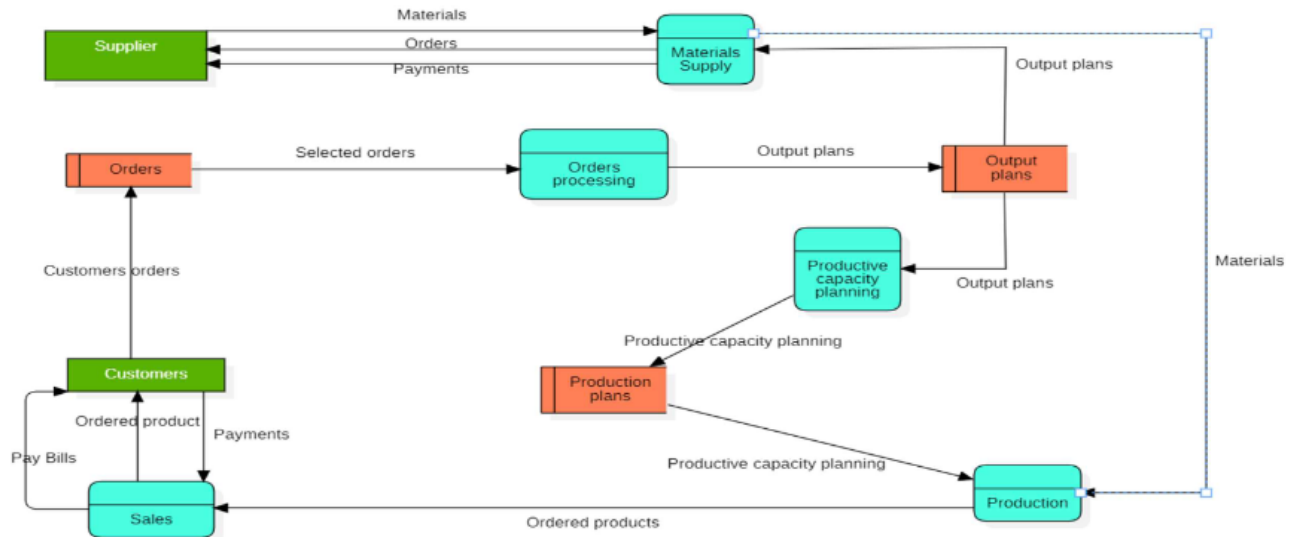
Solution & Technical Architecture
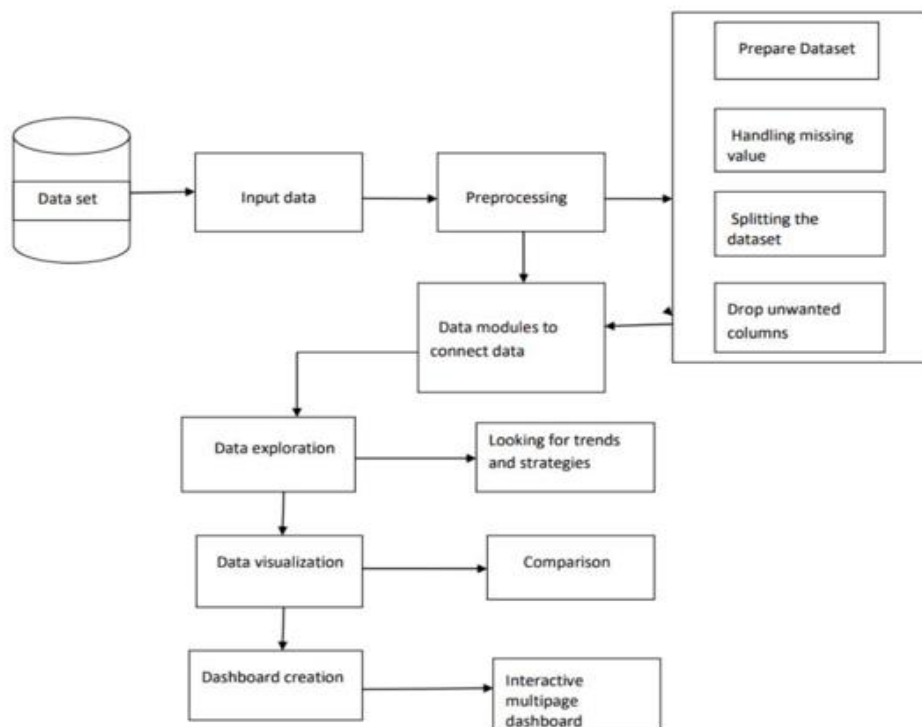
User Stories

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-3	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-4	As a user, I can enter data to conduct to conduct business analysis to make business decisions		High	Sprint-1
Customer Care Executive			As a Customer Care Executive, I can answer users' queries		High	Sprint-1
Administrator			As admin, can make changes to the interface according to the needs		High	Sprint-1

6 Project Planning & Scheduling

Sprint Planning & Estimation

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	Abikrishna M, Abhishek M
Sprint-2	Dashboard	USN-2	As a user, I can enter my sales information to clean it up and get it ready for analysis, and I can also locate my information to perform a business analysis.	3	High	Aravindan N, Abdush Samad M
Sprint-3	Customer Care	USN-3	As a user, I can enter my sales information to clean it up and get it ready for analysis, and I can also locate my information to perform a business analysis.	2	Low	Aravindan N, Abikrishna M, Abdush Samad M
Sprint-4	Administrator	USN-4	As an admin, I can modify the user interface to meet the needs of the users.	3	High	Aravindan N, Abdush Samad M, Abikrishna M, Abhishek M

Sprint Delivery Schedule

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	7	6	24 Oct 2022	14 Oct 2022	7	29 Oct 2022
Sprint-2	5	6	31 Oct 2022	15 Nov 2022	5	05 Nov 2022
Sprint-3	3	6	07 Nov 2022	18 Nov 2022	3	12 Nov 2022
Sprint-4	5	6	4 Nov 2022	19 Nov 2022	5	19 Nov 2022

