

## PROJECT REPORT

Team ID	PNT2022TMID18438
Project Name	Global Sales Data Analytics
Team Members	Neathra V S Nivetha G R Priya V Nandhini S

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## **1. INTRODUCTION**

### **1.1 Project Overview**

Shopping online is currently the need of the hour. Because of this COVID, it is 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. Global Sales covers all activities involved in selling a product or service to a consumer or business. It is important for sales and marketing teams to review their strategies and performance in order to make improvements. Understanding performance with sales data analytics helps sales and marketing teams to review their strategies and performance in order to make improvements. Sales analytics provides valuable information like Customer Analysis and Product Analysis to improve sales methodologies. Users create multiple analytical graphs/charts/Visualizations. One way to measure performance is with sales analytics.

### **1.2 Purpose**

Global Sales covers all activities involved in selling a product or service to a consumer or business. It is important for sales and marketing teams to review their strategies and performance in order to make improvements. One way to measure performance is with sales analytics. Sales data analytics refers to the use of technology to collect and use sales data to identify actionable insights. It is used to identify, optimize, and increase sales. An efficient sales model that generates higher revenue for the business.

## 2. LITERATURE SURVEY

Title & Author(s)	Year	Technique	Findings
Big Data Analytics and Deep Learning Based Sentiment Analysis System for Sales Prediction - Khatiwada, Aamod and Kadariya, Pradeep and Agrahari, Sandip and Dhakal, Rabin.	2019	Big and data analytics (BDA) combinations in e-commerce.	Merits: Used to understand complex datasets in a matter of time with beautiful visual representations.  Demerits: Lack of security since large data processed simultaneously
COVID-19 pandemic in the new era of big data analytics: Methodological innovations and future research directions - Sheng, Jie and Amankwah-Amoah, Joseph and Khan, Zaheer and Wang, Xiaojun	2021	Descriptive and diagnostic analytics, Predictive analytics	Merits: By comparing with machine learning models, we find that the proposed model is superior to others. Demerits: The experiment only considers the features of the product and does not consider external influences, such as the impact of regulations on sales. It uses only small dataset.
Sales Forecasting Based on CatBoost - Jingyi Ding, Ziqing Chen.	2020	CatBoost algorithm.	Merits: The search stops when no improvements over the current best solution have been found in 300 iterations.  Demerits: Dataset is limited

Developing and Implementing Big Data Analytics in Marketing - Dina Darwish	2020	Big data analytics, R tool.	Merits: The proposed method is based on similarity measurement without complex transformation so that forecast can be completed in a short time, and performs well on small
			scale data Demerits: The experiment only considers the features of the product and does not consider external influences, such as the impact of regulations on sales. It uses only small dataset.
Social media big data analytics for demand forecasting: development and case implementation of an innovative framework-Iftikhar, Rehan and Khan, Mohammad Saud	2020	Definitional aspects of big data analytics (BDA) in ecommerce	Merits: Captured linearity and non linearity better than ARIMA and ARNN gave the best result of 565 RMSE. Demerits: Hybrid Technique can fail if nonlinear model fails to capture residue patterns

## **2.1 Existing problem**

1. Lack of security since large data processed simultaneously
2. Hybrid Technique can fail if nonlinear model fails to capture residue patterns
3. The experiment only considers the features of the product and does not consider external influences, such as the impact of regulations on sales. It uses only small dataset.
4. Dataset is limited
5. The experiment only considers the features of the product and does not consider external influences, such as the impact of regulations on sales. It uses only small dataset.

## **2.2 References**

1. Big Data Analytics and Deep Learning Based Sentiment Analysis System for Sales Prediction - Khatiwada, Aamod and Kadariya, Pradeep and Agrahari, Sandip and Dhakal, Rabin.
2. COVID-19 pandemic in the new era of big data analytics: Methodological innovations and future research directions - Sheng, Jie and Amankwah-Amoah, Joseph and Khan, Zaheer and Wang, Xiaojun
3. Sales Forecasting Based on CatBoost - Jingyi Ding, Ziqing Chen.
4. 2020 2nd International Conference on Broadband Communications, Wireless Sensors and Powering (BCWSP)-Wisesa, Oryza and Adriansyah, Andi and Khalaf, Osamah Ibrahim.
5. Developing and Implementing Big Data Analytics in Marketing - Dina Darwish
6. Social media big data analytics for demand forecasting: development and case implementation of an innovative framework-Iftikhar, Rehan and Khan, Mohammad Saud

## **2.3 Problem Statement Definition**

1. Structured data focuses on demographic data including name, age, gender, date of birth, address, and preferences, unstructured data includes clicks, likes, links, tweets, voices, etc.
2. The methodological innovations in studying big data analytics and. We provide insights on methods in descriptive/diagnostic, predictive and prescriptive analytics, and how they can be leveraged to study 'black swan' events such as the COVID-19-related global crisis.
3. It proposed a sales forecasting system based on CatBoosting. The algorithm is trained on the Walmart sales dataset, by far the largest dataset in this field. We performed effective feature engineering to boost prediction accuracy and speed.
4. The results of this analysis are expected to generate reliable, accurate and effective forecasting data, a valuable resource for sales predictions. It shows good accuracy in forecasting.
5. Companies take informative business decisions in different fields, such as, health care, banking, manufacturing, media and entertainment, education and transportation and many others.
6. Social media big data offers insights that can be used to make predictions of products' future demand and add value to the supply chain performance

