

A NALAIYA THIRAN PROJECT ON
“GLOBAL SALES DATA ANALYTICS”
(DOMAIN: DATA ANALYTICS)

A Report Submitted By,
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NOVEMBER-2022.

1. INTRODUCTION

- Data Analytics refers to the process of collecting, organizing, analysing, and transforming any type of raw data into a piece of comprehensive information with the ultimate goal of increasing the performance of a business or organization.
- This project is about Global Sales Data Analytics, in which we have created 15 Templates to showcase the Trends and Patterns in the Dataset (2011-2014) provided. The Dataset contains 51291 Rows and 24 Columns.

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.

Customer analytics (or consumer analytics for B2C) is the process of collecting and analysing behavioural customer data across a range of channels, devices, and interactions. These analytics give you the insight necessary to form strategies, products, and services that your customers will want to engage with.

1.2 Purpose

- To visualize the Customer Analysis and Product Analysis of this Global Super Store and by the end of this Project, the User gets clarify with:
- Fundamental concepts of IBM Cognos Analytics.
- Gain a broad understanding of plotting different visualizations to provide a suitable solution.
- Able to create meaningful Visualizations and Dashboard(s).

Some of the types of Charts include:

- **Tables:** This consists of rows and columns used to compare variables. Tables can show a great deal of information in a structured way.
- **Pie charts and stacked bar charts:** These graphs are divided into sections that represent parts of a whole.
- **Line charts and area charts:** These visuals show change in one or more quantities by plotting a series of data points over time and are frequently used within predictive analytics.
- **Histograms:** This graph plots a distribution of numbers using a bar chart (with no spaces between the bars), representing the quantity of data that falls within a particular range.
- **Column Charts:** Column charts are useful for comparing discrete data or showing trends over time.
- **Area Charts:** Area charts are useful for emphasizing the magnitude of change over time. Stacked area charts are also used to show the relationship of parts to the whole.
- **Combination Charts:** Combination charts plot multiple data series by using combinations of columns, areas, and lines within one chart. They are useful for highlighting relationships between the various data series.
- **Scatter Charts:** Scatter charts use data points to plot two measures anywhere along a scale, not only at regular tick marks.
- **Bubble Charts:** Bubble charts, like scatter charts, use data points and bubbles to plot measures anywhere along a scale. The size of the bubble represents a third measure.
- **Bullet Charts:** Bullet charts are a variation of bar charts. They compare a featured measure (the bullet) to a targeted measure (the target). They also relate the compared measures against coloured regions in the background that provide additional qualitative measurements, such as good, satisfactory, and poor.
- **Radar Charts:** Radar charts integrate multiple axes into a single radial figure. For each figure, data is plotted along a separate axis that starts at the centre of the chart.

2. LITERATURE SURVEY

In the information era, enormous amounts of data have become available on hand to decision makers. Big data refers to datasets that are not only big, but also high in variety and velocity, which makes them difficult to handle using traditional tools and techniques. Due to the rapid growth of such data, solutions need to be studied and provided in order to handle and extract value and knowledge from these datasets.

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

2.2 References

For References we inferred a few project papers:

- Digital Transformat ion of IKEA's by Rama Krishna Ponnana;
Navya Uppalapati
- Evaluation of Business Continuity Managemen t - A case study of
disaster recovery during the Covid-19 pandemic by Fredrik
Tegström; Filip Nilsson.
- How to integrate the Purchase with Sales and Operation planning
process by Matilda Davidson; Frida Hannson.
- A Theory of Predictive Sales Analytics Adoption by Sasha Alavi;
Nicolas Heinitz.

2.3 Problem Statement Definition

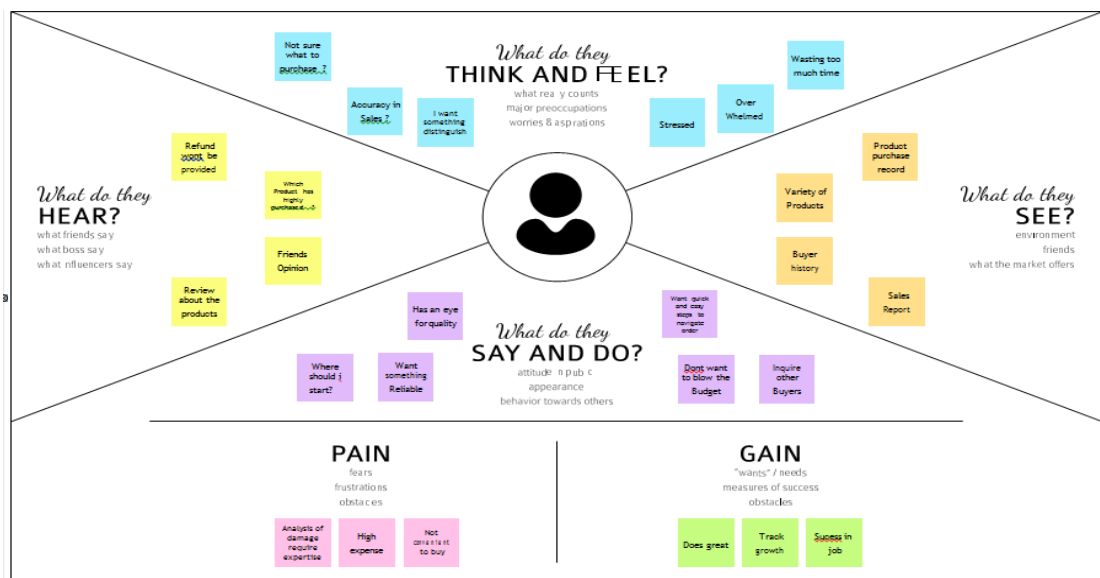
- ✓ Every store be it online or offline needs evaluation and analysis to
predict daily sales. It's also essential to know what goods customers
want at a particular time and what the trend would be every day,
month and year. The major focus of this analysis is to understand
some things.

- ✓ Like Sales Trend, Most Selling Products by Number of Sales, Least Selling Product by Number of Sales, Shipping Mode by Sales, Profitable Categories, Numbers of Product Sold by Category, Cities with Highest Sales Top Selling Products by Amount of Sales. Analysis of the sales data with particular focus given to how promotions and advertising translate into sales, in terms of both units sold and sales dollars.
- ✓ Usually, Data Redundancy might happen or missing of data when we do it manually. So, we should aim to answer some basic questions that may arise for the store manager/owner/customers giving a much better insight about the store and how to increase the productivity.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

An empathy map is a template that organizes a user's behaviors and feelings to create a sense of empathy between the user and your team. The empathy map represents a principal user and helps teams better understand their motivations, concerns, and user experience.



3.2 Ideation & Brainstorming

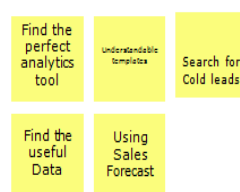
Ideation essentially refers to the whole creative process of coming up with and communicating new ideas. Brainstorming also emphasizes on improving our ideation process and elevates the creative thinking of individuals.

Below, the Brainstorming Ideas and the importance/feasibility graph of this Project is attached.

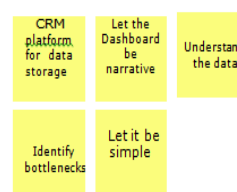
Hemadharshini .S.M



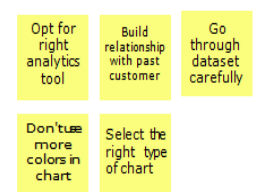
Kanchana Devi. R

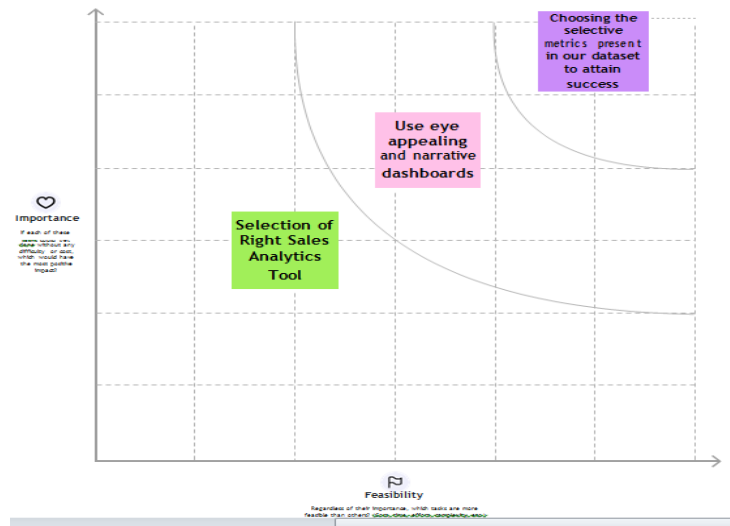


Rajakumari.S



Jeevahariharan. B





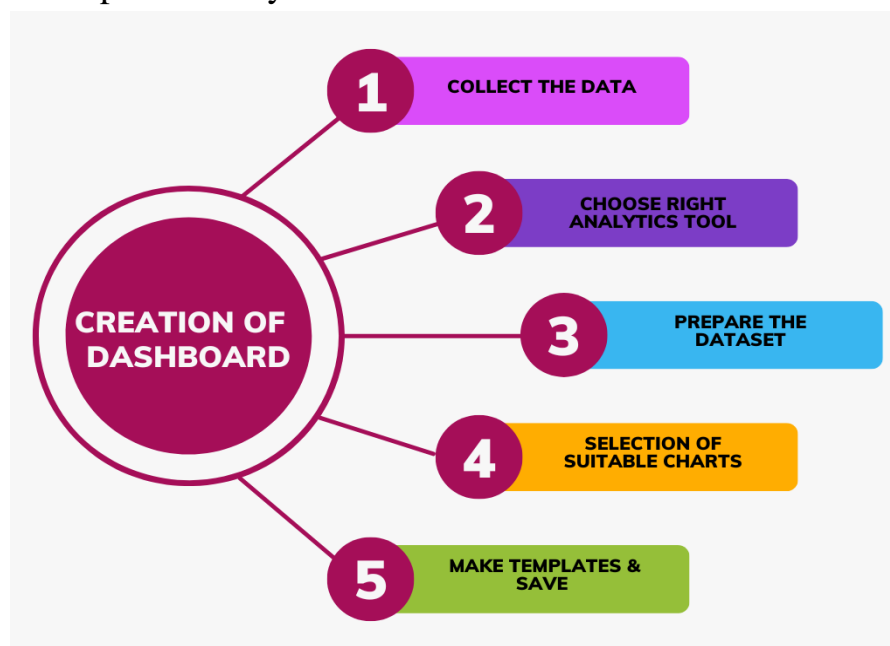
3.3 Proposed Solution

The major focus of this Project is to understand the Sales and Purchases Data by the Customer and Buyer all around the world. Thus, by providing a Data Visualization Chart, one can discover the recent Trends in Data and saves time. Also, Data Visualization Provides a Perspective or Usefulness on the Data. The solution is found in three step,

Which is :

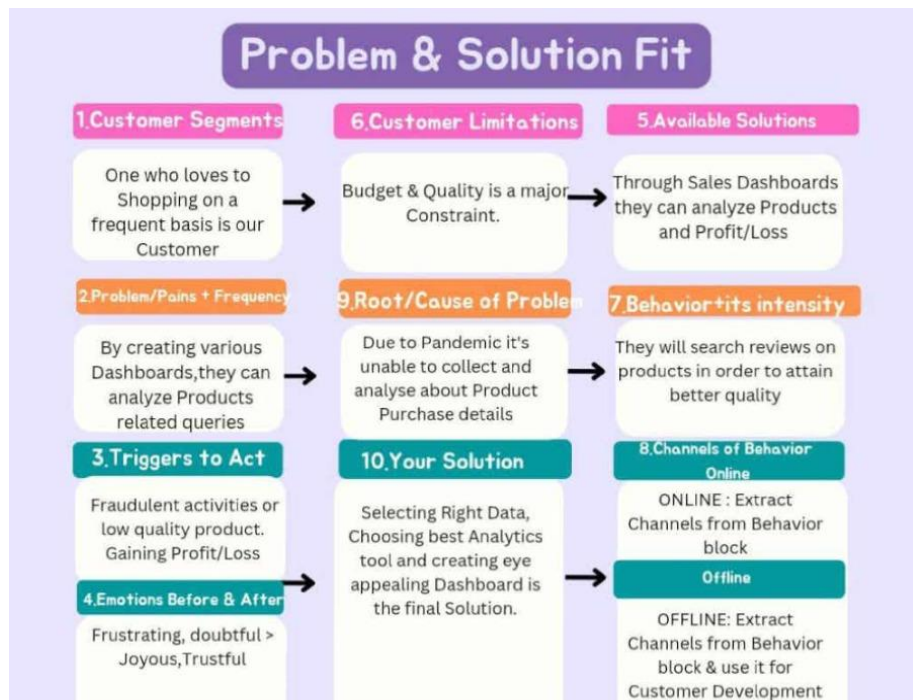
- ✓ Selection of Right Analytic Tool
- ✓ Using eye appealing and narrative Dashboards.
- ✓ Choosing the Right Metrics in our Dataset to showcase the Trends.