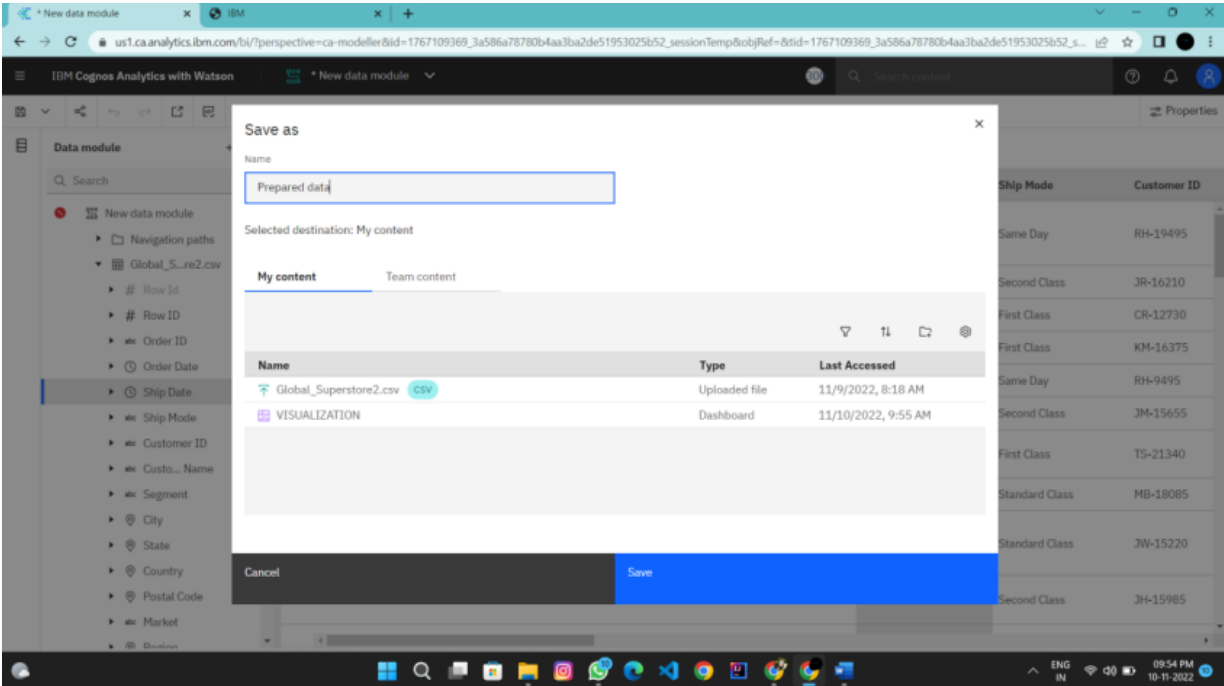# 7 CODING & SOLUTION

Database Schema

Build the following visualizations

1. Global Superstore Data Upload.

2. Global Superstore Data Prep.

3. Date Calculations and Navigation path.

4. Segment wise Sales, Profit and Qty.

5. Use Pie to showcase Sales by Order Priority and Sales by Market.

6. Use a Tree Map to present Sales by Sub-Category

7. Using a Bar chart present Sales by Region by the Sales Order.

8. Present Regional Sales using Map Country points -- Showcase Top 10 countries.

9. Present Sales (Bar), Profit (line) by Sub-Category using Line and Column Chart.

10. Sales vs Profit Scatter Plot with Sub-Category points and Region in Colour.

11. Sales and Profit Forecast by Month Country as Region and Region as Filter.

12. Sales vs Profit forecast by Month by Order Priority.

13. Show the Min, Max, and Avg Sales by Sub-Category using the Box plot.

14. By setting a 10% extra Target for Sales Present Segment-wise Sales use Bullet   Chart.

15. Present Sales using Hierarchy Bubbles by Market / Region.

16. Using a Legacy Map Present Sales vs Profit by Country / Region.

17. Showcase Quantity Sold by Radar Chart across various Regions.

18. Present Monthly Sales by Sub-Category using Waterfall chart.

19. Present Sales Vs Profit of Countries by Word Cloud.

20. Sales dashboard with Summary Cards.

Global Superstore Data Upload
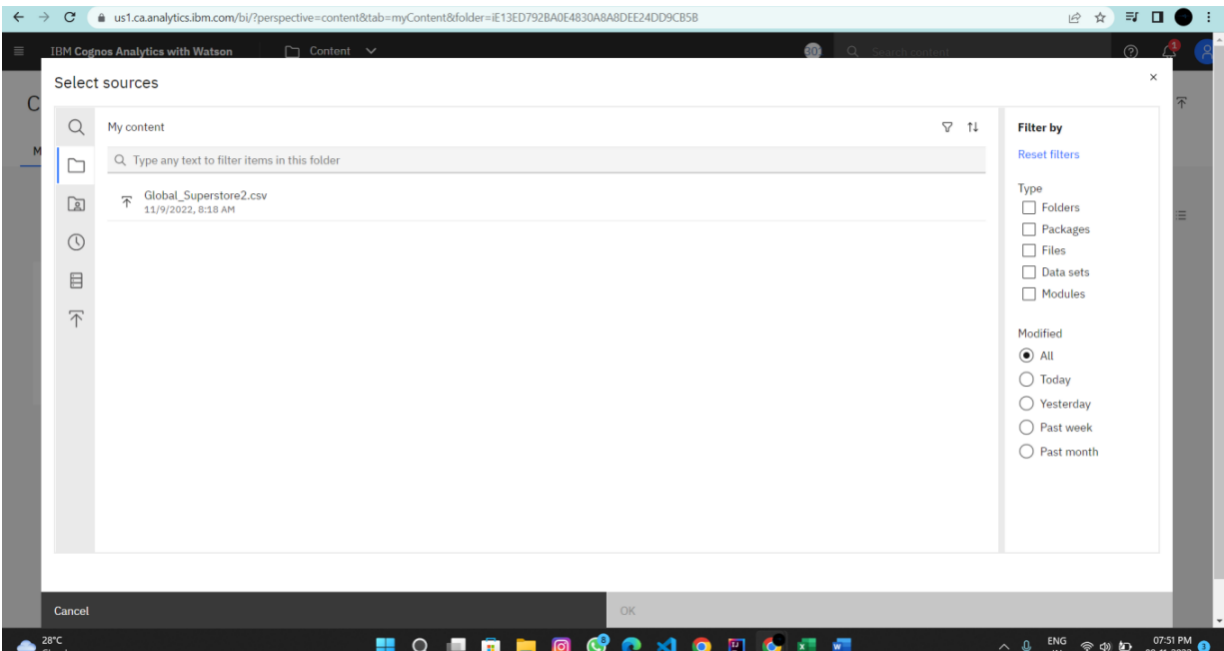
Global Superstore Data Prep