## **3. IDEATION & PROPOSED SOLUTION**

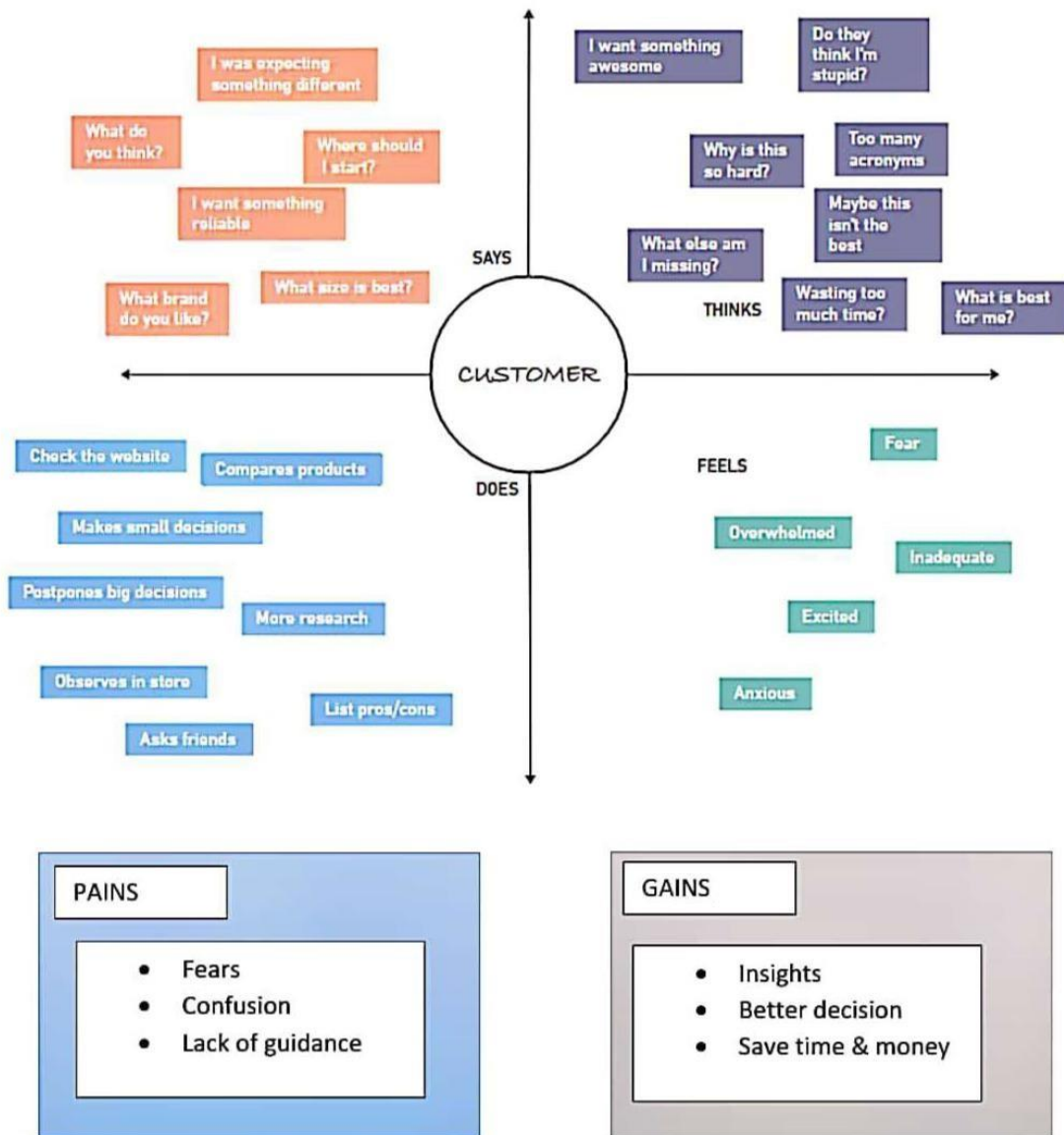
### **3.1 Empathy Map Canvas**

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviors and attitudes. It is a useful tool to help teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

# GLOBAL SALES DATA ANALYTICS

## EMPATHY DIAGRAM

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.





### 3.2 Ideation & Brainstorming

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

#### Step-1: Team Gathering, Collaboration and Select the Problem Statement

**Brainstorm & Idea prioritization**

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

1. 10 minutes to prepare  
2. 1 hour to brainstorm  
3. 10 people to participate

**Before you collaborate**

At the end of your session, you will have a list of ideas that you can use to solve your problem. Here is what you need to do to get the most out of your session.

1. **Team gathering:** Gather all team members in the same room or virtual space. Make sure you have a good connection to the internet.

2. **Set the goal:** Make sure the problem you are trying to solve is clear to everyone.

3. **Review team from the facilitator's perspective:** Be a facilitator for your team. Be a good listener and encourage everyone to share their ideas.

Check off the box when you have completed the step.

**Before you prioritize statement**

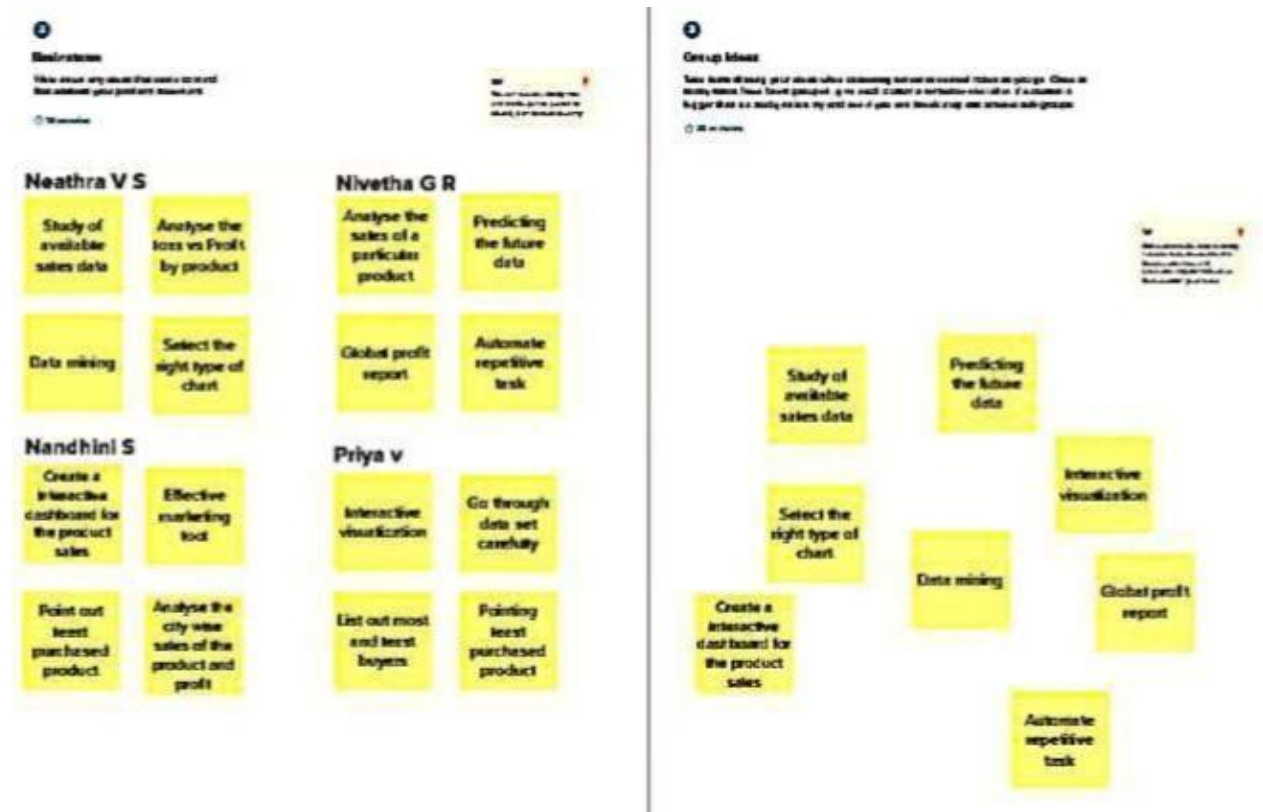
At the end of your session, you will have a list of ideas that you can use to solve your problem. Here is what you need to do to get the most out of your session.