Hence, a Owner/Customer able to get better insight about the store and how to increase the productivity.



3.4 Problem Solution fit

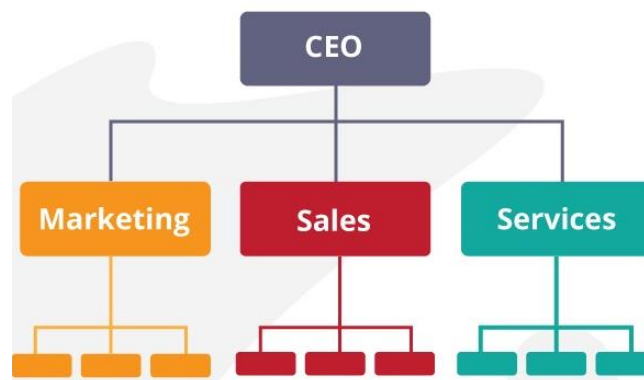
The best way to put the energy, the resourcefulness, the creativity and the technical skills of an entrepreneur to service is to identify an existing problem and to solve it in with a solution that customers find useful and satisfying. Below edited problem and Solution Fit is designed by Canva Designing Tool.



4. REQUIREMENT ANALYSIS

The data requirements analysis process employs a top-down approach that emphasizes business-driven needs, so the analysis is conducted to ensure the identified requirements are relevant and feasible. The process incorporates data discovery and assessment in the context of explicitly qualified business data consumer needs.

4.1 Functional requirement



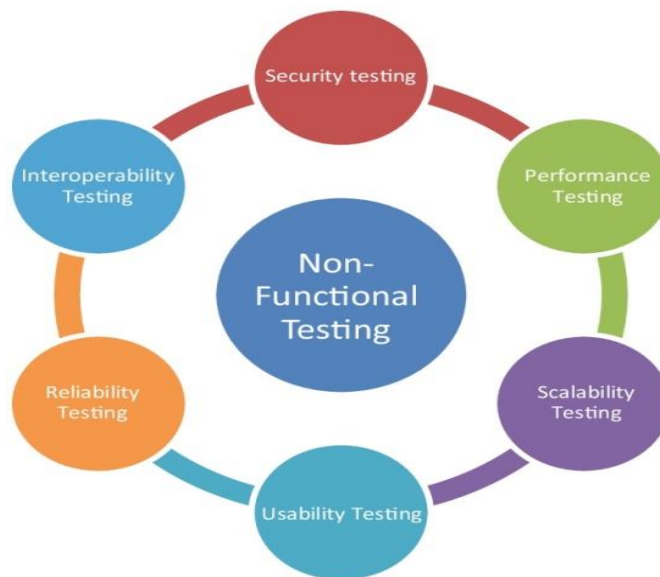
Functional requirements are the details and instructions that dictate how software performs and behaves. Typically, software engineers create and apply functional requirements to software during the development stages of a project to ensure their software is easy to use and operational.

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 Gmail
		Sign Up/Sign In
FR-2	User Confirmation	Confirmation via Email is sent.
FR-3	Dataset	Upload Dataset in Cognos Analytics Tool.
FR-4	Visualize/Analyse	Drag and Drop Columns to analyse the Dataset.
FR-5	Create Dashboards	Create Charts, Graphs, Tables, etc.
FR-6	Log Out	Logout after downloading the Dashboards.

- The system must allow users to log into their account by entering their email and password.
- The system must allow users to log in with their Google accounts.
- The system must allow users to reset their password by clicking on "I forgot my password" and receiving a link to their verified email address.

4.2 Non-Functional requirements



Non-functional requirements or NFRs are the set of requirements that defines how well a system will operate as opposed to functional requirements that focus on the specific business functionalities that an application performs.

Following are the Non-Functional Requirements of the Proposed Solution.

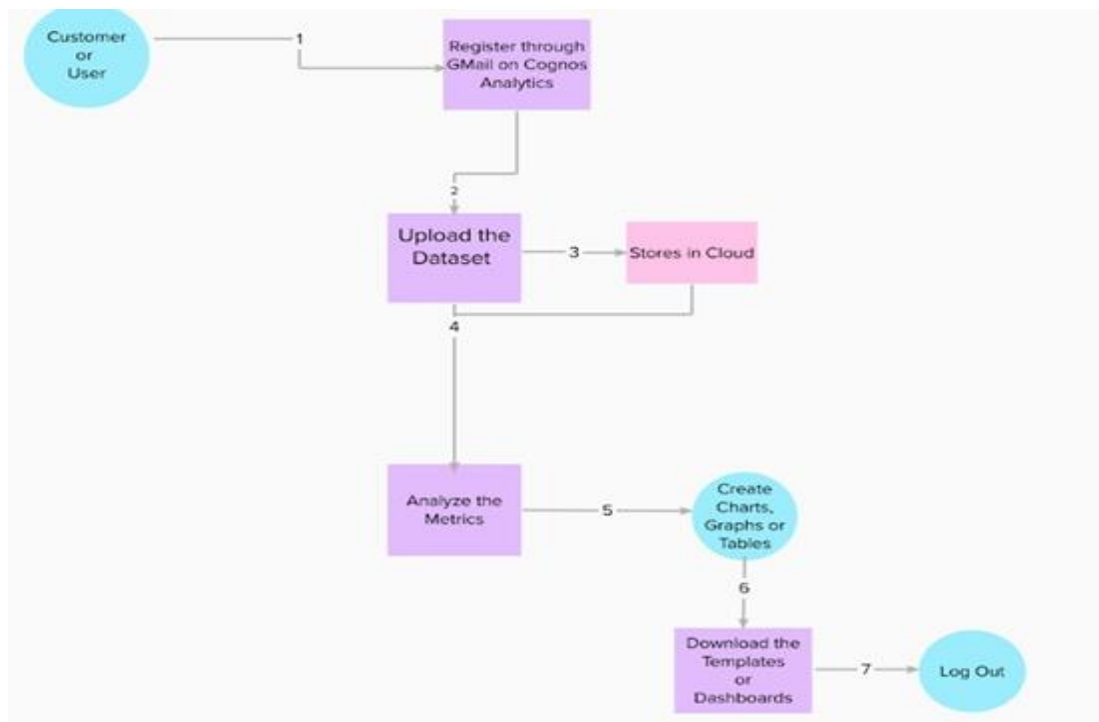
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The user can access the Dashboard till it has the right Store Sales Dataset.
NFR-2	Security	Anyone with correct Login credentials can view the Dashboards/Templates.
NFR-3	Reliability	Templates are reliable because we are uploading and Accessing it through Cloud.

5. PROJECT DESIGN

5.1 Data Flow Diagrams

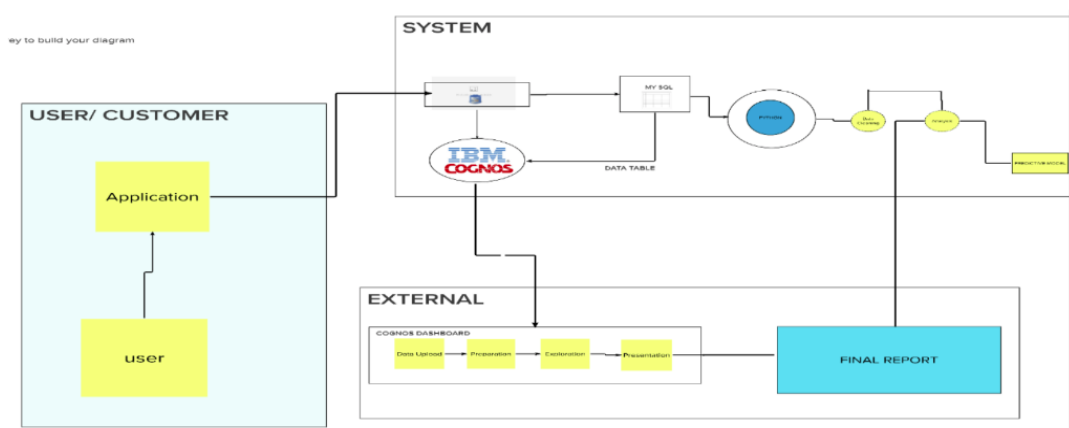
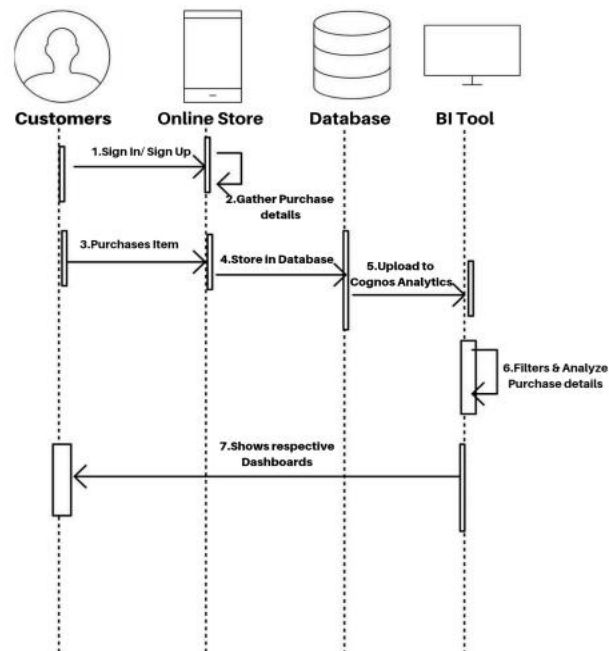
A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

- Customer Registers themselves through Mail ID on Cognos Analytics.
- Upload various kinds of Datasets.
- Those Datasets are saved in My Content section of Cognos Analytics tool.
- Select the Metrics and Visualize it.
- Create colourful Charts , Graphs or Tables.
- Save the Template and Download it for Business Decision purpose.
- Finally ,Log Out.



5.2 Solution & Technical Architecture

- The Software Architecture Definition (SAD) document describes the subsystems and components of the solution by presenting a number of architectural views. Each view shows a different aspect of the system to address different concerns and is described in a separate section.
- Technical Architecture (TA) is a form of IT architecture that is used to design computer systems. It involves the development of a technical blueprint with regard to the arrangement, interaction, and interdependence of all elements so that system-relevant requirements are met.



5.3 User Stories

- A user story is a small, self-contained unit of development work designed to accomplish a specific goal within a product.

