PROJECT REPORT

TEAM ID	PNT2022TMID05132
PROJECT NAME	GLOBAL SALES DATA ANALYTICS
TEAM MEMBER	ABISEKH M -(921319106005) ABDUSH SAMAD M-(921319106002) ABIKRISHNA M -(921319106003) ARAVINDAN N -(921319106020)

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.

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. LITERATURE SURVEY

2.1 Existing problem

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.

2.2 References

1.Data analysis and visualization of sales data - Mar-2016

Authors: Kiran Singh,Rakhi Wajgi

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

Authors: Manpreet singh, Bhawick Ghutla, Reuben lilo Jnr, Aesaan F S Mohammed

3.Research on Refined Sales Management, Data Analysis and Forecasting under Big Data - Oct-2020

Author: Wenhui Shan

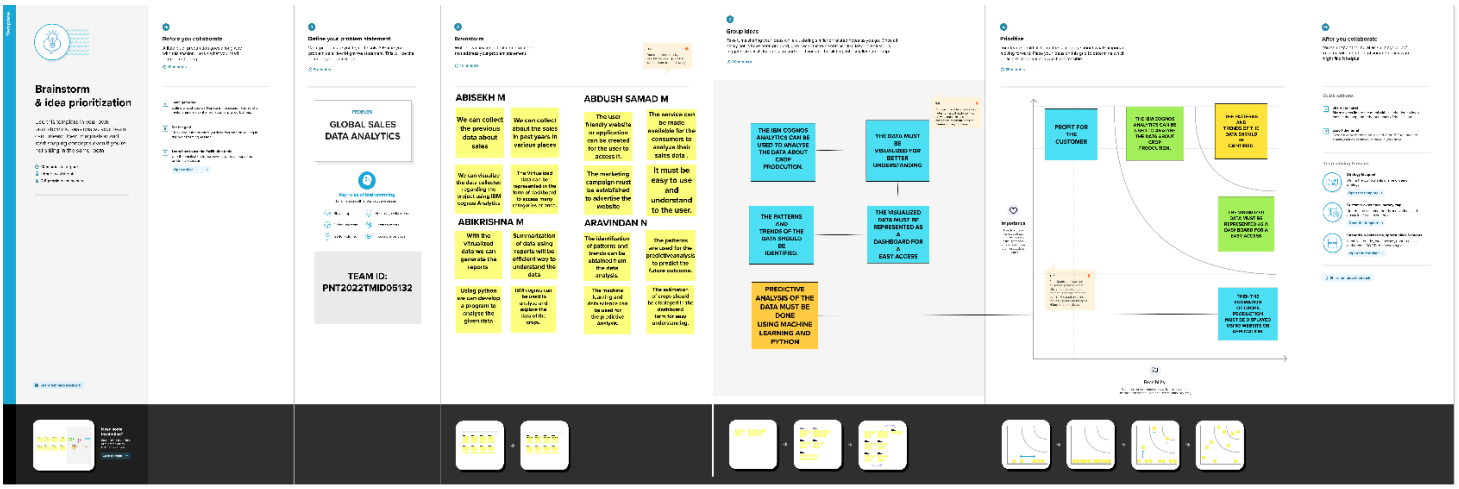
2.3 Problem Statement Definition

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

3.1 Empathy Map Canvas

3.2 Ideation & Brainstorming



3.3 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.

3.4 Problem Solution fit

4. REQUIREMENT ANALYSIS

4.1 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.