Date Calculations and Navigation path

Segment wise Sales, Profit and Qty

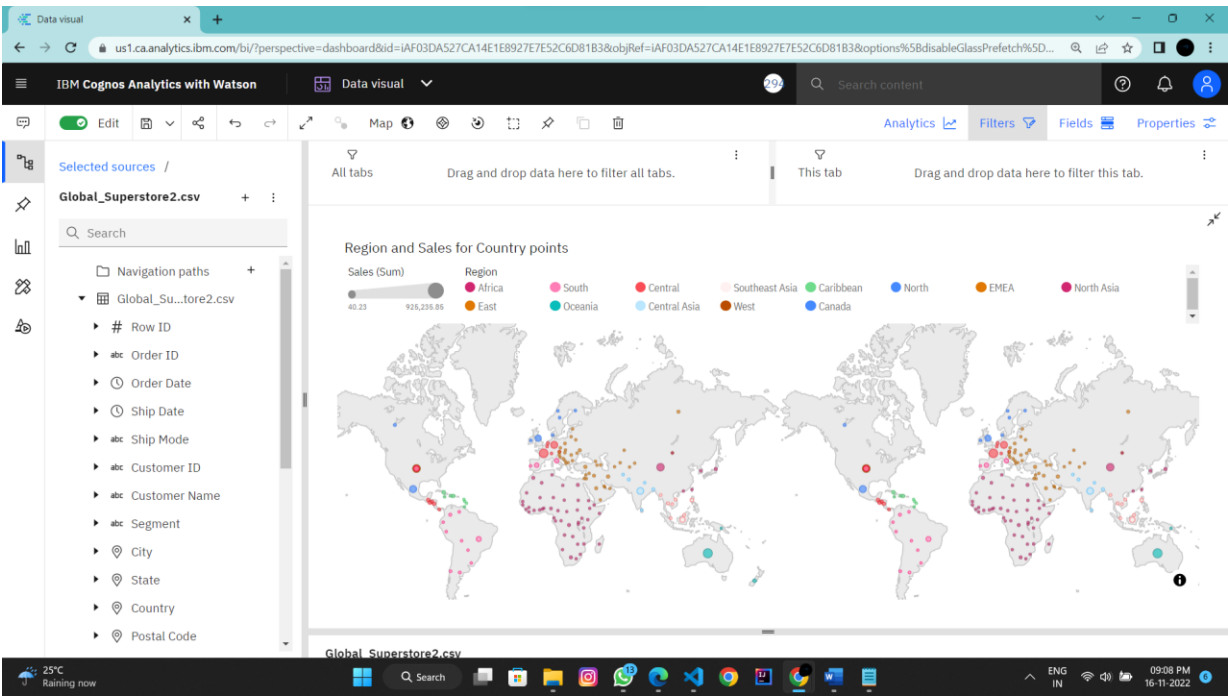Use Pie to showcase Sales by Order