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 Cognos Analytics or any BI Tool 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	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register through Gmail	I can receive confirmation Gmail and Subscribe	Medium	Sprint-1
	Login	USN-4	As a user, I can log into the dashboard by entering email & password	I can login into the BI Tool	High	Sprint-1
	Dashboard		Upload data, View already uploaded Dataset	I can upload dataset and view dashboards available	High	Sprint-1
Customer (Web user)	Registration	USN-1	As a user, I can register for the Cognos Analytics or any BI Tool 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	I can receive confirmation email & click confirm	High	Sprint-1
	Login	USN-3	As a user, I can log into the dashboard by entering email & password	I can login into the BI Tool	High	Sprint-1
	Dashboard		Upload data, View already uploaded Dataset and make charts/graphs/tables	I can upload dataset and view dashboards available	High	Sprint-1
Administrator			As a Administrator, I can manage query and solve issue occur	I can solve query and manage dataset	High	Sprint-1

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

SPRINT PLANNING



Sprint planning is an essential process that an organization needs to adapt to be successful. It indicates the roadmap for the next two to four weeks when stakeholders and team members decide as a group what they need to complete and deliver before the next sprint review meeting. Global estimates and analytical tools to make the most informed decisions. Seamlessly receive comprehensive global estimates straight into your systems, portals, and business applications through our flexible Data Feed, Cloud and API Solutions.

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 giving out Email ID, Password and assuring it.	2	High	Hema,Jeeva, Kanchana, Rajakumari
Sprint-1	Registration	USN-2	As a user, I will receive confirmation via Email once I have been Registered.	3	High	Hema,Jeeva, Kanchana, Rajakumari
Sprint-1	Registration	USN-3	As a user, I can Register for the Application through G-Mail, Facebook and Twitter.	1	Low	Hema,Jeeva, Kanchana, Rajakumari
Sprint-1	Login	USN-4	As a user, I can Sign-In into the Application by giving out my registered Email ID & Password	2	Medium	Hema,Jeeva, Kanchana, Rajakumari
Sprint-2	Understanding the Data	USN-5	As a user, I can analyze the Global Sales Dataset which I have attached in the Web Application for Analysis purpose.	2	High	Hema,Jeeva, Kanchana, Rajakumari
Sprint-3	Working with the Dataset	USN-6	As a user, I can spot the Trends in the Dataset and make Visualization Charts	2	High	Hema,Jeeva, Kanchana, Rajakumari
Sprint-3	Creating Dashboards	USN-7	As a user, I can handle Business Analysis to make Meaningful insights out from the data.	2	High	Hema,Jeeva, Kanchana, Rajakumari
Sprint-4	Customer Care/ Contact Tab	USN-8	As a Customer Care Executive, I can solve end user Doubts and Queries in the Contact Navigation Tab.	2	Low	Hema,Jeeva, Kanchana, Rajakumari

6.2 Sprint Delivery Schedule



Projects (or features or epics) are your main unit of work. Projects can be broken down into tasks or user stories, and includes details like cross-functional owners (for resource allocation) and related assets (like product requirements documents and design files).

Sprints (sometimes referred to as “iteration”) are defined periods of time (often 2 weeks) where a development team works to complete specific tasks or milestones.

Tasks are the smallest unit of work. Ideally, a task should be able to be completed within a sprint. They are broken down from Projects, and they are what we will be tracking in ongoing sprints. Many times, tasks are synced from a system such as Jira—we provide integrations to tools like Jira Cloud, Jira Server/Data Center, Github Issues, and more.

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	8	6 Days	24 Oct 2022	29 Oct 2022	8	29 Oct 2022
Sprint-2	6	6 Days	31 Oct 2022	05 Nov 2022	4	05 Nov 2022
Sprint-3	2	6 Days	07 Nov 2022	12 Nov 2022	5	12 Nov 2022
Sprint-4	4	6 Days	14 Nov 2022	19 Nov 2022	3	19 Nov 2022

Velocity:

The team's average velocity (AV) per iteration unit (story points per day):

$$\text{Sprint 1: AV} = \text{Sprint duration} / \text{velocity} = 8/6 =$$

$$1.34 \text{ Sprint 2: AV} = \text{Sprint duration} / \text{velocity} =$$

$$4/6 = 0.66$$

$$\text{Sprint 3: AV} = \text{Sprint duration} / \text{velocity} = 5/6 =$$

$$0.83 \text{ Sprint 4: AV} = \text{Sprint duration} / \text{velocity} =$$

$$3/6 = 0.5$$

Total = 20 Points

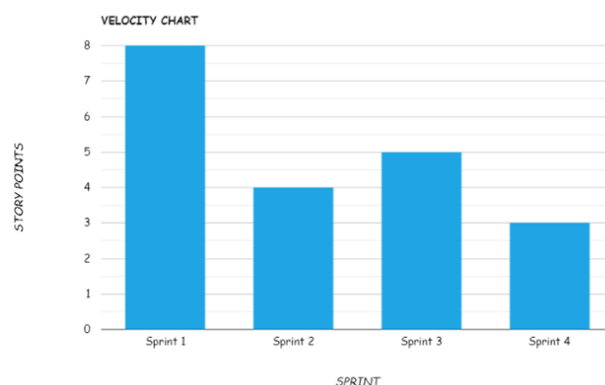
6.3 Reports from JIRA

Agile JIRA Reports deliver value to customers faster with real-time insights at your fingertips. Jira Software enables teams to make data-driven decisions with agile reports, dashboards, and more.

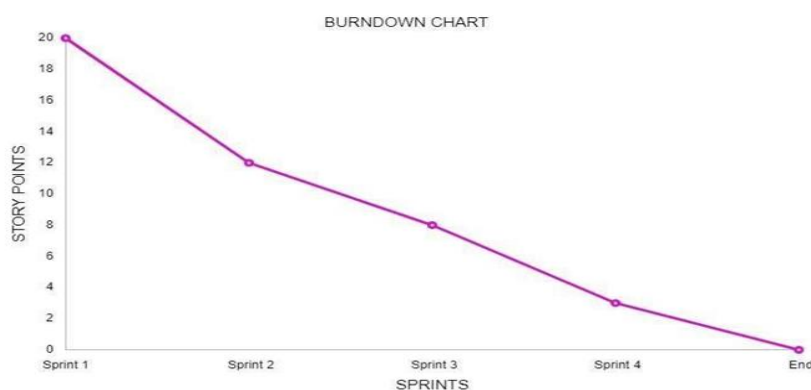
Velocity Chart is how a scrum team measures the amount of work they can complete in a typical sprint. Velocity is measured historically, from one sprint to the next. By tracking the number of story points the team can complete according to their own definition of done, they can build up a reliable and predictable sense of how long it will take them to complete new stories based on their relative point value.

A Burndown Chart shows the team's progress toward completing all of the points they agreed to complete within a single sprint. This chart starts with the total number of points the team has taken on for the sprint, and tracks on a day-to-day basis how many of those points have been completed and is ready for the sprint demo.

VELOCITY CHART:-



BURNDOWN CHART:-



7. CODING & SOLUTIONING

7.1 Feature 1

Initially, we have created a Log-In / Registration for the web application using HTML and CSS code. Below we have attached the CODE & SCREEN SHOT of the user interface page.

As a user, I can Log-In or Register into the Application by giving out my registered E-mail ID and Password.

HTML FILE :

```
<!--Homepage-->
```

```
<section id="HOME">
```

```
<div class="row">
```

```
<div class="col-lg-6 col-md-6 col-12 order-1 pt-5">
```

```
<h1 class="display-4"> Global Sales<br><span>Data  
Analytics</span> </h1>
```

```
<p class="my-lg-2 my-3">
```

Data Analytics refers to the process of collecting, organizing, analysing, and transforming

any type of raw data into a piece of comprehensive information with the ultimate goal of

increasing the performance of a business or organization.

This project is about Global Sales Data Analytics, in which we have created 15 Templates to

showcase the Trends and Patterns in the Dataset (2011-2014) provided. The Dataset contains

51291 Rows and 24 Columns.</p>

```
<P>
```

```
</p>
```

```
</div>
```

```
<div class="col-lg-6 col-md-6 col-12 py-lg-0 py-3 order-sm-2">
```

```

```

```
</div>
```

</div>

</section>

<!--Dashboard-->

<section id="DASHBOARD">

<div class="row">

<div class="col-lg-6 col-md-6 col-12 py-lg-0 py-3 order-sm-2">

</div>

<div class="col-lg-6 col-md-6 col-12 order-1 pt-5">

<h6 style="font-size: 50px"> GLOBAL SUPERSTORE </h6>

<h1 class="display-5"> DATASET</h1>

<P> A collection of data is known as a data set (or dataset). In the case of tabular data, a data set relates to one or more database tables, where each row refers to a

specific record in the corresponding data set and each column to a single variable. </P>

<h6 style="font-size: 30px"> The dashboard we worked for the following title:</h6>

<ol class="types">

<p style="color:darkblue">

Segment Wise Sales, Profit And Quantity

Sales By Market

Sales By Category And Sales By Region

Country Wise Sales Using Map Points

 Sub Category Wise Sales And Profits Using Line And Bar Chart

Sales Vs Profit Scatter Plot With Sub Categories And Regions

 Regional Sales And Profit Forecast

 Sales Forecast By Order Priority

Sales By Sub Category Analytics

 Sales By Segment Analysis

 Sales Vs Profit By Countries

```
        <li> Regional Quantity And Sales Using Radar Chart</li>
        <li> Country Wise Sales Vs Profit Using Word Cloud</li>
        <li> Sales Dashboard</li>
    </p>
</ol>
    <a href="slide1.html">
    <button class="btn btn-primary my-lg-3 my-3">View Chart</button>
    </a>
</div>

</div>

</section>
```

CSS FILE :

```
*{
    margin: 0;
    padding: 0;
    font-family: sans-serif;
}
.hero{
    height: 100%;
    width: 100%;
    background-image: linear-
    gradient(rgba(0,0,0,0.4),rgba(0,0,0,0.4)),url(bg3.jpg);
    background-position: center;
    background-size: cover;
    position: absolute;
}
.form-box{
    width: 380px;
    height: 480px;
```

```
position: relative;
margin: 6% auto;
background: #fff;
padding: 5px;
overflow: hidden;
}
.button-box{
width: 220px;
margin: 35px auto;
position: relative;
box-shadow: 0 0 20px 9px #ff61121f;
border-radius: 30px;
}
.toggle-btn{
padding: 10px 30px;
cursor: pointer;
background: transparent;
border: 0;
outline: none;
position: relative
}
#btn{
top: 0;
left: 0;
position: absolute;
width: 110px;
height: 100%;
background: linear-gradient(to right, #ff105f, #ffad06);
border-radius: 30px;
transition: .5s;
overflow: hidden;
}
.social-icons{
margin: 30px auto;
```

```
        text-align: center;
    }
    .social-icons img{
        width: 30px;
        margin: 0 12px;
        box-shadow: 0 0 20px 0 #7f7f7f3d;
        cursor: pointer;
        border-radius: 50%;

    }

    .input-group{
        top: 180px;
        position: absolute;
        width: 280px;
        transition: .5s;
    }

    .input-field{
        width: 100%;
        padding: 10px 0;
        margin: 5px 0;
        border-left: 0;
        border-top: 0;
        border-right: 0;
        border-bottom: 1px solid #999;
        outline: none;
        background: transparent;
    }

    .submit-btn{
        width: 85%;
        padding: 10px 30px;
        cursor: pointer;
        display: block;
```