4.2

4.3

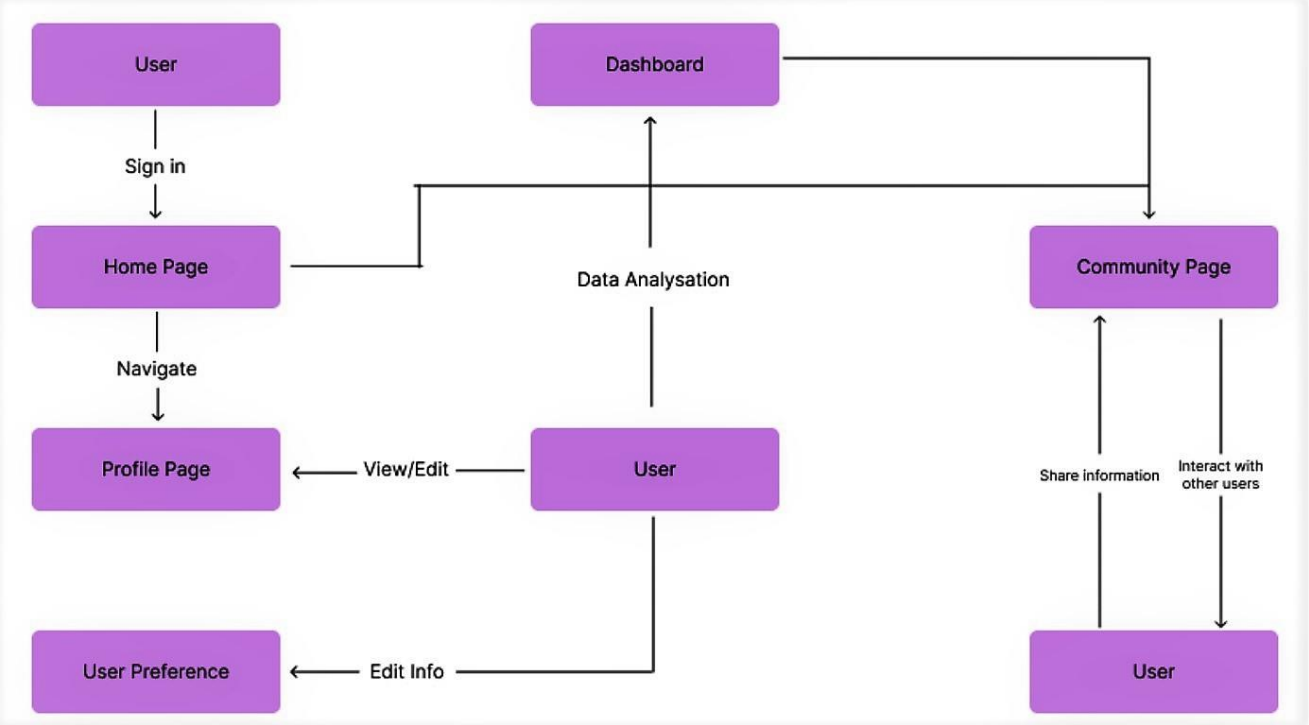
4.2 Non-Functional requirements

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

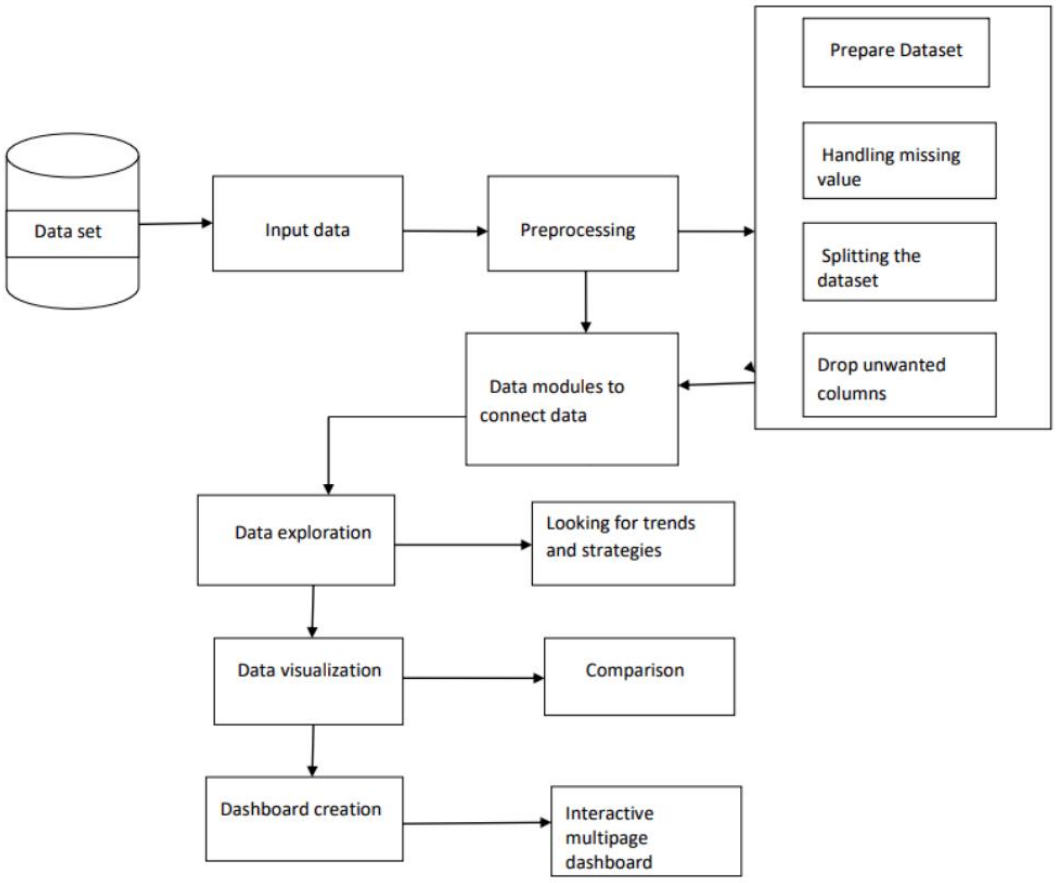
NFR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	It should be easier to understand the insights for the customers.
NFR-2	**Security**	The data is protected from unauthorized access.
NFR-3	**Reliability**	App could be run offline while server maintenance takes place. Server traffic would 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