1. **Problem statement:** Write down the problem you are trying to solve. Be as specific as possible.

2. **Key rules of brainstorming:** There are several rules that you should follow during your brainstorming session.

- 1. **Everyone's ideas are welcome:** No idea is too small or too big.
- 2. **Quantity over quality:** The more ideas you have, the better.
- 3. **No criticism:** No one should criticize or judge anyone's ideas.
- 4. **Build on others' ideas:** Try to improve on someone else's idea.
- 5. **Be creative:** Think outside the box.

## Step-2: Brainstorm, Idea Listing and Grouping



### Step-3: Idea Prioritization



### 3.3 Proposed Solution

S.No	Parameter	Description
1.	Problem Statement (Problem to be solved)	<ul style="list-style-type: none"><li>Decision makers of E-commerce companies(User) need a way to comprehend raw data, analyse and make more informed business decisions.</li><li>E-commerce companies(User) need a way to understand the shift in preferences of customers and the current trend, so that they can satisfy the customers.</li></ul>
2.	Idea/Solution description	A powerful and easy-to-use sales analytics tool that automates and visualizes sales trends to optimize business outcomes.
3.	Novelty/Uniqueness	<ul style="list-style-type: none"><li>Interactive Dashboard and simple UI</li><li>Dynamic and real time analytics</li><li>AI based predictions and forecasting</li></ul>
4.	Social Impact/Customer Satisfaction	<ul style="list-style-type: none"><li>Visible profiles driven by informed decisions</li><li>Optimize sales and marketing</li><li>Ability to react to competitor's strategies</li></ul>
5.	Business Model(Revenue Model)	Three tier pricing-Basics, Standards, Enterprise <ul style="list-style-type: none"><li>Basic : Limited features targeting startups and individuals</li><li>Standard : Limited premium features. Target customers- Medium Scale businesses.</li><li>Enterprise with all premium features targeted at Large corporations.</li></ul>
6.	Scalability of the Solution	<ul style="list-style-type: none"><li>More B2B customer services can be provided alongside</li><li>Usable by all customers facing companies and startups of all scale</li></ul>

### **3.4 Problem Solution Fit**

The problem solution fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem. It helps to identify behavioral patterns and recognize on sales.

**Purpose:**

- Solve complex problems in a way that fits the state of your customers.
- Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.
- Sharpen your communication and marketing strategy with the right triggers and messaging.
- Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.
- Understand the existing situation in order to improve it for your target group.

## Solution fit:

Problem-Solution Fit

Project Design Phase-I - Solution Fit Template

Team ID:PNT2022TMID18438

Define CS, fit into CC	<b>1. CUSTOMER SEGMENT(S)</b> <b>CS</b> <ul style="list-style-type: none"> <li>A Business owner who would like to understand more about his business performance in global scale.</li> <li>Sales Manager looking for smart sales strategies</li> </ul>	<b>6. CUSTOMER</b> <b>CC</b> <ul style="list-style-type: none"> <li>Difficult to place order within given time</li> <li>Need to check input file structure before uploading</li> </ul>	<b>5. AVAILABLE SOLUTIONS</b> <b>AS</b> <ul style="list-style-type: none"> <li>The competition perform analytics and display Dashboard with autogenerated insights.</li> <li>Spreadsheet tools like Excel, Google Sheets</li> </ul>	Explore AS, differentiate
	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <b>J&amp;P</b> <ul style="list-style-type: none"> <li>Unavailability of required products</li> <li>What analysis to perform to be useful and how to perform them?</li> </ul>	<b>9. PROBLEM ROOT CAUSE</b> <b>RC</b> <ul style="list-style-type: none"> <li>Customer satisfaction</li> <li>Expensive products are sometimes damaged</li> <li>People think that order of products may lead to high shipping cost.</li> </ul>	<b>7. BEHAVIOUR</b> <b>BE</b> <ul style="list-style-type: none"> <li>Patience until orders are placed.</li> <li>Collecting sales data and using office software to analyze it</li> </ul>	Focus on J&P, tap into BE, understand RC
Identify strong TR & EM	<b>3. TRIGGERS</b> <b>TR</b> <ul style="list-style-type: none"> <li>To increase the overall sales.</li> <li>To increase the overall profit over different countries</li> </ul>	<b>10. YOUR SOLUTION</b> <b>SL</b> <ul style="list-style-type: none"> <li>To reduce the price for shipping modes.</li> <li>To clear the damage &amp; transaction problems within 24 hours.</li> <li>To forecast sales of time to predict future sales across countries</li> </ul>	<b>8. CHANNELS of BEHAVIOUR</b> <b>CH</b> <b>8.1 ONLINE</b> Give information about the orders	Extract online & offline CH of BE
	<b>4. EMOTIONS: BEFORE / AFTER</b> <b>EM</b> BEFORE: Anxiety, Decision fatigue, Laziness AFTER: Clear mind, Peacefulness		<b>8.2 OFFLINE</b> Visit traditional stores or contact salesman for buying any product	

## 4. REQUIREMENT ANALYSIS

### 4.1 Functional Requirements

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Website Registration through Gmail
FR-2	User Confirmation	Confirmation via Email
FR-3	User Login	Login via Gmail and Password
FR-4	Generating Report	User can view the product details