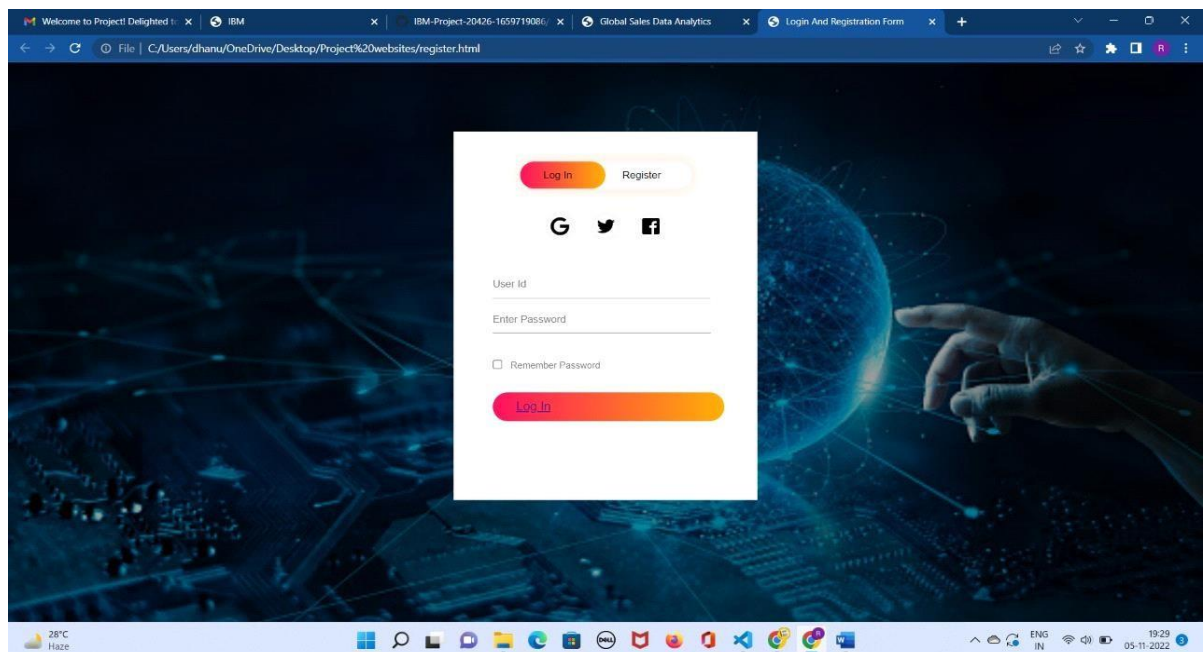
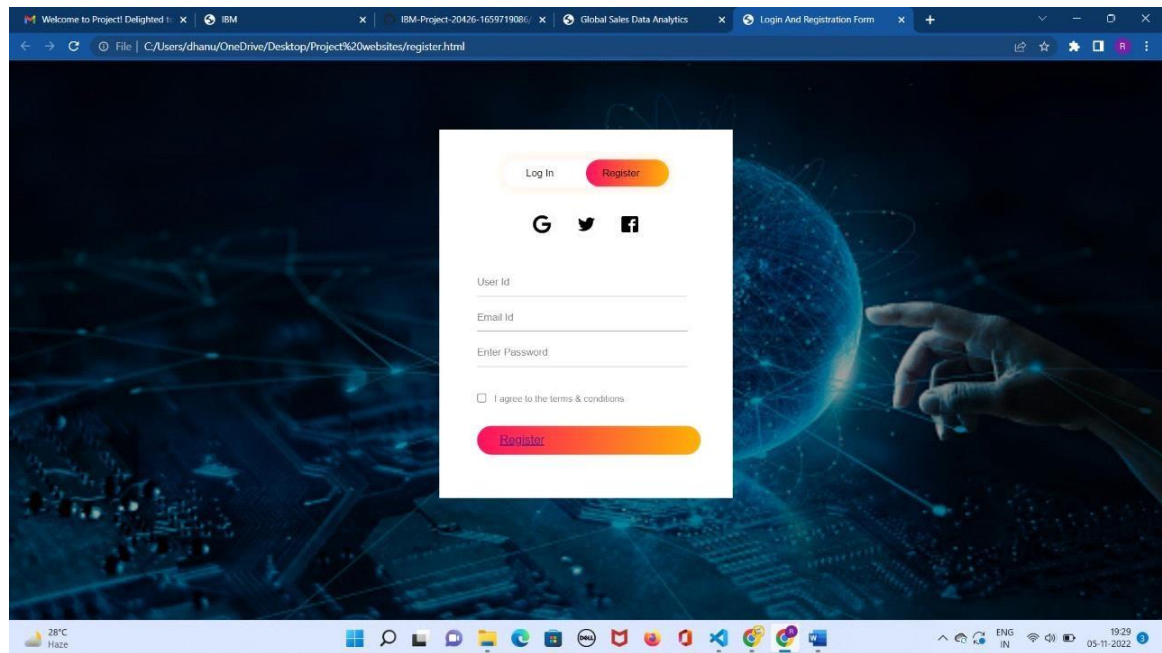
```
margin :auto;
background: linear-gradient(to right, #ff105f, #ffad06);
border: 0;
outline: none;
border-radius: 30px;
}
```

```
.chech-box{
    margin: 30px 10px 30px 0;
}
```

```
span{
    color: #777;
    font-size: 12px;
    bottom: 68px;
    position: absolute;
}
```

```
#login{
    left: 50px;
}
```

```
#register {
    left: 450px;
}
```



7.2 Feature 2

UNDERSTANDING TNE DATASET :

- Once we have download the [Dataset](#), the rows you see are the details of the order done online by people across the globe in the time frame 1-jan-2011 to 31-dec-2014. There are no missing values in the majority of columns except postal code, you can drop it if not required.

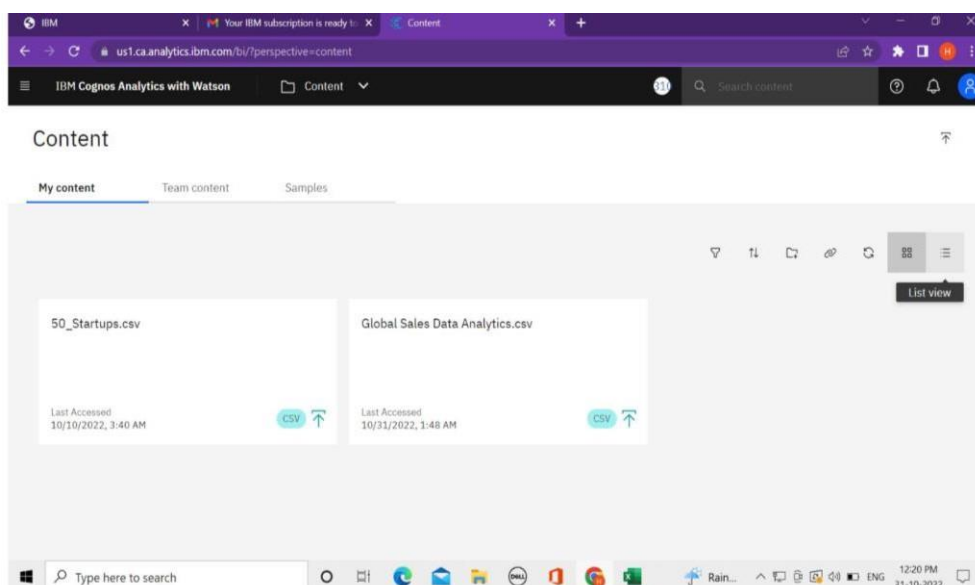
Global Sales Data Analytics - Excel

HomeInsertPage LayoutFormulasDataReviewViewHelpTell me what you want to do

Calibri11AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz[]_{}~`|'":;.,-*/<>=+&@#%\$'"'©®™© ©

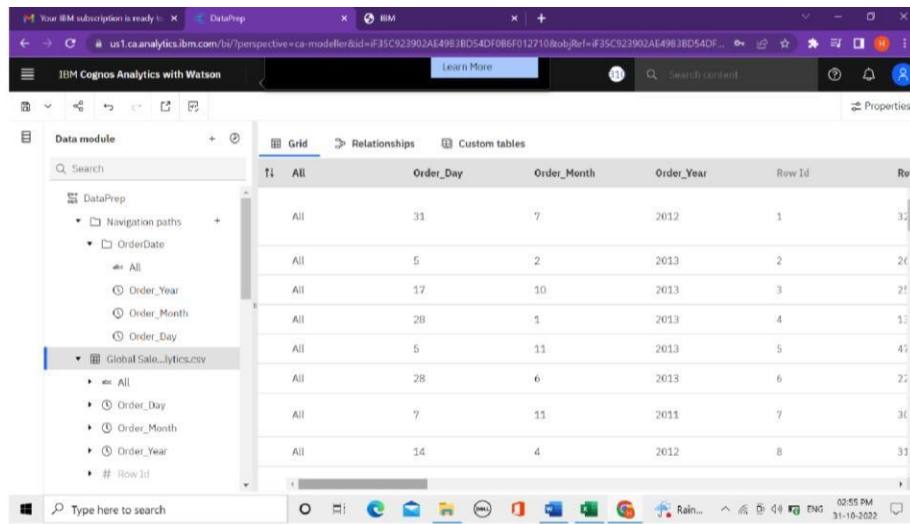
LOADING THE DATASET:

- ✓ Before we can build a view and analyze your data, we must first connect the data to IBM Cognos.
- ✓ Cognos supports connecting to a wide variety of data, stored in a variety of places.
- ✓ The data might be stored on your computer in a spreadsheet or a text file, or in a big data, relational, or cube (multidimensional) database on a server in your enterprise.
- ✓ In our case, we will be using a spreadsheet or text file for making our analysis.

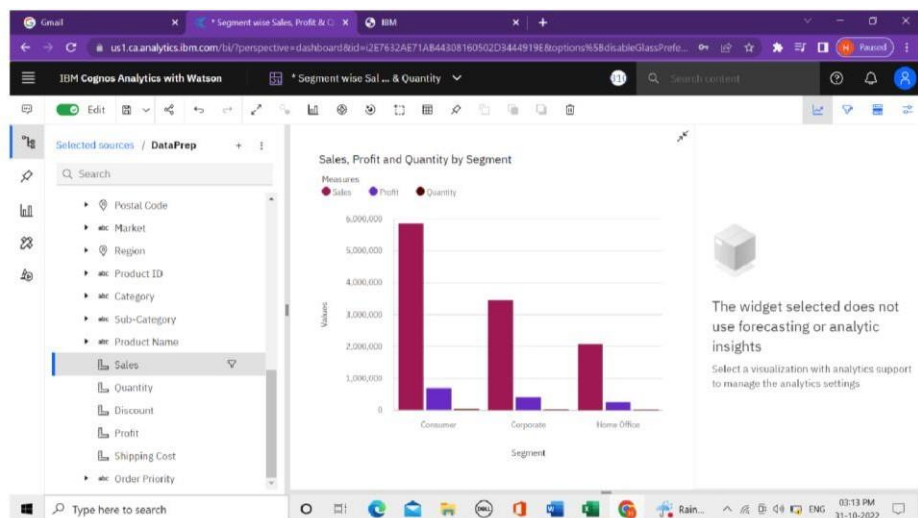


PREPARE THE DATASET :

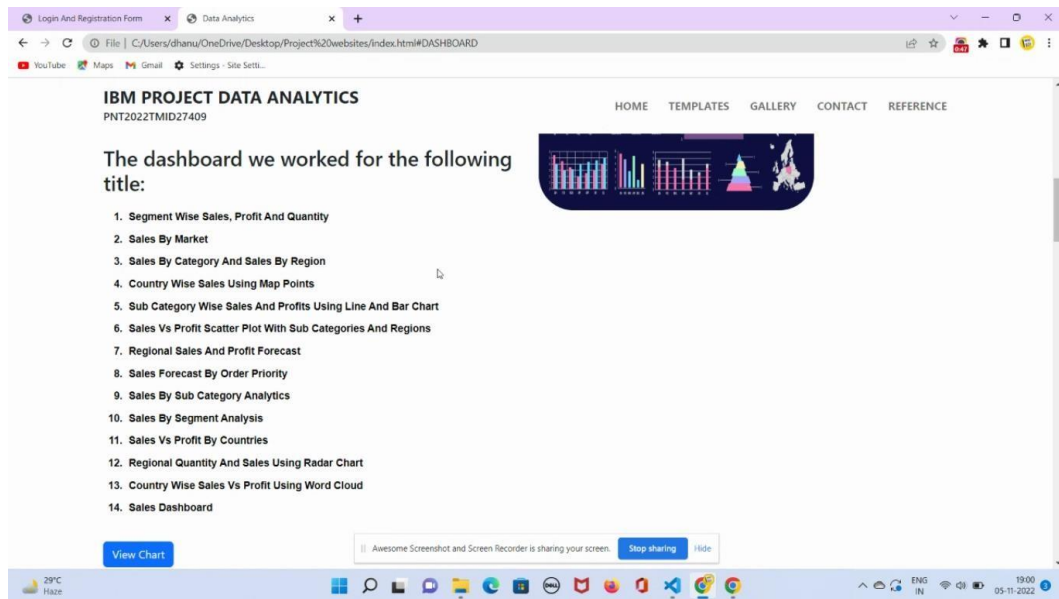
- ❖ Once we load the data, we need to Prepare the data.
- ❖ Prepare Calculations of Year, Month, Day fields and also the related Navigation path
Create a Few more Calculations – Target Sales, Min Sales, Max Sales, Middle Range Sales.