Priority and Sales by Market
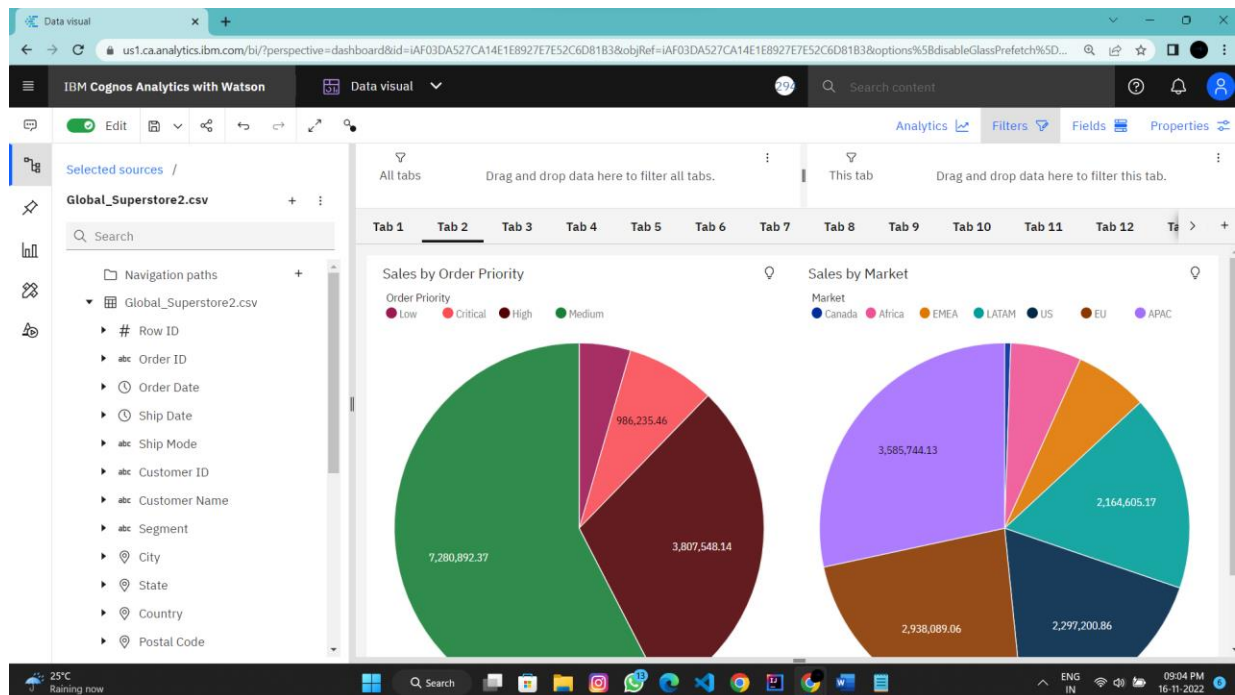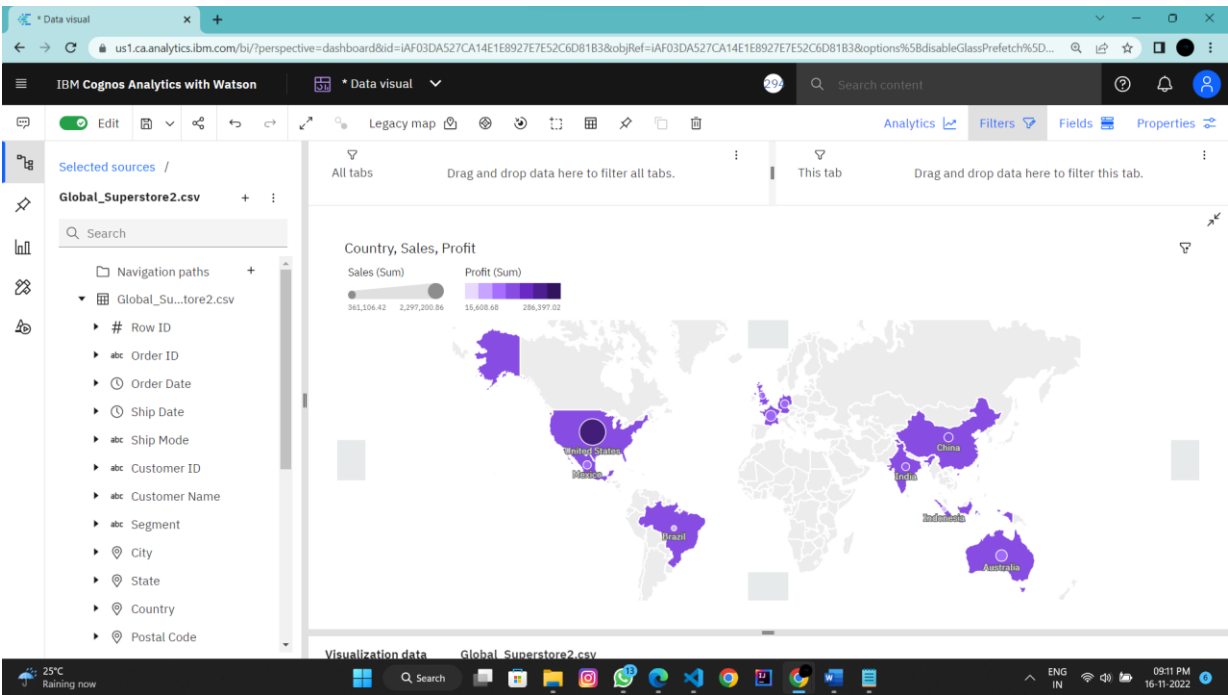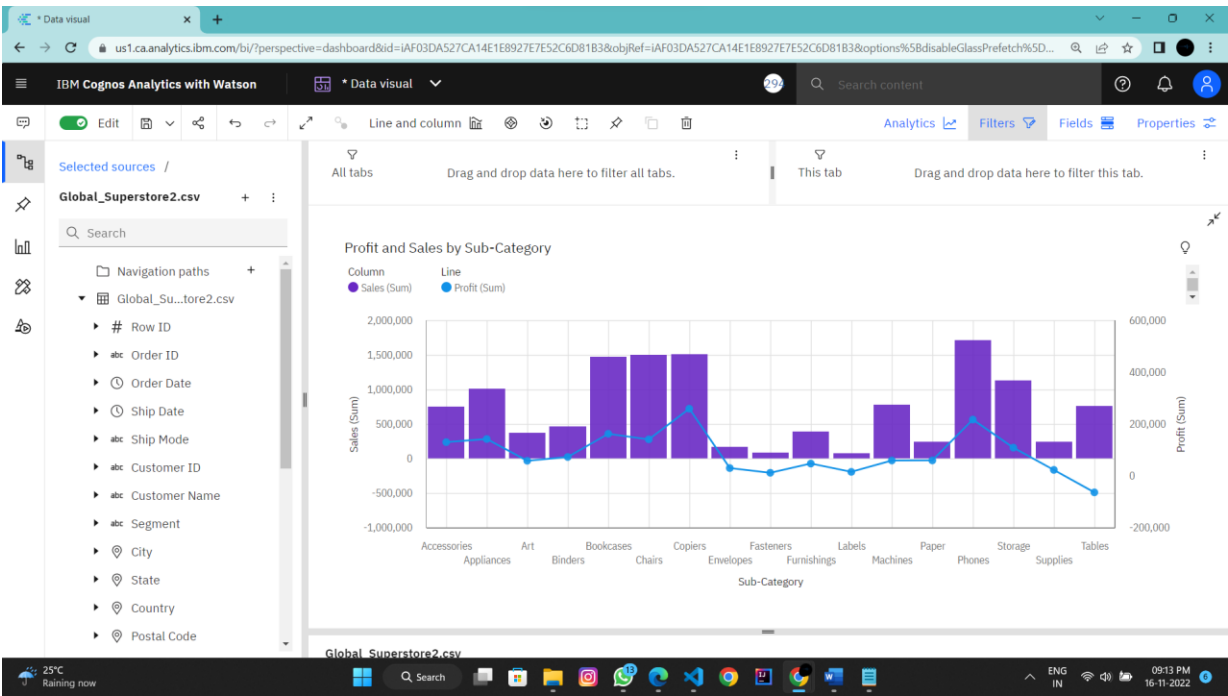