#### 4.2 Non-functional Requirements

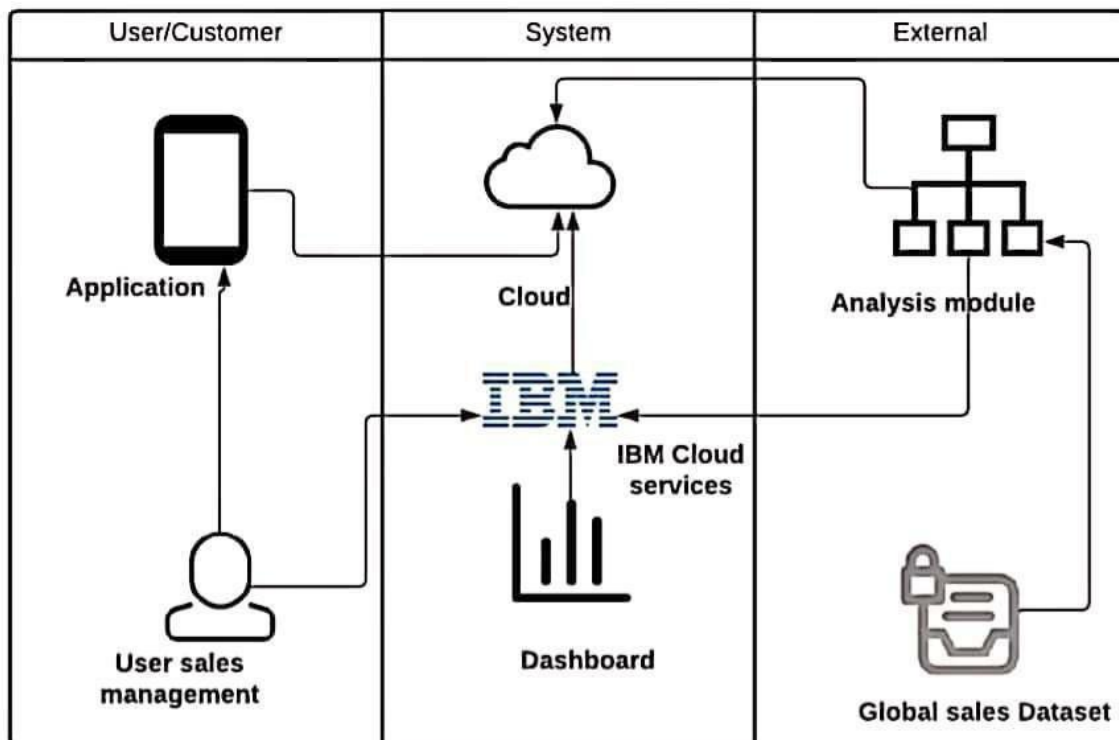
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	This service will have a simple and user-friendly graphical interface. Users will be able to understand all the features easily.
NFR-2	Security	The main security concern is for users' login information. End-to-end encryption should be used to avoid hacking.
NFR-3	Reliability	It has high reliability because when the system is disconnected or internet connection is lost, it should save all the process of the users made.
NFR-4	Performance	A good internet speed while browsing the product. It had high performance with efficiency.
NFR-5	Availability	It will be available 24 hours a day and seven days a week. User access anywhere at any time.
NFR-6	Scalability	A Many users can access the website simultaneously.



## 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.

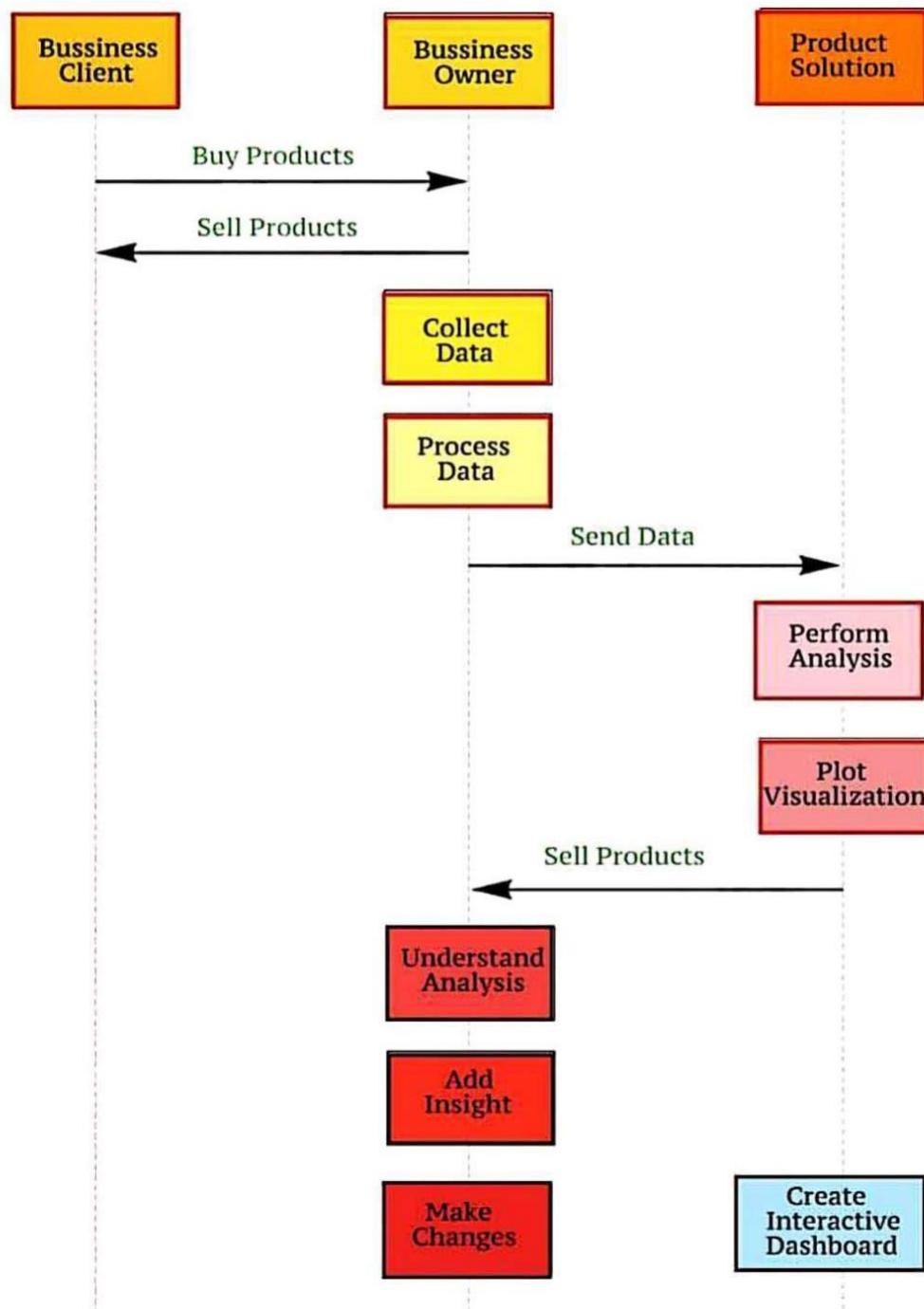


## **5.2 Solution & Technical Architecture**

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

**Solution Architecture Diagram:**



## 5.3 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
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-6	As a user, I can create the visualization by using the dashboard in the application		High	Sprint-3
Customer (Web user)	Login	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 and dashboard	High	Sprint-1
Customer Care Executive	Chat box	USN-1	It can be used by easily access and responsible	I can access by easily through application	High	Sprint-2
Administrator	Mail	USN-3	It can be used by easily access and responsible	I can access by easily through application	High	Sprint-1