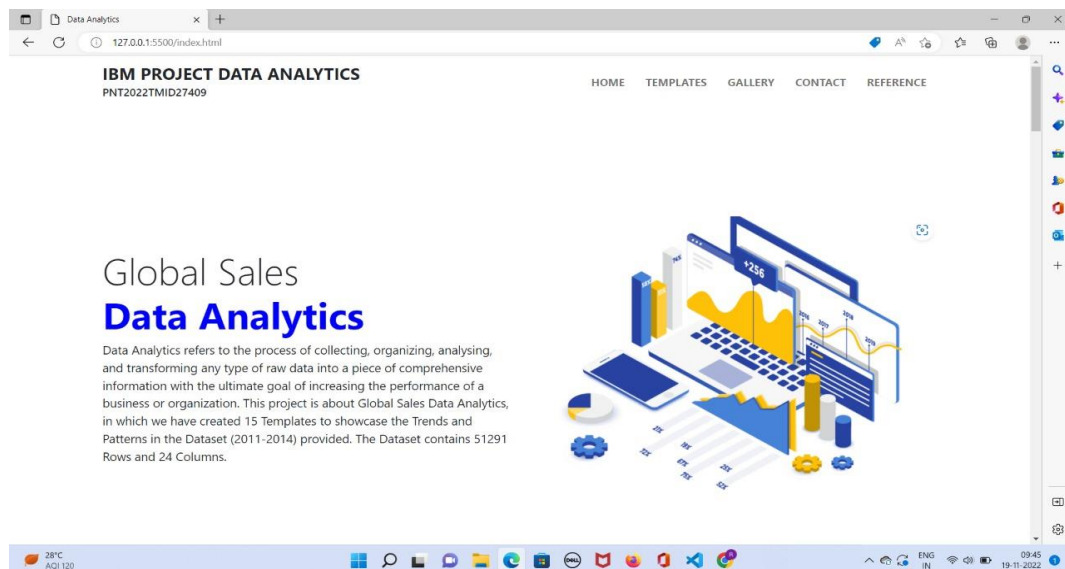
All	Order_Day	Order_Month	Order_Year	Row Id	Row
All	31	7	2012	1	32
All	5	2	2013	2	20
All	17	10	2013	3	21
All	28	1	2013	4	13
All	5	11	2013	5	47
All	28	6	2013	6	22
All	7	11	2011	7	36
All	14	4	2012	8	31

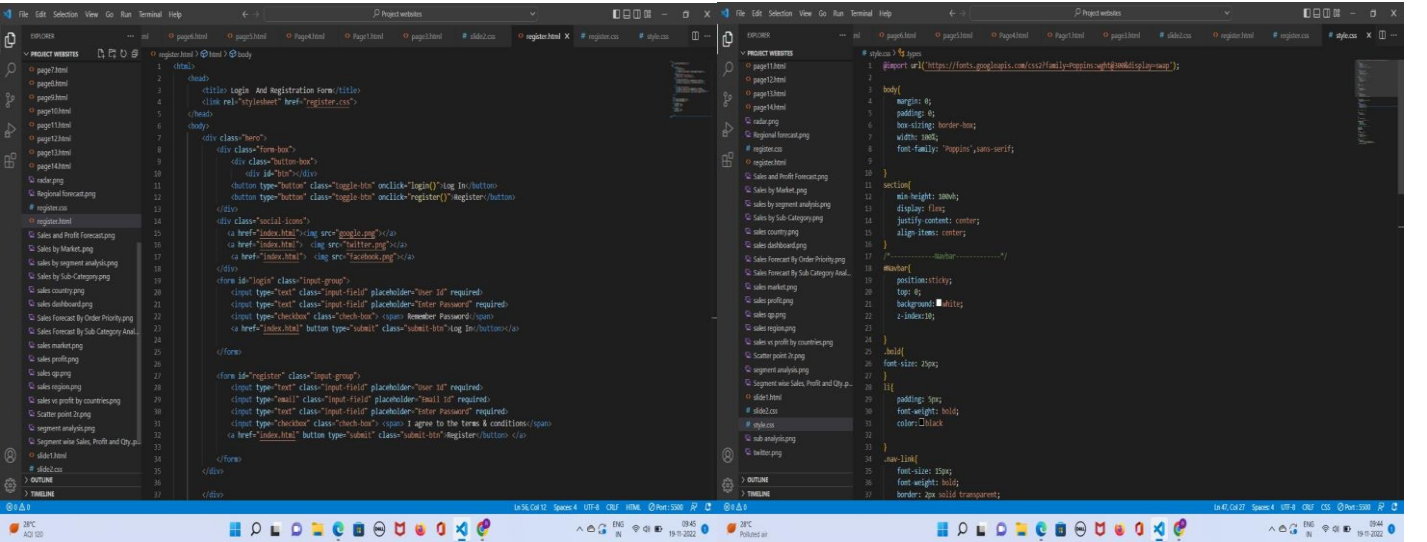
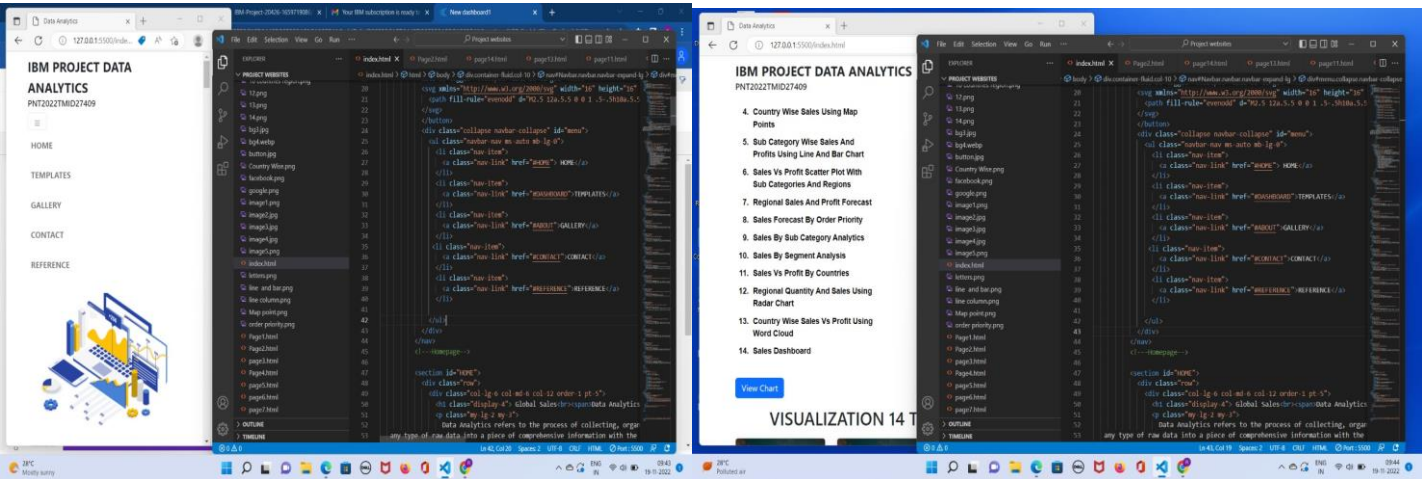
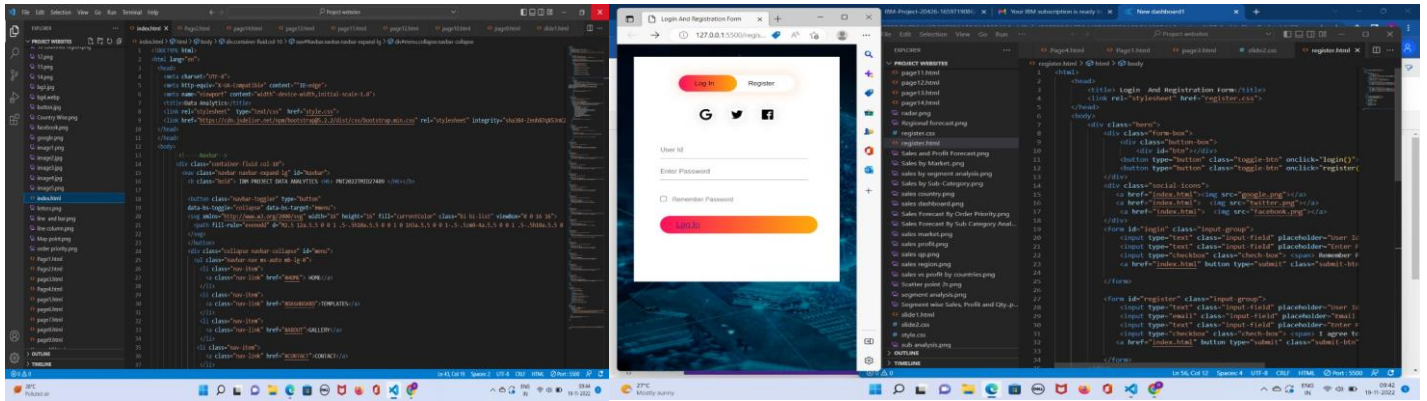


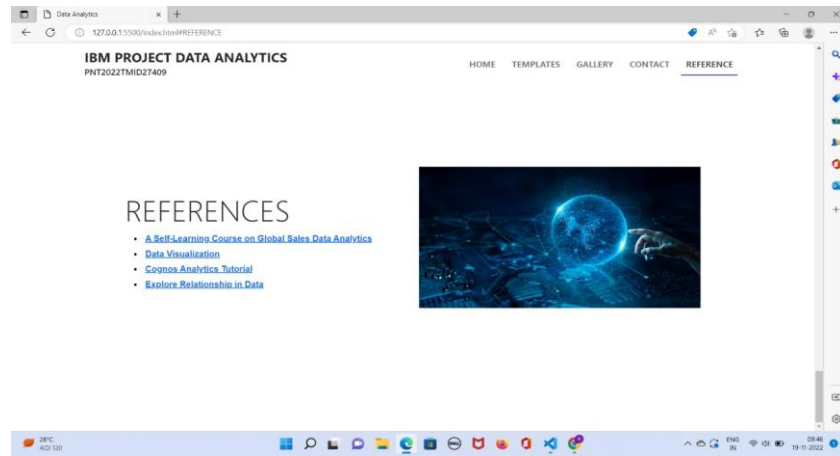
Dashboards



THE FINAL GLOBAL SALES DATA ANALYTICA WEB APPLICATION SCREEN SHOT WITH CODING STRUCTUR







- ✓ Coding is the assignment of labels or meaning to particular words when analyzing data, often assigned numerical scores as well.
- ✓ The above web page had created using HTML & CSS and etc.,
- ✓ The term "solution" implies that the proposed new product produces improved outcomes and successfully resolves the customer problem.
- ✓ Here the solutioning of the web application is to develop a dashboard by collecting data from customer's side and created a dashboard using some platforms like visualization tool, IBM Cloud and Cognos Analytics.