Use a Tree Map to present Sales by Sub-Category
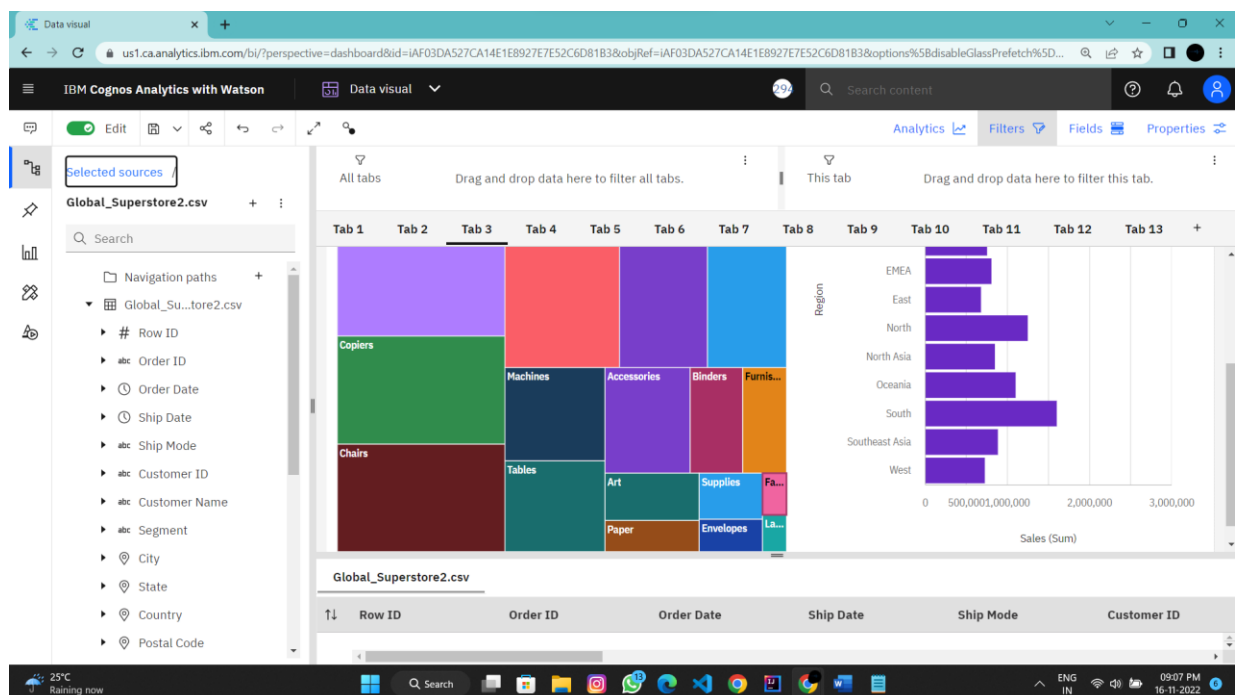
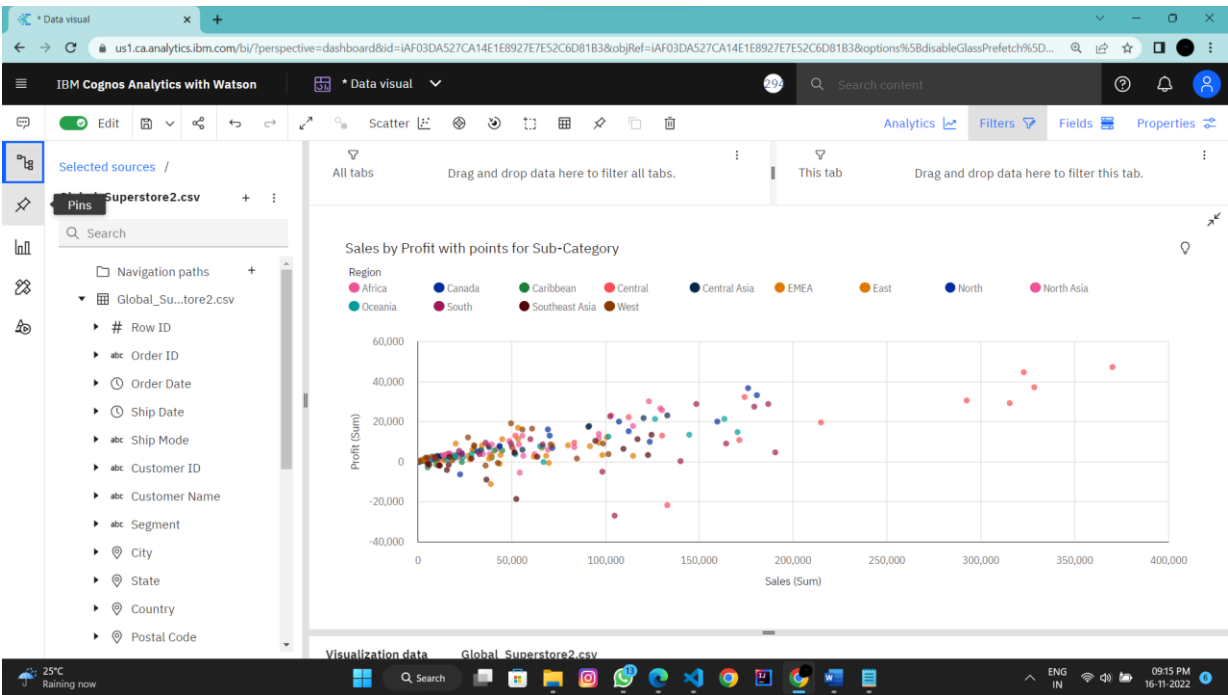Using a Bar chart present Sales by Region by the Sales Order
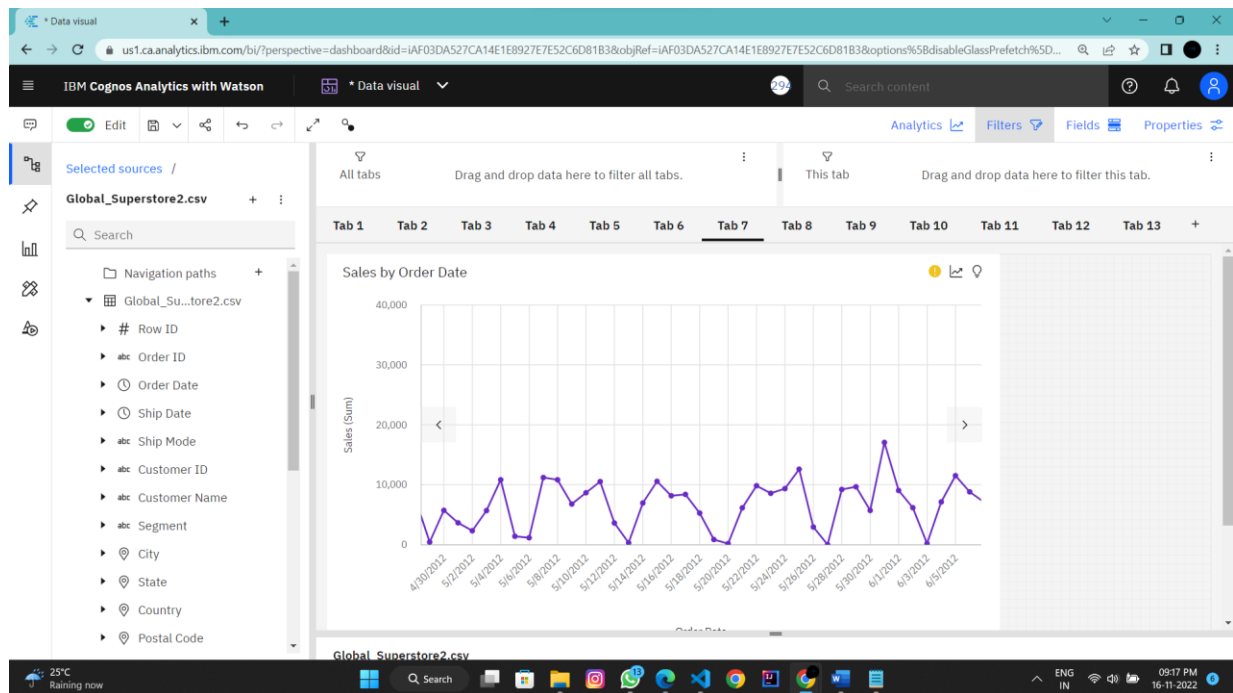