## 6.PROJECT PLANNING & SCHEDULING

### 6.1 Sprint Planning & Estimation

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

Sprint	Functional Requirement (Epic)	User Story Number	User Story /Task	Story Points	Priority	Team Member
Sprint-1	Registration	UNS-1	Register in IBM Cognos and IBM cloud	3	High	Neathra V S , Nivetha G R
Sprint-1	Login	UNS-2	As a user, I can register for the website and can login.	2	High	Neathra V S , Nivetha G R

Sprint-1	Collecting Sample Dataset	UNS-3	Fetch Data from external API(Kaggle API)	3	High	Neathra V S , Nivetha G R
Sprint-2	DB2 service creation	USN – 4	To create data visualization make DB2 connectivity with cognos	3	High	Neathra V S , Nivetha G R
Sprint -2	Pre- processing and cleaning the dataset	USN – 5	As a data Analyst I should preprocess and clean the dataset if required	3	High	Neathra V S , Nivetha G R
Sprint -2	Create Data Module	USN -6	As a data Analyst I need to perform data preparation, data exploration using created data module	3	High	Neathra V S , Nivetha G R
Sprint -3	Create Dashboard	USN – 7	As a data Analyst I need to perform data visualization and create a dashboard using IBM cognos	3	High	Priya V,Nandhini S

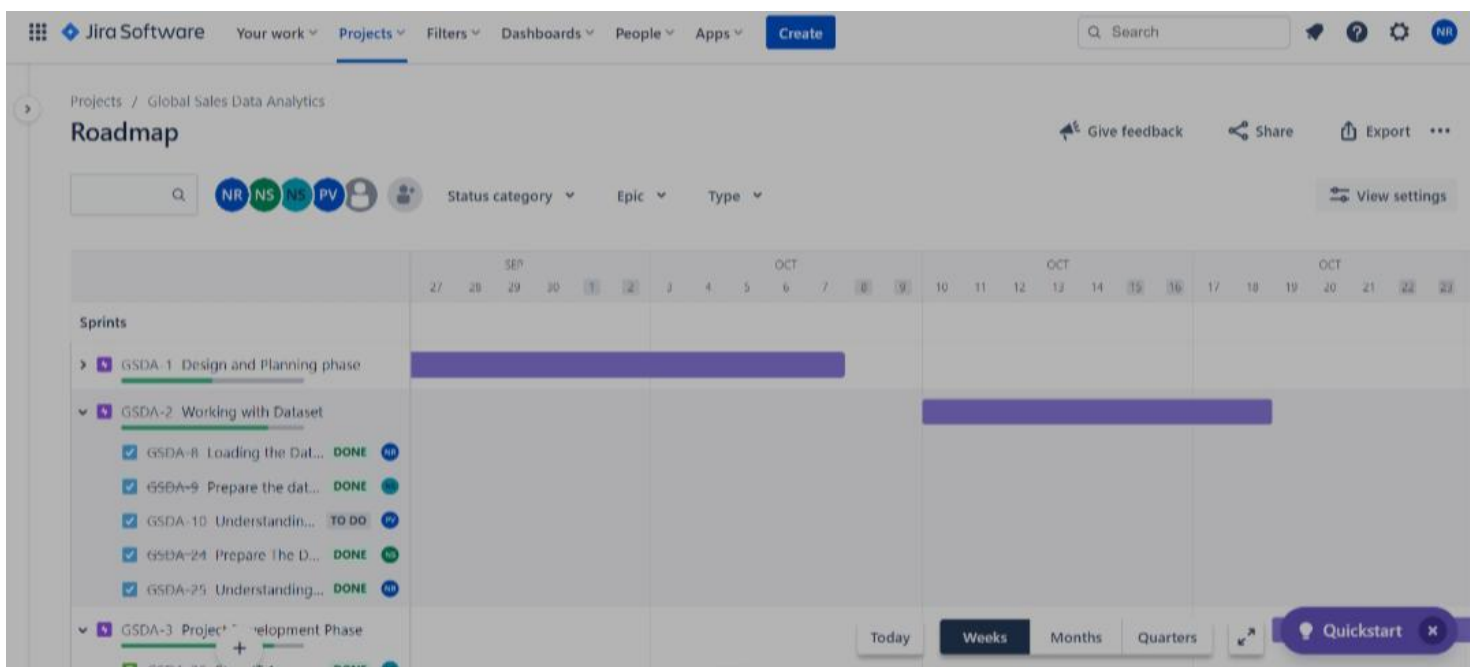
Sprint –3	Access Dashboard	USN – 8	As a user, I can access my Sales Data Analytics Dashboard	3	High	Priya V,Nandhini S
Sprint –4	Web Development	USN - 9	As a programmer I should create website for the user	1	High	Priya V,Nandhini S
Sprint - 4	Embed Dashboard into Website	USN - 10	As a programmer, I want to embed the dashboard to the website so the user can access the dashboard easily through website	3	High	Priya V,Nandhini S