5.1 Data Flow Diagrams



5.2 Solution & Technical Architecture



5.3 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

6.1 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

6.2Sprint 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 & SOLUTIONING (Explain the features added in the project along with code)

7.1 Feature

We have used many visualizations type like

- For comparison:
  - Bar
  - Bullet
  - Line and column
  - Radar
  - Word cloud
- Parts to whole:
  - Pie chart
  - Tree map
- Trend:
  - Box plot
  - Line
  - Line and column
- Relationships
  - Scatter
- Tables and summary
  - Crosstab
  - Summary
- Geospatial
  - Legacy map
  - Map

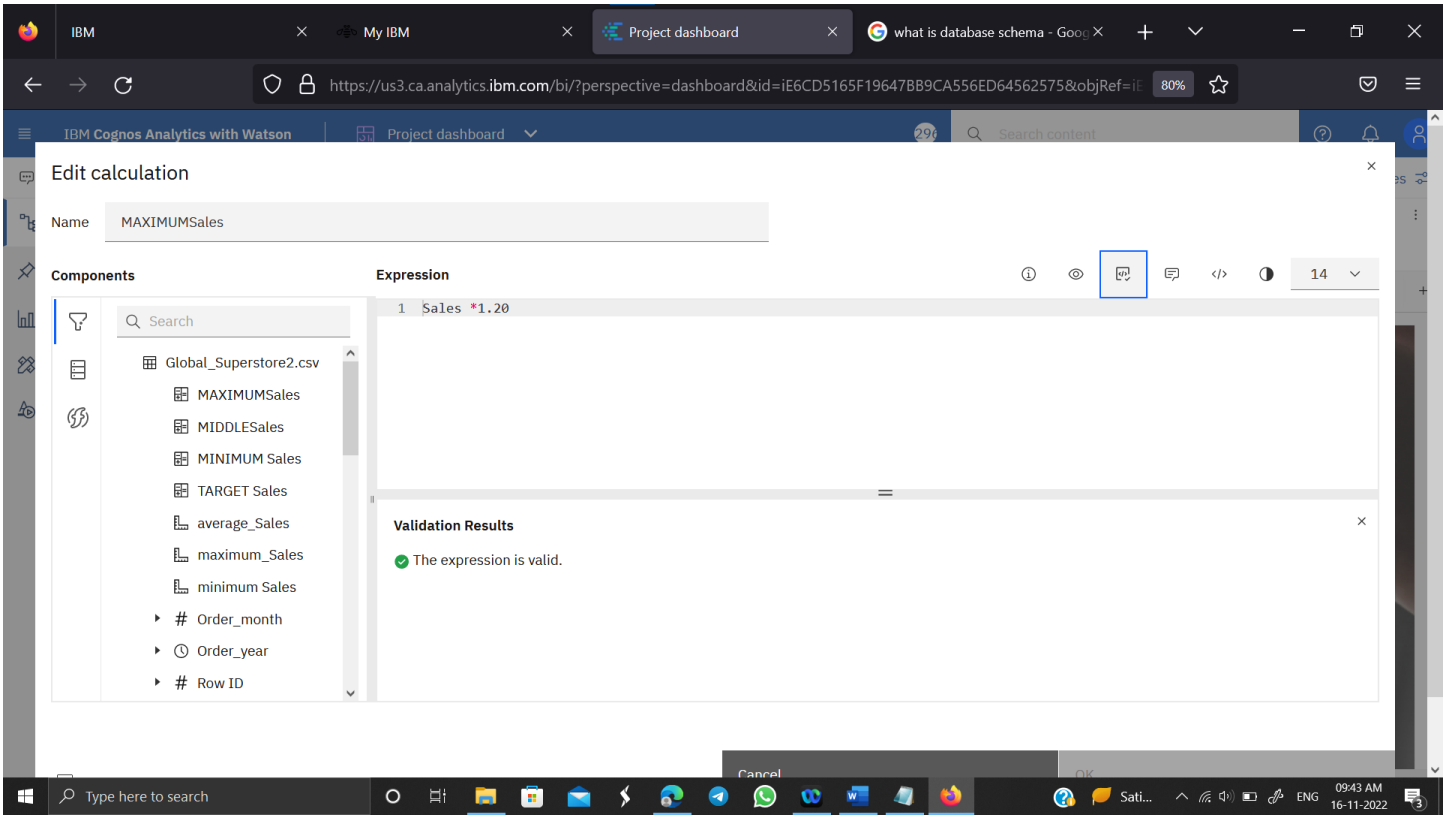
7.2 Database Schema (if Applicable)