Regional Sales using Map Country points
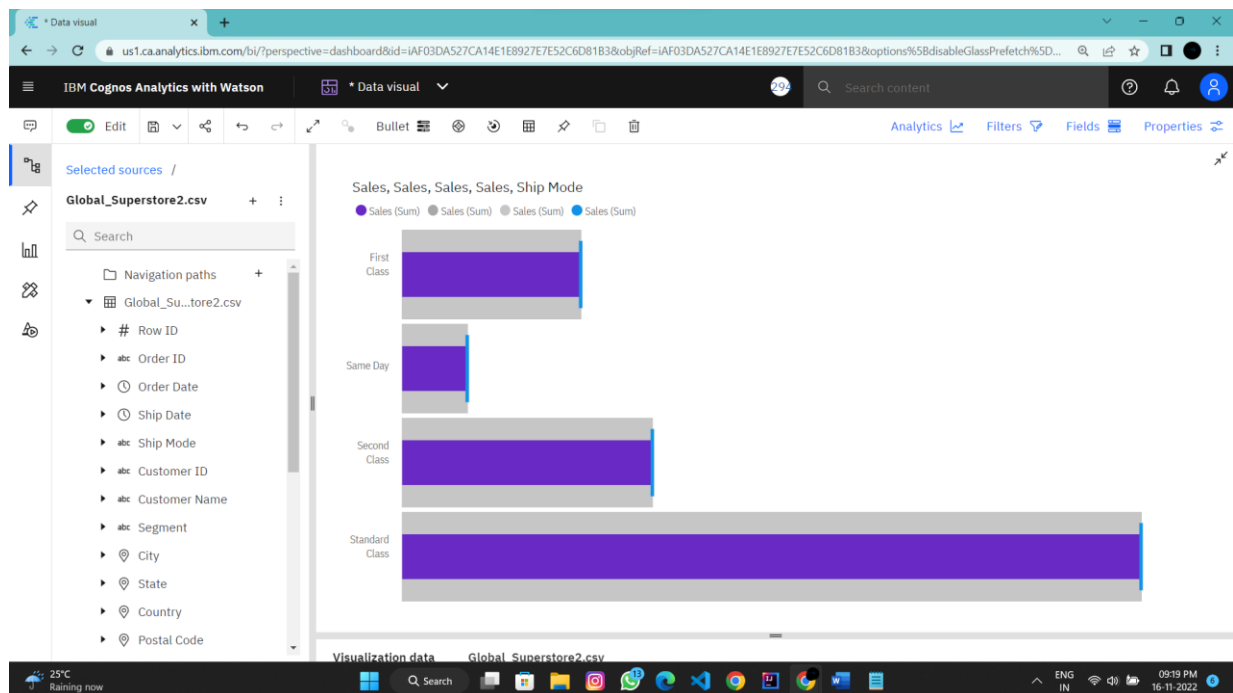
Sales (Bar), Profit (line) by Sub-Category
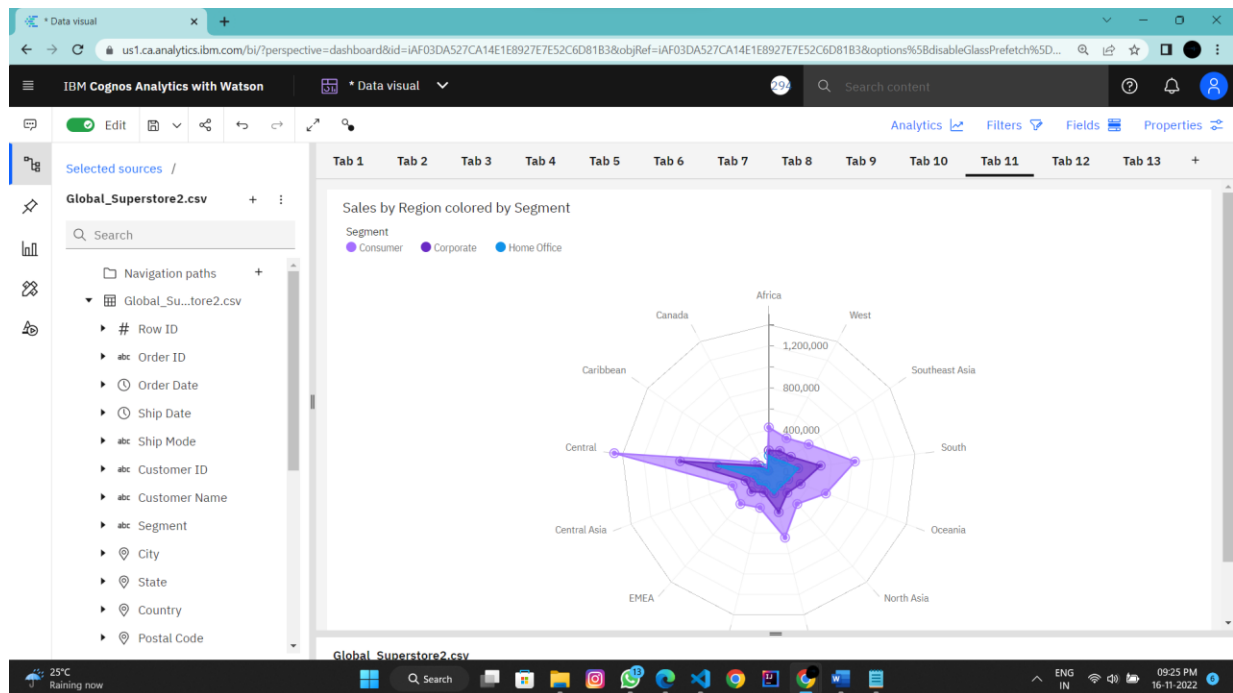