## 6.2 Sprint Delivery Schedule

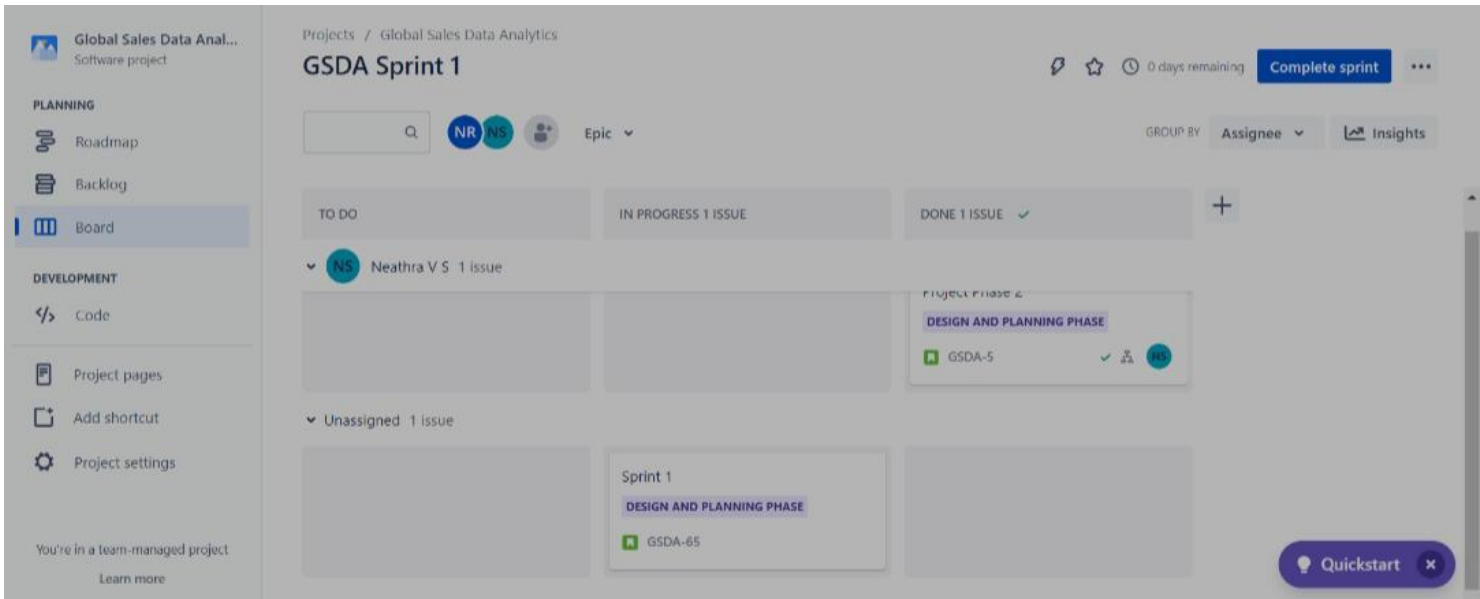
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	4	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	2	6 Days	30 Oct 2022	06 Nov 2022	20	06 Nov2022
Sprint-3	2	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov2022