Build the following visualizations

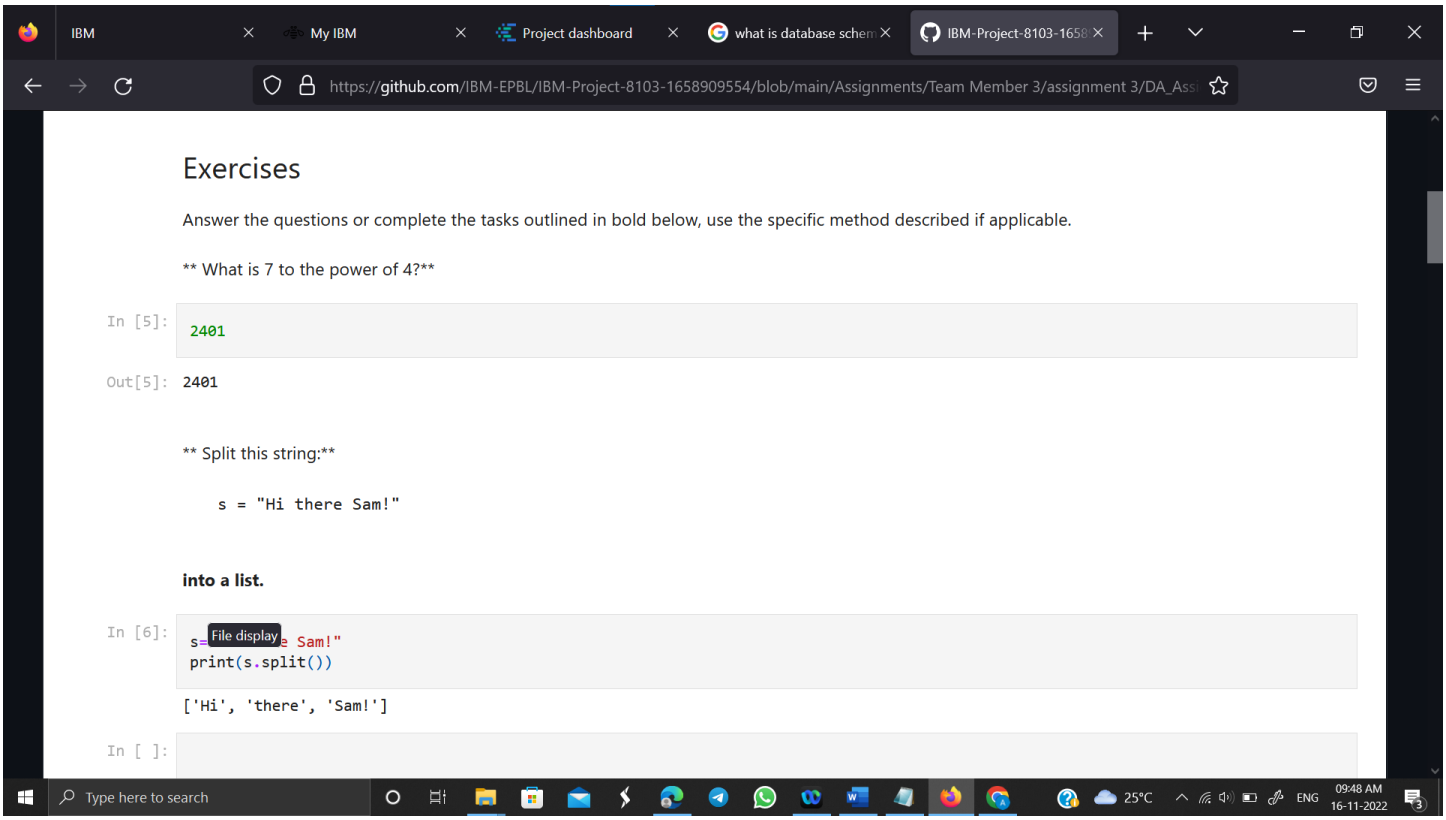
1. Global Stuperstore_Data Upload.
2. Global Superstore_DataPrep.
3. Date Calculations and Navigation path.
4. Segment wise Sales, Profit and Qty.
5. Use Pie to showcase Sales by Order Priority and Sales by Market.
6. Use a TreeMap to present Sales by Sub-Category
7. Using a Bar chart present Sales by 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.

8. TESTING

8.1 Test Cases



Every expression is validated before calculation.



9. RESULTS

9.1 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.

10. 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.

11. CONCLUSION

Creating this dashboard will help understand customers will So that purchasing power will increase and will be beneficiary for both retailers and consumers.

12. FUTURE SCOPE

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 sales.

13. APPENDIX

GitHub: **IBM-Project-8103-1658909554**