Sales vs Profit Scatter Plot with Sub-Category points

Sales vs Profit forecast by Month by Order Date
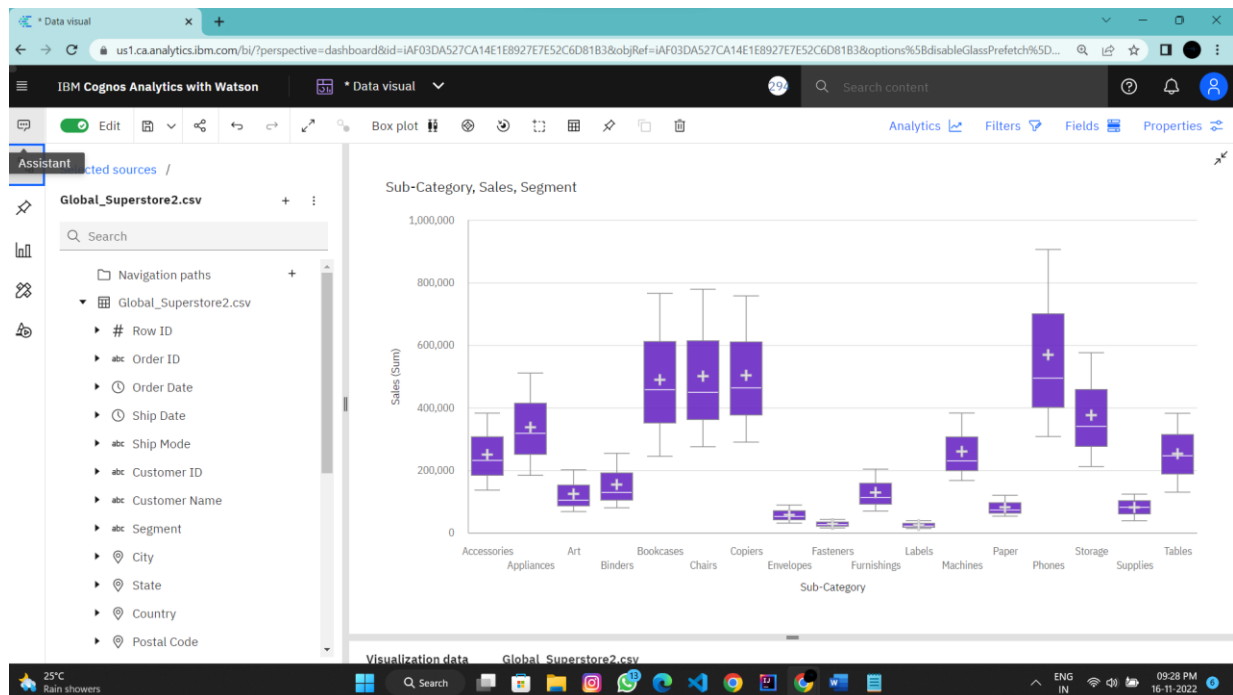

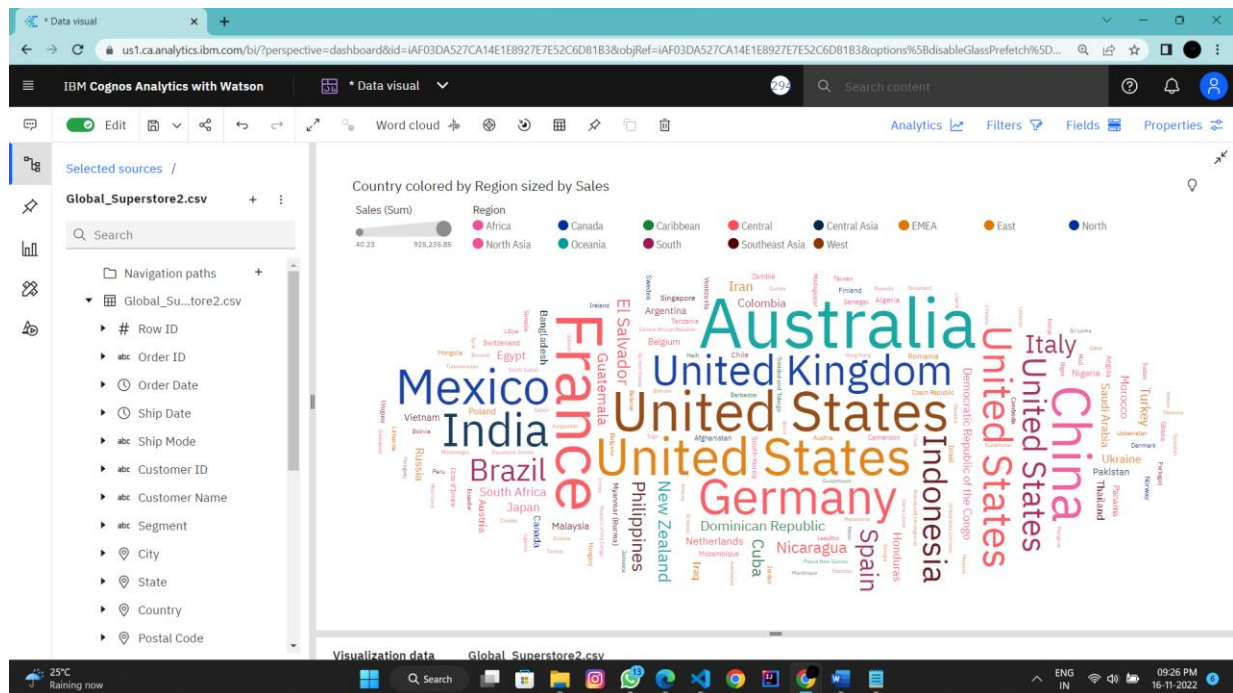# Target For Sales Present Segement Wise Sales Using Bullet Chart
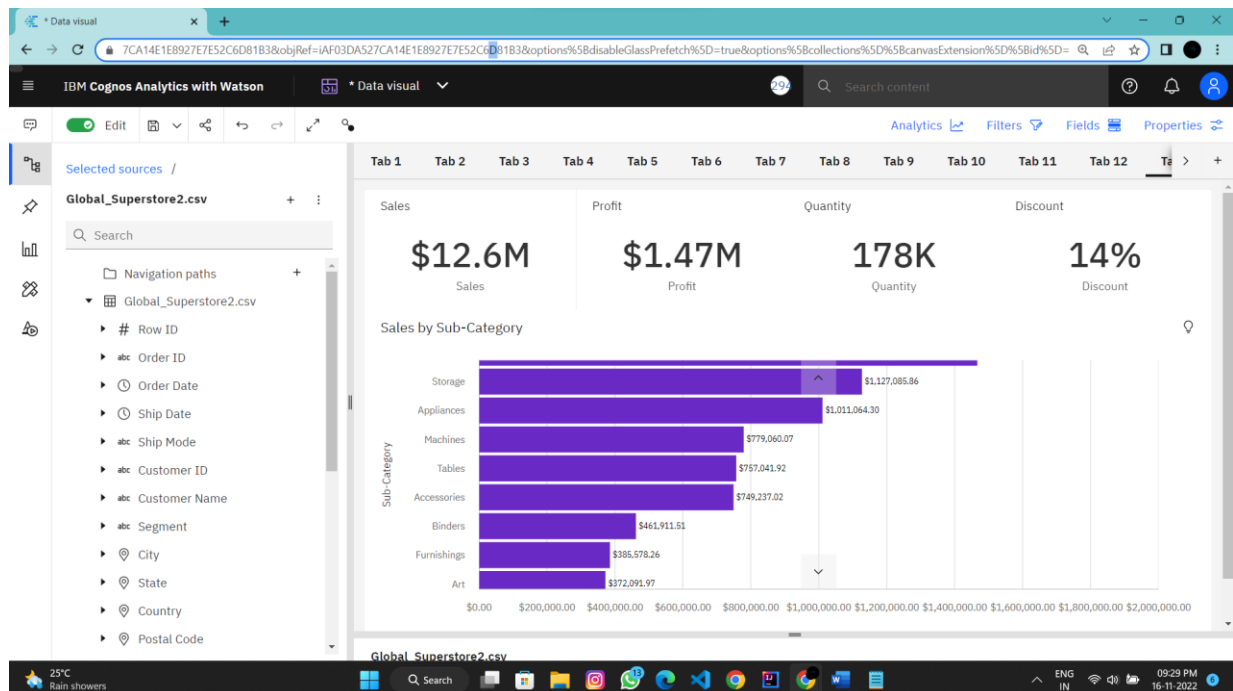
Radar Chart across various Regions.