## 6.3 Reports from Jira

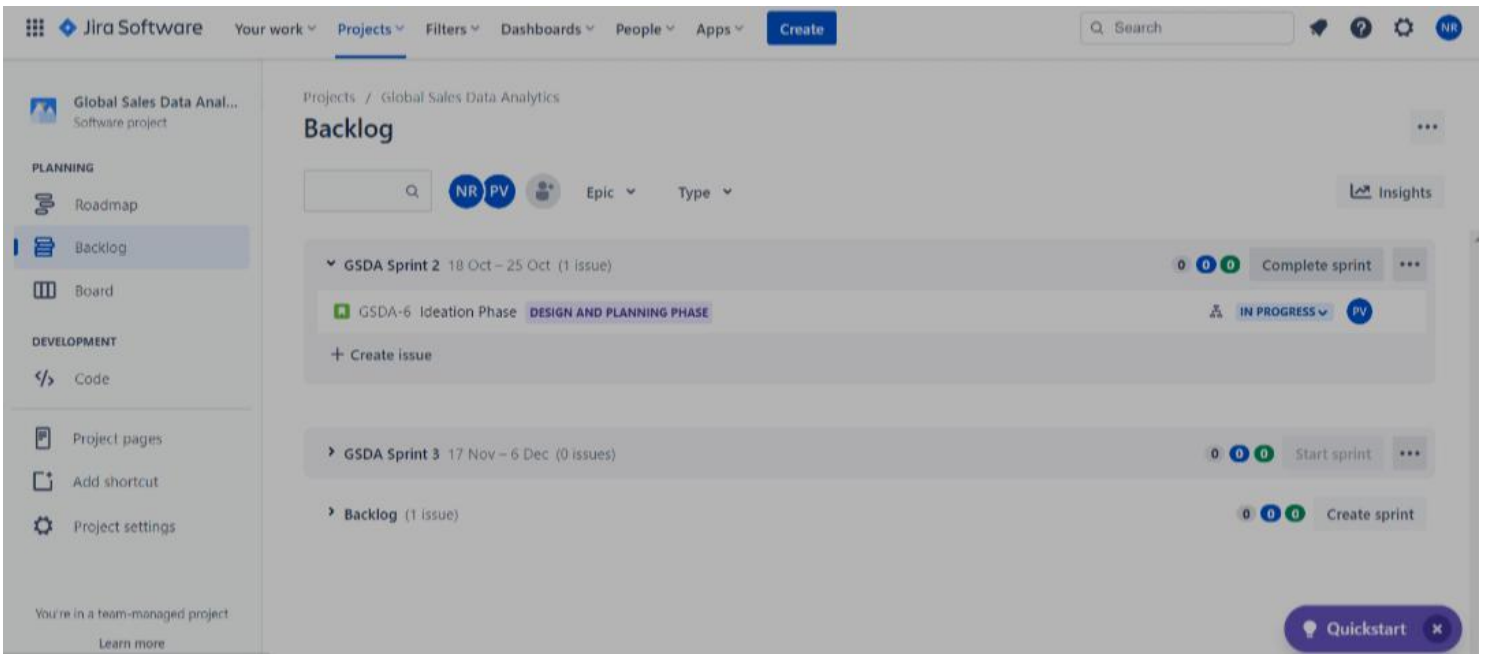
### ROADMAP



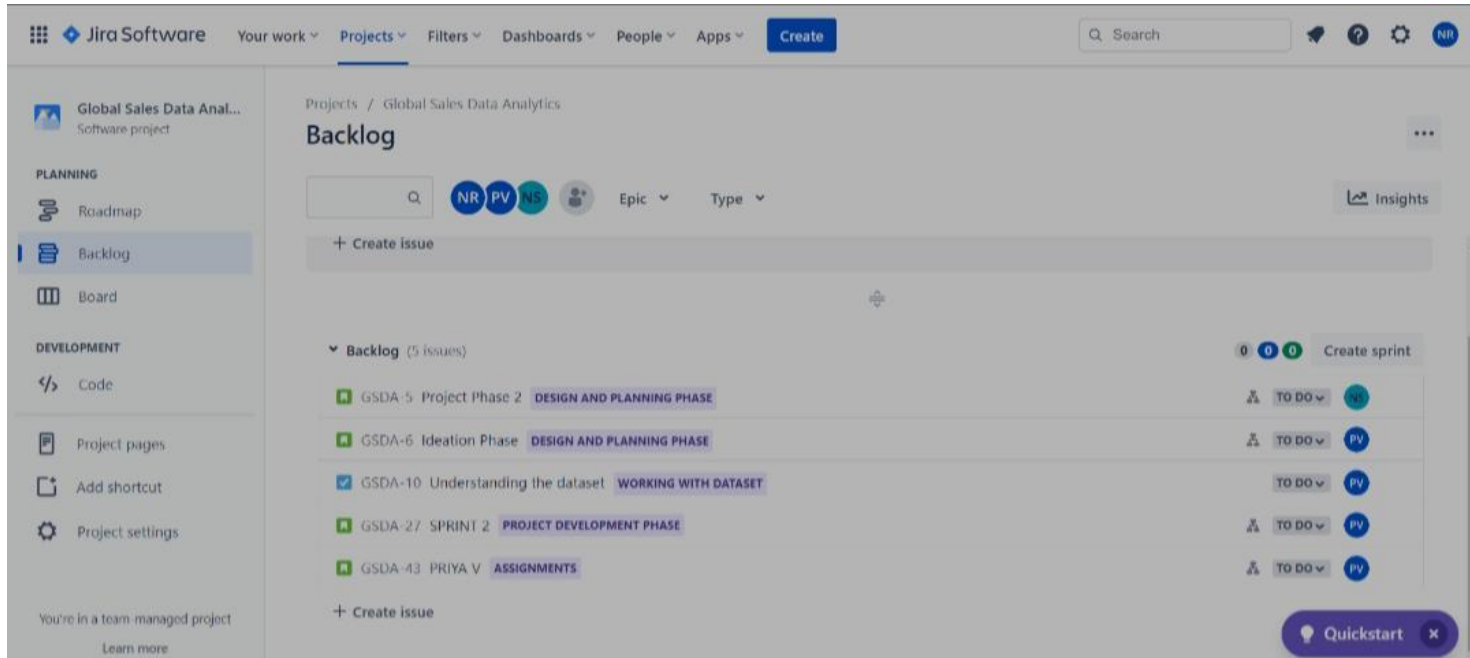
SPRINT ACTIVITY



SPRINT STATUS



## BACKLOG



## 7.CODING & SOLUTION

**Feature 1 - Embedding dashboard to web app:**

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<head>
```

```
  <meta charset="utf-8" />
```

```
  <meta name="viewport" content="width=device-width,
  initialscale=1, shrink-to-fit=no">
```



```

    <link rel="apple-touchicon" sizes="76x76"
href="../assets/img/apple-icon.png">

    <link rel="icon" type="image/png" href="../assets/img/favicon.p
ng">

    <title>

        Global Sales Data Analytics

    </title>

    <!--      Fonts and icons      7

    <link href=https://fonts.googleapis.com/css?family=Open+Sans:30
0,400,600,700 rel="stylesheet" />

    <!--Nucleo Icons 7

    <link href="../assets/css/nucleo-icons.css" rel="stylesheet" />

    <link href="../assets/css/nucleo-svg.css" rel="stylesheet" />

<!--Font Awesome Icons 7

    <script src=https://kit.fontawesome.com/42d5adcbca.js crossorigin
in="anonymous"></script>

    <link href="../assets/css/nucleo-svg.css" rel="stylesheet" />

    <!--CSS Files 7

    <link id="pagestyle" href="../assets/css/soft-
uidashboard.css?v=1.0.6" rel="stylesheet" />

</head>

<body class="g-sidenav-show bg-gray-100">

```

```

<aside class="sidenav navbar navbar-vertical navbar-expandxs
border-0 border-radius-xl my-3 fixed-start ms-3 "
id="sidenavmain">

```

```

<div class="sidenav-header">

```

```

<i class="fas fa-times p-3 cursor-pointer textsecondary
opacity-5 position-absolute end-0 top-0 d-none d-xlnone" aria-
hidden="true" id="iconSidenav"></i>

```

```

<a class="navbar-brand m-0" target="_blank">

```

```



```

```

<span class="ms-1 font-weightbold">Global
Sales Data Analytics</span>

```

```

</a>

```

```

</div>

```

```

<hr class="horizontal dark mt-0">

```

```

<div class="collapse navbar-collapse w-auto "
id="sidenavcollapse-main">

```

```

<ul class="navbar-nav">

```

```

<li class="nav-item">

```

```

<a class="navlink active"
href="../../../pages/dashboard.html">

```

```

<div class="icon icon-shape icon-sm shadow
borderradius-md bg-white text-center me-2 d-flex align-
itemscenter justify-content-center">

```

```

<svg width="12px" height="12px" viewBox="0 0 45 40"
version="1.1" xmlns=http://www.w3.org/2000/svg xmlns:xlink=http://

```

[/www.w3.org/1999/xlink](http://www.w3.org/1999/xlink)>

<title>shop </title>

<g stroke="none" strokewidth="1"  
fill="none" fill-rule="evenodd">

<g transform="translate(-1716.000000, -  
439.000000)" fill="#FFFFFF" fill-rule="nonzero">

<g transform="translate(1716.000000, 291.0000  
00)">

<g transform="translate(0.000000, 148.00000  
0)">

<path class="color-background opacity-  
6" d="M46.7199583,10.7414583 L40.8449583,0.949791667 C40.4909749,0  
.360605034 39.8540131,0 39.1666667,0 L7.83333333,0 C7.1459869,0 6.  
50902508,0.360605034 6.15504167,0.949791667 L0.280041667,10.741458  
3 C0.0969176761,11.0460037 -1.23209662e-05,11.3946378 1.23209662e-  
05,11.75 C-  
0.00758042603,16.0663731 3.48367543,19.5725301 7.80004167,19.58333  
33 L7.81570833,19.5833333 C9.75003686,19.5882688 11.6168794,18.872  
6691 13.0522917,17.5760417 C16.0171492,20.2556967 20.5292675,20.25  
56967 23.494125,17.5760417 C26.4604562,20.2616016 30.9794188,20.26  
16016 33.94575,17.5760417 C36.2421905,19.6477597 39.5441143,20.170  
8521 42.3684437,18.9103691 C45.1927731,17.649886 47.0084685,14.842  
8276 47.0000295,11.75 C47.0000295,11.3946378 46.9030823,11.0460037  
46.7199583,10.7414583 Z"></path>

<path class="colorbackground"  
d="M39.198,22.4912623 C37.3776246,22.4928106 35.581753  
1,22.0149171 33.951625,21.0951667 L33.92225,21.1107282 C31.1430221  
,22.6838032 27.9255001,22.9318916 24.9844167,21.7998837 C24.475038  
9,21.605469 23.9777983,21.3722567 23.4960833,21.1018359 L23.474541  
7,21.1129513 C20.6961809,22.6871153 17.4786145,22.9344611 14.53866  
67,21.7998837 C14.029926,21.6054643 13.533337,21.3722507 13.052291  
7,21.1018359 C11.4250962,22.0190609 9.63246555,22.4947009 7.815708  
33,22.4912623 C7.16510551,22.4842162 6.51607673,22.4173045 5.875,2