8. TESTING

8.1 Test Cases

Test case ID	Test Scenario	Steps To Execute	Expected Result	Status	Executed By
RegisterPage_TC_OO1	Authenticated user is able to see the Login/Register popup when they landed on Web Application	1.Enter URL and click go. 2.Verify login/register popup displayed or not	Login/Signup popup should display	Pass	Rajakumari
RegisterPage_TC_OO2	Verify the UI elements in Login/Register popup	1.Enter URL and click go 2.Verify login/Singup popup with below UI elements: a.email text box b.password text box c.Login button d.Register button e.Remember password checkbox	Application should show below UI elements: a.email text box b.password text box c.Login button with orange colour d.Register button e.Remember password	Pass	Kanchana Devi
LoginPage_TC_OO3	Verify user is able to log into application with InValid credentials	1.Enter URL (Global Sales Data Analytics Web Application) and click go 2.Enter InValid user id/email in Email text box 3.Enter valid password in password text box 4.Click on login button	User should navigate to the homepage	Fail	Hema-dharshini
LoginPage_TC_OO4	Verify user is able to log into application with Valid credentials	1.Enter URL (Global Sales Data Analytics Web Application) and click go 2.Enter Valid userid/email in Email text box 3.Enter valid password in password text box 4.Click on login button	Application should show 'Redirecting to the Homepage ' validation message.	Pass	Hema-dharshini

LoginPage _TC_OO5	Verify user is able to log into application with InValid credentials	1.Enter URL(Global Sales Data Analytics Web Application) and click go 2.Enter InValid username/email in Email text box 3.Enter Invalid password in password text box 4.Click on login button	Application should show 'Incorrect email or password ' validation message.	Pass	Rajakumari
LoginPage _TC_OO6	Verify user is able to log into application with InValid credentials	1.Enter URL(Global Sales Data Analytics Web Application) and click go 2.Enter InValid username/email in Email text box 3.Enter Invalid password in password text box 4.Click on login button	Application should show 'Incorrect email or password ' validation message.	Pass	Kanchana Devi

Test case gives detailed information about testing strategy, testing process, preconditions, and expected output. These are executed during the testing process to check whether the software application is performing the task for that it was developed or not.

8.2 User Acceptance Testing

User Acceptance Testing (UAT), also known as beta or end-user testing, is defined as testing the software by the user or client to determine whether it can be accepted or not.

Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the Global Sales Data Analytics project at the time of the release to User Acceptance Testing (UAT).

Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved.

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	7	2	0	0	9
Duplicate	0	0	0	0	0
External	0	0	0	0	0
Fixed	6	1	0	1	8
Not Reproduced	0	0	0	0	0
Skipped	0	0	1	0	1
Won't Fix	0	0	1	0	1
Totals	13	3	2	1	19

Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested.

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	6	0	0	6
Client Application	5	0	1	4
Security	4	0	0	4
Outsource Shipping	3	0	0	3
Exception Reporting	6	0	0	6
Final Report Output	4	0	0	4
Version Control	1	0	0	1

9. RESULTS

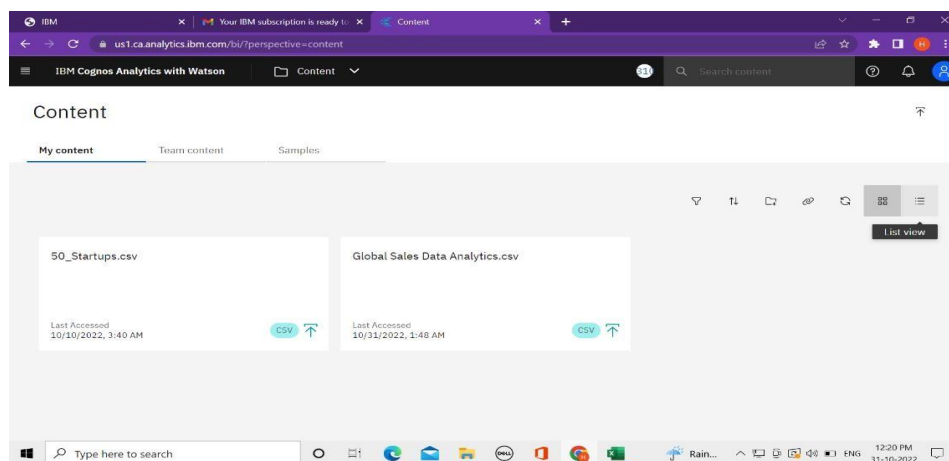
Once we have downloaded the respective GLOBAL SUPER STORE DATASET from Kaggle (<https://www.kaggle.com/apoorvaappz/global-super-store-dataset>), We have created a 18 Dashboard using visualization charts.

- ✓ We identify the key sales metrics needs, such as win rate and average deal size
- ✓ A visualization tool is used to track the data as leads travel through a dashboards.
- ✓ Finally we Record a data in visual dashboards from **GLOBL SUPER STORE DATASET**.
- ✓ Review the data regularly against historical averages to monitor growth and problem area.

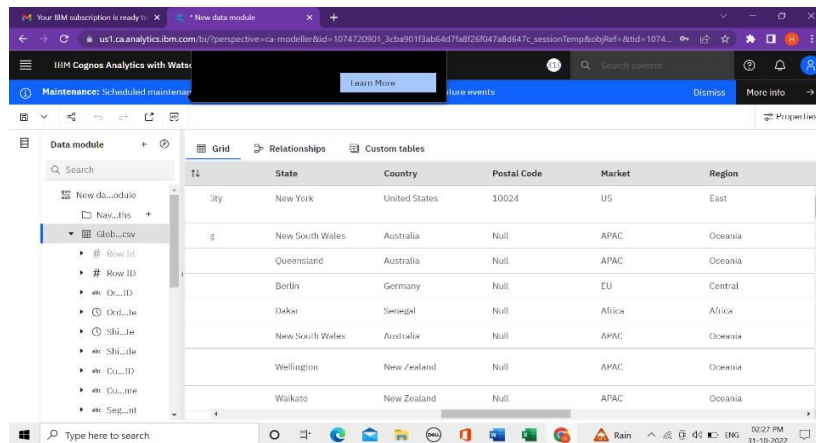
9.1 Performance Metrics

Sales metrics are **data points that measure and evaluate an individual, team or company's sales performance over a period of time**. In the big picture, sales metrics help an organization analyze the success of its sales initiatives, as well as identify areas that might need improvement.

1. Global Superstore Data is Uploaded to IBM Cognos Analytics Tool.



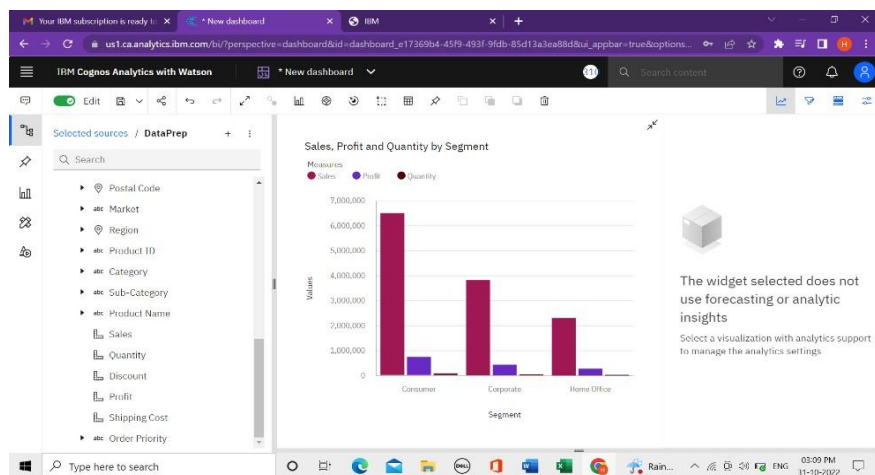
2. Global Superstore Dataset is Prepared by analysing the Columns & Rows



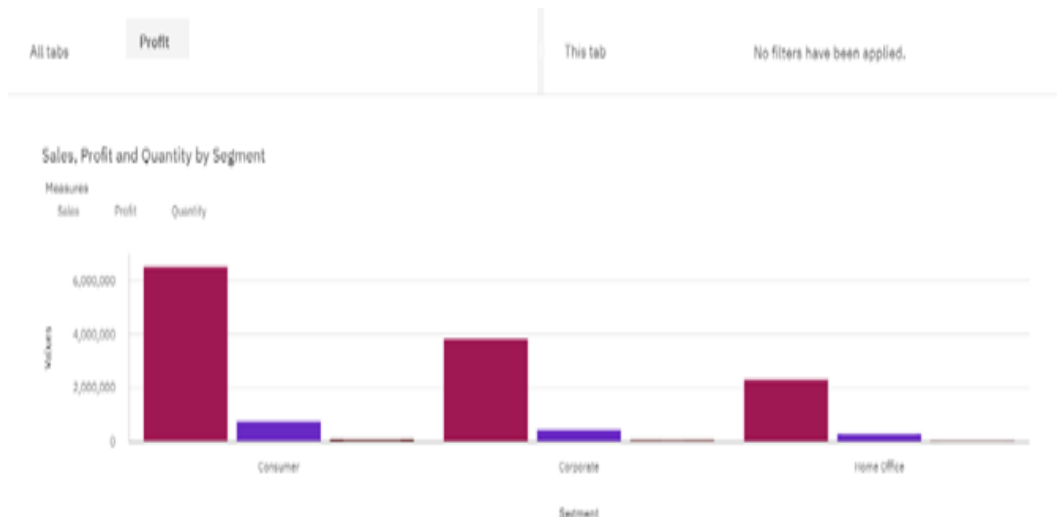
The screenshot shows the IBM Cognos Analytics interface. On the left, the 'Data module' pane lists various fields including Row ID, Col ID, Ord ID, Ship ID, Col ID, and Seg ID. The main area displays a table with the following columns: City, State, Country, Postal Code, Market, and Region. The table contains data for various locations including New York, New South Wales, Queensland, Berlin, Dakar, New South Wales, Wellington, and Waikato.

City	State	Country	Postal Code	Market	Region
New York	New York	United States	10024	US	East
New South Wales	New South Wales	Australia	Null	APAC	Oceania
Queensland	Queensland	Australia	Null	APAC	Oceania
Berlin	Berlin	Germany	Null	EU	Central
Dakar	Dakar	Senegal	Null	AFRICA	Africa
New South Wales	New South Wales	Australia	Null	APAC	Oceania
Wellington	Wellington	New Zealand	Null	APAC	Oceania
Waikato	Waikato	New Zealand	Null	APAC	Oceania

Date Calculations has done in the Dataset and Navigation path is shown.



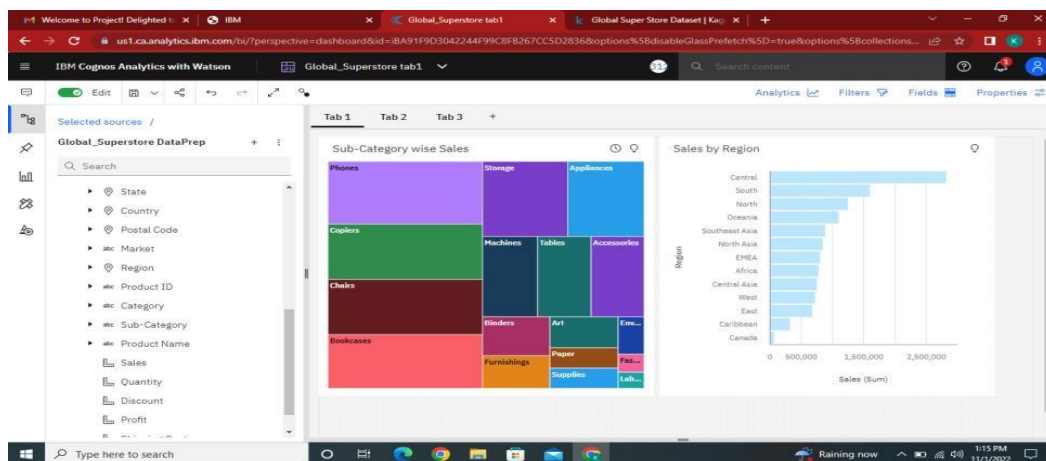
This Chart shows the Segment wise Sales, Profit and Quantity.