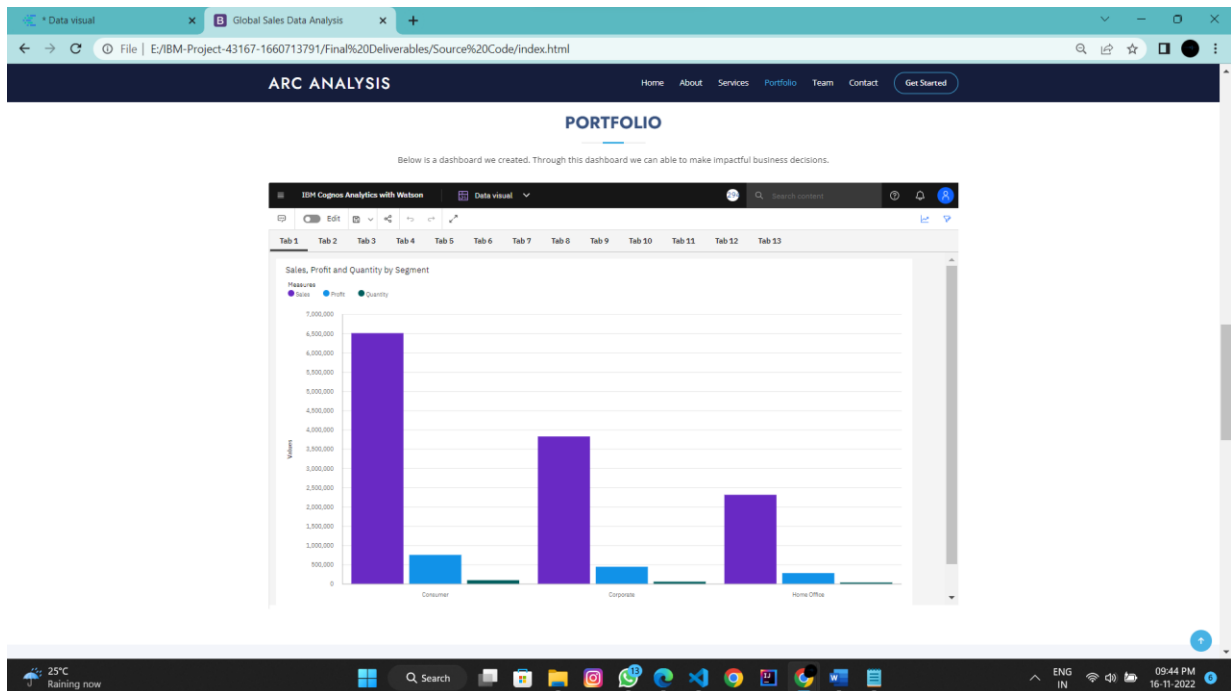Show the Min, Max, and Avg Sales by Sub-Category using the Box plot

Country Colored by Region sized by Sales

Sales by Sub-Category

Web Page

TEAM

Meet the team behind Arc Analysis.

Suresh K
Team Leader

Data Analyst

Saran N
Team Member 1

Data Analyst

Naveen Babu L
Team Member 2

Data Analyst

Ponrasu K
Team Member 3

Data Analyst

CONTACT

If you have any queries, you can reach out to us by filling out the form. We will get back to you.

Location:
Thachanallur, Chennai, India

Your Name

Your Email

Location:
Thachanallur, Chennai, India

Email:
info@arcanalysis.com

Call:
+1 5589 55488 55s

Your Name

Your Email

Subject

Message

Send Message

ARC ANALYSIS

Thachanallur
Chennai,
India

Phone: +1 5589 55488 55
Email: contact@arcanalysis.com

Useful Links

› Home
› Our Services
› Portfolio

Company

› About us
› Team
› Contact Us

Our Social Networks

© Copyright **Noob Dev.** All Rights Reserved

Designed by BootstrapMade

8 RESULT

Performance Metrics

This dashboard is created to understand a few things like, Customer Analysis and Product Analysis of the Global Super Store. This can be achieved by hearing out to the consumers and collecting their user preference data So that purchasing power will increase and beneficiary for both retailers and consumers.

9 ADVANTAGES & DISADVANTAGES

ADVANTAGES

- purchasing power will increase and beneficiary for both retailers and consumers.
- IBM Cognos analytics helps in building the dashboard and creating the exploration.

DISADVANTAGES

- A little bit confusing to choose the type of exploration

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

This dashboard is a responsive dashboard, so as we update the csv file uploaded in the IBM Cognos dashboard updates automatically so that this dashboard can be utilized in future also.

This dashboard is also having forecast exploration which enables to predict future sale

11 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 analyze 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

References

1. Data analysis and visualization of sales data 2016
2. Walmart's Sales Data Analysis - A Big Data Analytics Perspective - Dec2017
3. Research on Refined Sales Management, Data Analysis and Forecasting under Big