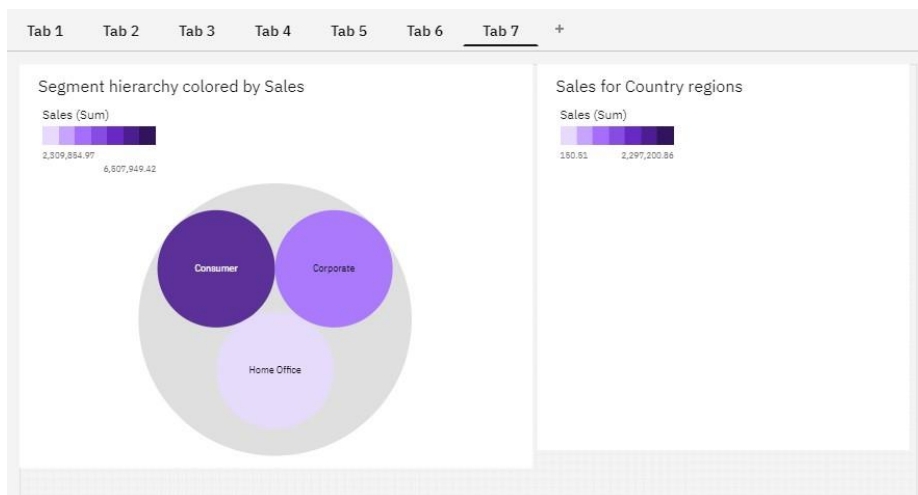
Pie Chart to showcase Sales by Order Priority and Sales by Market



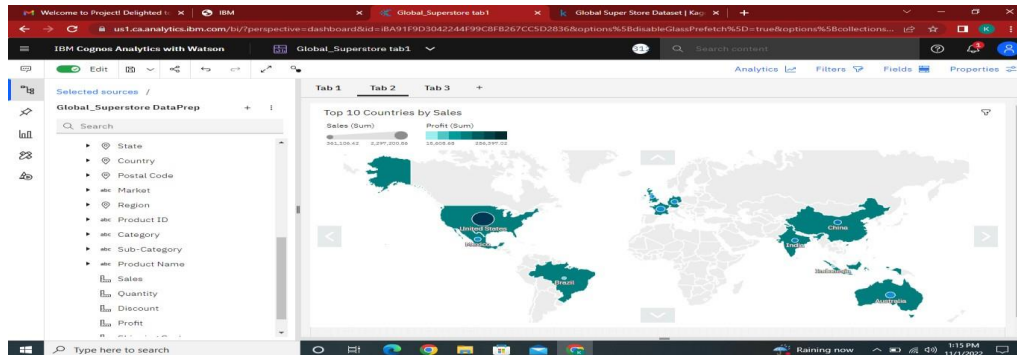
A Tree Map Chart to present Sales by Sub-Category.



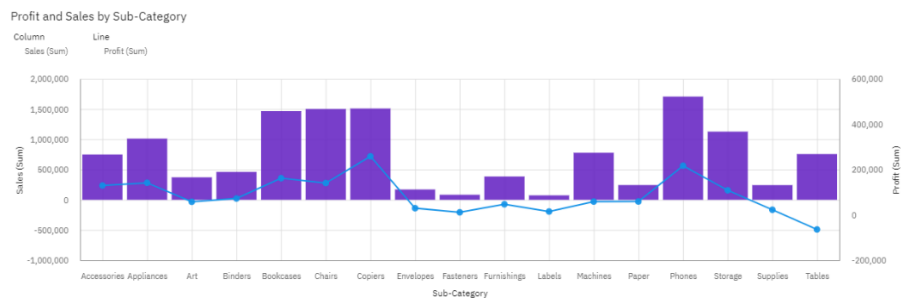
Using a Bubble chart to represent Sales by Region by the Sales Order.



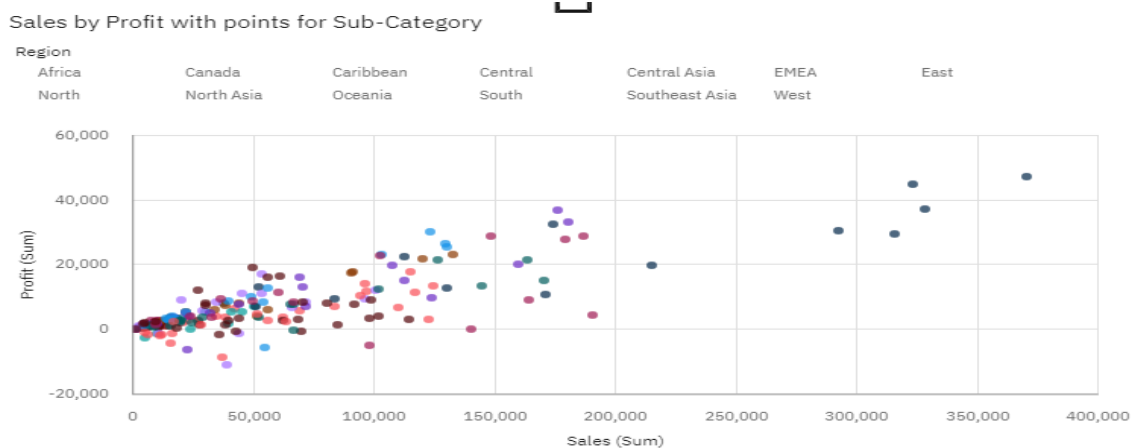
Present Regional Sales using Map Country points – This Template is showcasing Top 10 countries.



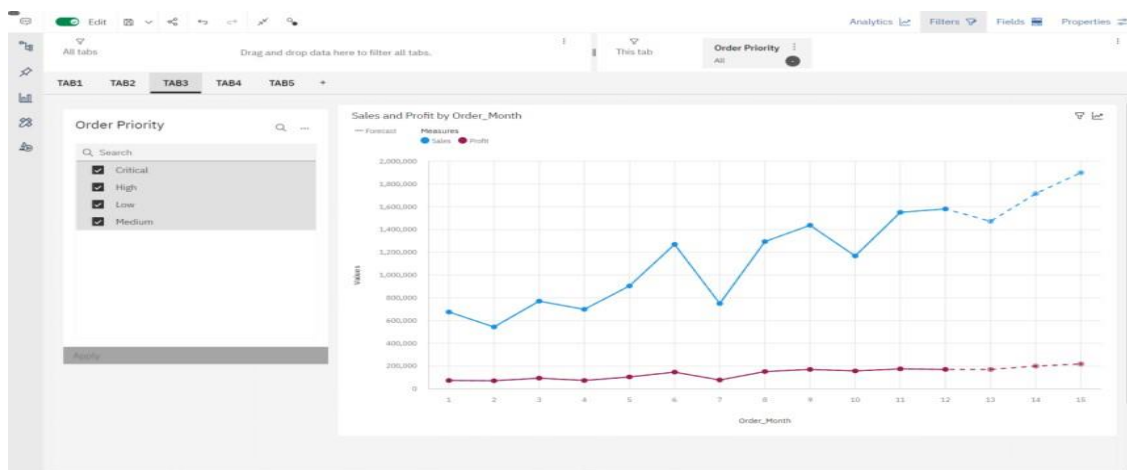
Present Sales (Bar), Profit (line) by Sub-Category using Line and Column Chart.



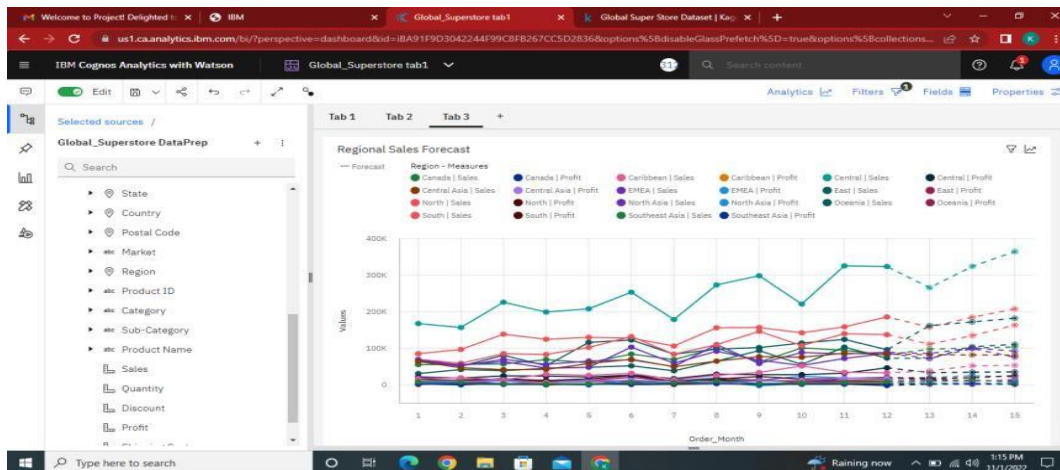
Sales vs Profit Scatter Plot with Sub-Category points and Region in Colour is shown.



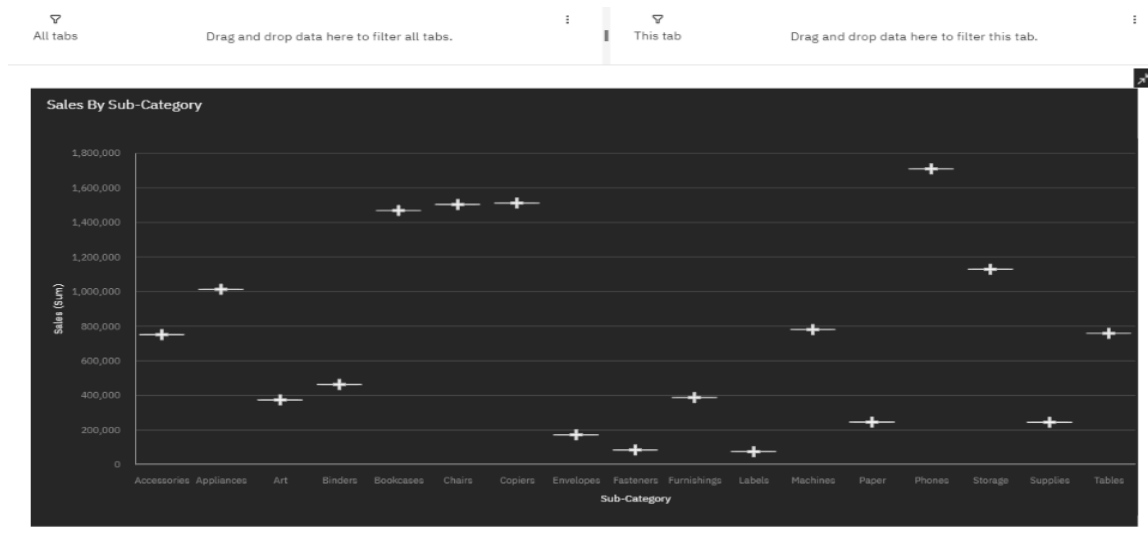
Sales and Profit Forecast by Month Country as Region and Region as Filter.



Sales vs Profit forecast by Month by Order Priority.

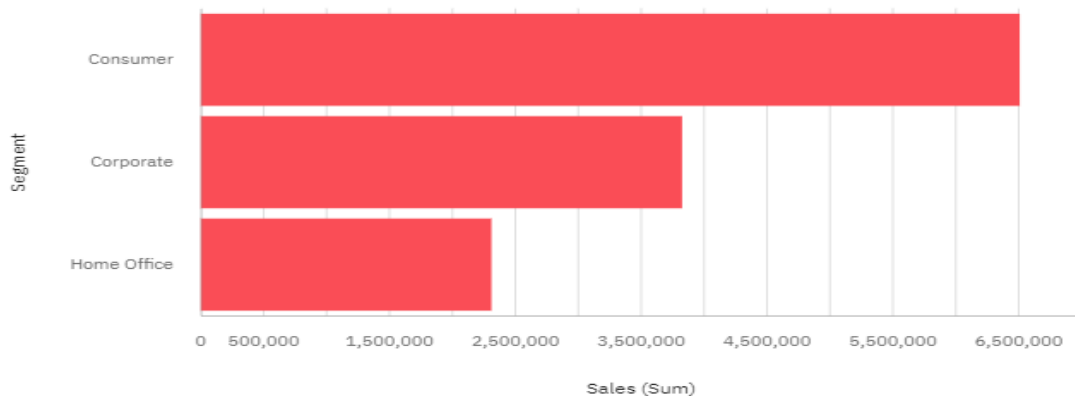


Show the Min, Max, and Avg Sales by Sub-Category using the Box plot.

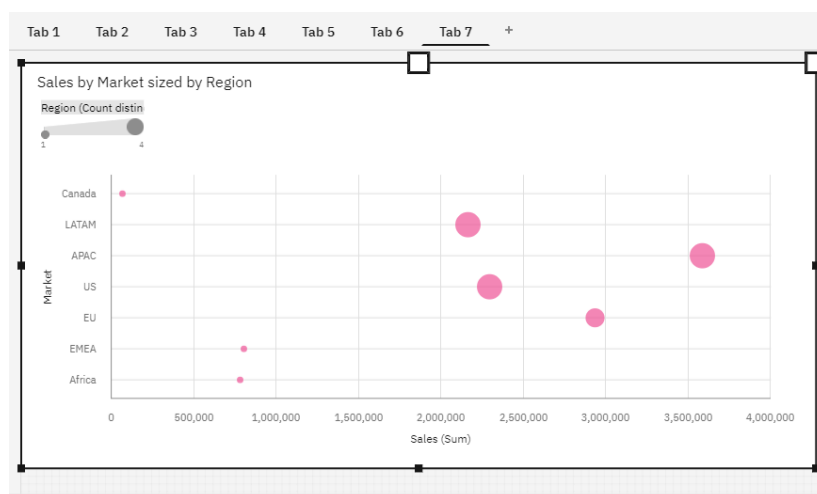


By setting a 10% extra Target for Sales Present Segment-wise Sales use Bullet Chart.

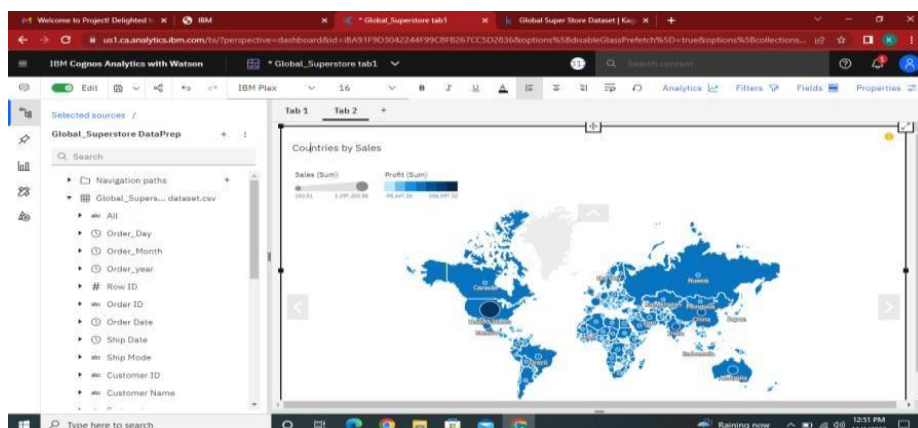
Sales by Segment



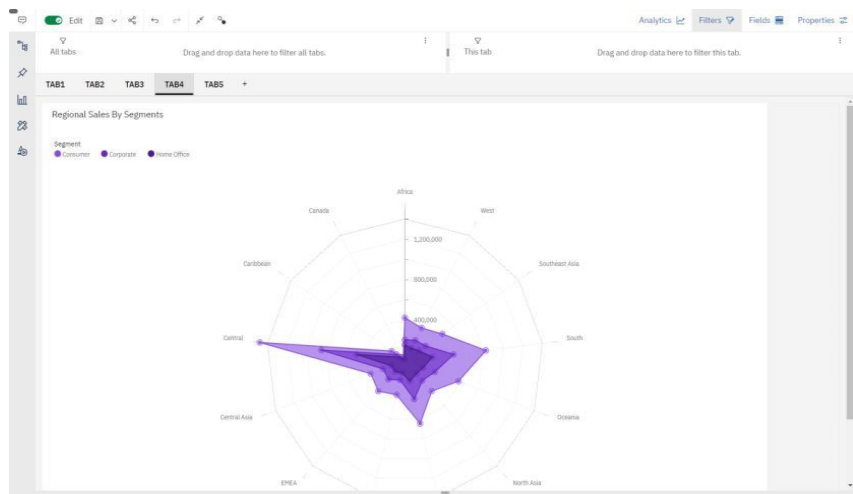
Present Sales using Hierarchy Bubbles by Market / Regio



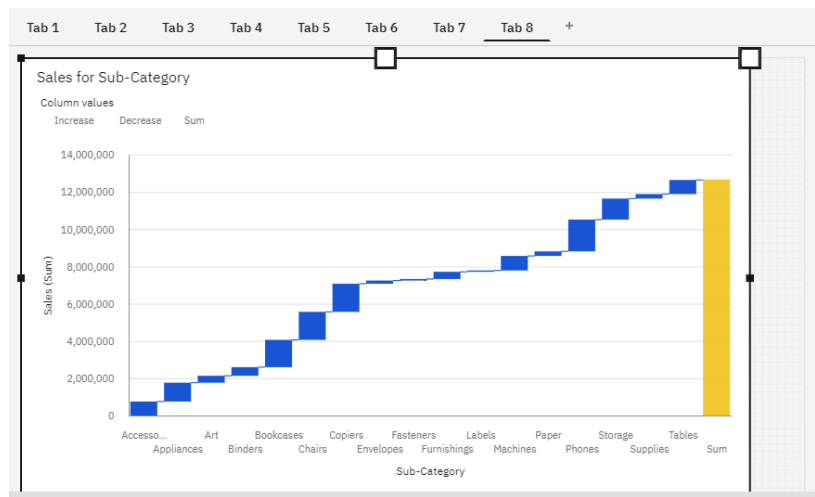
Using a Legacy Map Present Sales vs Profit by Country / Region.



Showcase Quantity Sold by Radar Chart across various Regions.



Present Monthly Sales by Sub-Category using Waterfall chart.



7



Region
Africa
East
West

Canada
North

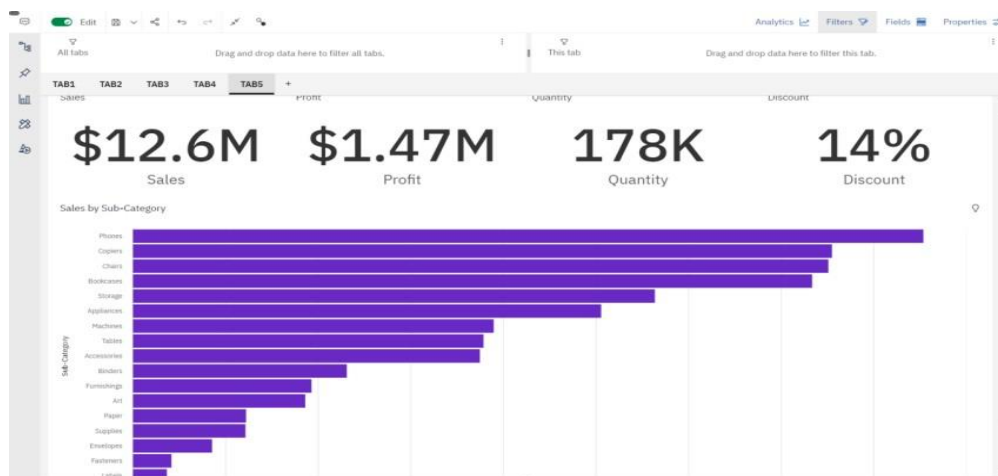
Caribbean
North Asia

Central
Oceania

Central Asia
South

EMEA
South

South-east Asia



10. ADVANTAGES & DISADVANTAGES

The data analytics involve various operations on the data sets or tables available in databases. The operations include data extraction, data profiling, data cleansing and data deduping etc. Data analytics tools and solutions are used in various industries such as banking, finance, insurance, telecom, healthcare, aerospace, retailers, social media companies etc.

Following are the Advantages of Data Analytics:

- ➡ It detects and correct the errors from data sets with the help of data cleansing. This helps in improving quality of data and consecutively benefits both customers and institutions such as banks, insurance and finance companies.
- ➡ It removes duplicate information from data sets and hence saves large amount of memory space. This decreases cost to the company.
- ➡ It helps in displaying relevant advertisements on the online shopping websites based on historic data and purchase behavior of the users. Machine learning algorithms are applied for the same. This helps in increasing revenue and productivity of the companies.
- ➡ It reduces banking risks by identifying probable fraudulent customers based on historic data analysis. This helps institutes in deciding whether to issue loan or credit cards to the applicants or not.



Following are the disadvantages of data Analytics:

- ➡ This may breach privacy of the customers as their information such as purchases, online transactions, subscriptions are visible to their parent companies. The companies may exchange these useful customer databases for their mutual benefits.
- ➡ The cost of data analytics tools vary based on applications and features supported. Moreover some of the data analytics tools are complex to use and require training. This increases cost to the company willing to adopt data analytics tools or software.
- ➡ The information obtained using data analytics can also be misused against group of people of certain country or community or caste.
- ➡ It is very difficult to select the right data analytics tools. This is due to the fact that it requires knowledge of the tools and their accuracy in analysing the relevant data as per applications.

**The privacy of our
customers'
information is
something that we
take very seriously.**

11. CONCLUSION

- ✓ Data analytics helps companies develop new products/services that will have better responses from customers and increase their sales revenue and profits by analysing customer preferences through surveys.
- ✓ This will help them create new products/services that will have a better response from customers and increase their sales revenue and profits.
- ✓ Thus, a Web Application which contains multiple Data Visualization Charts is created.
- ✓ Data visualization is the graphical representation of information and data in a pictorial or graphical format (Example: charts, graphs, and maps).
- ✓ Thus, this project provides an accessible way to see and understand trends, patterns in Global Superstore Data collected from 2011 to 2014 worldwide.

12. FUTURE SCOPE

➤ In Future or in need of the advancement of this Global Sales Data Analytics project, one can create more Visualization Dashboards by looking at the Dataset carefully.

✚ Hence, the Customer Analysis and Product Analysis is enhanced.

✚ Data analytics can be used in many ways. However, the main purpose of data analytics is to help companies make better business decisions and improve their overall performance. There are various ways in which data analytics can be used:

- ✓ Helps companies track past trends and patterns to predict future trends and patterns so that they do not miss out on opportunities for increased sales revenue or profits. For example, if a company wants to know if there is an increase in the sales of its products or services, it may use data analytics to analyze the past trends and patterns of its product/service sales on an annual basis to understand if there is any significant increase or decrease in sales revenue from previous years.
- ✓ Monitor social media activities to help them know how their customers are reacting before launching a new product or service which has a good response from customers. This will help them create new products/services that will have a better response from customers and increase their sales revenue and profits.
- ✓ Data analytics helps companies improve operations by analyzing past trends and patterns to predict future trends and patterns so that they do not miss out on opportunities for increased sales revenue or profits. For example, if a company wants to know if there is an increase in the sales of its products or services, it may use data analytics to analyze the past trends and patterns of its product/service sales on an annual basis to understand if there is any significant increase or decrease in sales revenue from previous years.
- ✓

13. APPENDIX

Source Code



Global Sales Data Analytics Web Application.zip

- The above zip file is our project **GLOBAL SALES DATA ANALYTICS WEB APPLICATION WEBSITE**.
- On opening this file, it will show the entire code of the web application and web page also.

GitHub & Project Demo Link

Below we have attached our GitHub and Final Demo Video Link

GitHub Link :-

(<https://github.com/IBM-EPBL/IBM-Project-20426-1659719086>)

Project Demo Link :-

(<https://drive.google.com/file/d/1oP6s7t3D8ezrlAIhYv8ncqWMd7-RgcV-/view?usp=sharing>)