```
2.2911849 L5.875,44.7220845 C5.875,45.9498589 6.7517757,46.9451667
  7.83333333,46.9451667 L19.5833333,46.9451667 L19.5833333,33.60667
34 L27.4166667,33.6066734 L27.4166667,46.9451667 L39.1666667,46.94
51667 C40.2482243,46.9451667 41.125,45.9498589 41.125,44.7220845 L
41.125,22.2822926 C40.4887822,22.4116582 39.8442868,22.4815492 39.
198,22.4912623 Z"></path>
```

```
</g>
```

```
</g>
```

```
</g>
```

```
</g>
```

```
</svg>
```

```
</div>
```

```
<span class="nav-link-text ms-1">Dashboard</span>
```

```
</a>
```

```
</li>
```

```
<li class="nav-item">
```

```
<a class="nav-link " href="../pages/report.html">
```

```
<div class="icon icon-shape icon-sm shadow
borderradius-md bg-white text-center me-2 d-flex align-
itemscenter justify-content-center">
```

```
<svg width="12px" height="12px" viewBox="0 0 42 42"
version="1.1" xmlns=http://www.w3.org/2000/svg xmlns:xlink=http://www.w3.org/1999/xlink>
```

```
<title>office</title>
```

```

        <g stroke="none" strokewidth="1"
fill="none" fill-rule="evenodd">

        <g transform="translate(-1869.000000, -
293.000000)" fill="#FFFFFF" fill-rule="nonzero">

        <g transform="translate(1716.000000, 291.0000
00)">

        <g id="office" transform="translate(153.000
000, 2.000000)">

        <path class="color-background opacity-
6" d="M12.25,17.5 L8.75,17.5 L8.75,1.75 C8.75,0.78225 9.53225,0 10
.5,0 L31.5,0 C32.46775,0 33.25,0.78225 33.25,1.75 L33.25,12.25 L29
.75,12.25 L29.75,3.5 L12.25,3.5 L12.25,17.5 Z"></path>

        <path class="colorbackground"
d="M40.25,14 L24.5,14 C23.53225,14 22.75,14.78225 22.7 5,15.75
L22.75,38.5 L19.25,38.5 L19.25,22.75 C19.25,21.78225 18.46 775,21
17.5,21 L1.75,21 C0.78225,21 0,21.78225 0,22.75 L0,40.25 C0
,41.21775 0.78225,42 1.75,42 L40.25,42 C41.21775,42 42,41.21775 42
,40.25 L42,15.75 C42,14.78225 41.21775,14 40.25,14 Z M12.25,36.75
L7,36.75 L7,33.25 L12.25,33.25 L12.25,36.75 Z M12.25,29.75 L7,29.7
5 L7,26.25 L12.25,26.25 L12.25,29.75 Z M35,36.75 L29.75,36.75 L29.
75,33.25 L35,33.25 L35,36.75 Z M35,29.75 L29.75,29.75 L29.75,26.25
L35,26.25 L35,29.75 Z M35,22.75 L29.75,22.75 L29.75,19.25 L35,19.
25 L35,22.75 Z"></path>

        </g>

        </g>

        </g>

        </g>

</svg>

</div>

```

```

        <span class="nav-link-text ms-1">Report</span>

    </a>

</li>

<li class="nav-item">

    <a class="nav-link" href="../pages/story.html">

        <div class="icon icon-shape icon-sm shadow
borderterradius-md bg-white text-center me-2 d-flex align-
itemscenter justify-content-center">

            <svg width="12px" height="12px" viewBox="0 0 43 36"
version="1.1" xmlns=http://www.w3.org/2000/svg xmlns:xlink=http://
www.w3.org/1999/xlink>

                <title>credit-card</title>

                <g stroke="none" strokewidth="1"
fill="none" fill-rule="evenodd">

                    <g transform="translate(-2169.000000, -
745.000000)" fill="#FFFFFF" fill-rule="nonzero">

                        <g transform="translate(1716.000000, 291.0000
00)">

                            <g transform="translate(453.000000, 454.000
000)">

                                <path class="color-background opacity-
6" d="M43,10.7482083 L43,3.58333333 C43,1.60354167 41.3964583,0 39
.4166667,0 L3.58333333,0 C1.60354167,0 0,1.60354167 0,3.58333333 L
0,10.7482083 L43,10.7482083 Z"></path>

                                <path class="colorbackground"
d="M0,16.125 L0,32.25 C0,34.2297917 1.60354167,35.8333 33
3.58333333,35.8333333 L39.4166667,35.8333333 C41.3964583,35.83

```

```
33333 43,34.2297917 43,32.25 L43,16.125 L0,16.125 Z M19.7083333,26
.875 L7.16666667,26.875 L7.16666667,23.2916667 L19.7083333,23.2916
667 L19.7083333,26.875 Z M35.8333333,26.875 L28.6666667,26.875 L28
.6666667,23.2916667 L35.8333333,23.2916667 L35.8333333,26.875 Z"><
/path>
```

```
</g>
```

```
</g>
```

```
</g>
```

```
</g>
```

```
</svg>
```

```
</div>
```

```
<span class="nav-link-text ms-1">Story</span>
```

```
</a>
```

```
</aside>
```

```
<main class="main-content position-relative max-height-vh-
100 h-100 border-radius-lg ">
```

```
<!--Navbar 7
```

```
<nav class="navbar navbar-main navbar-expand-lg px-0 mx4
shadow-none border-radius-xl" id="navbarBlur"
navbarscroll="true">
```

```

<div class="container-fluid py-1 px-3">

  <nav aria-label="breadcrumb">

    <ol class="breadcrumb bg-transparent mb-0 pb-0 pt-1 px-
0 me-sm-6 me-5">

      </ol>

      <h6 class="font-weight-bolder mb-
0">Sales Dashboard</h6>

    </nav>

    <div class="collapse navbar-collapse mt-sm-0 mt-2 me-md-
0 me-sm-4" id="navbar">

      <div class="ms-md-auto pe-md-3 d-flex align-
itemscenter">

        </div>

        <ul class="navbar-nav justify-content-end">

          </ul>

```



</div>

</div>

</nav>

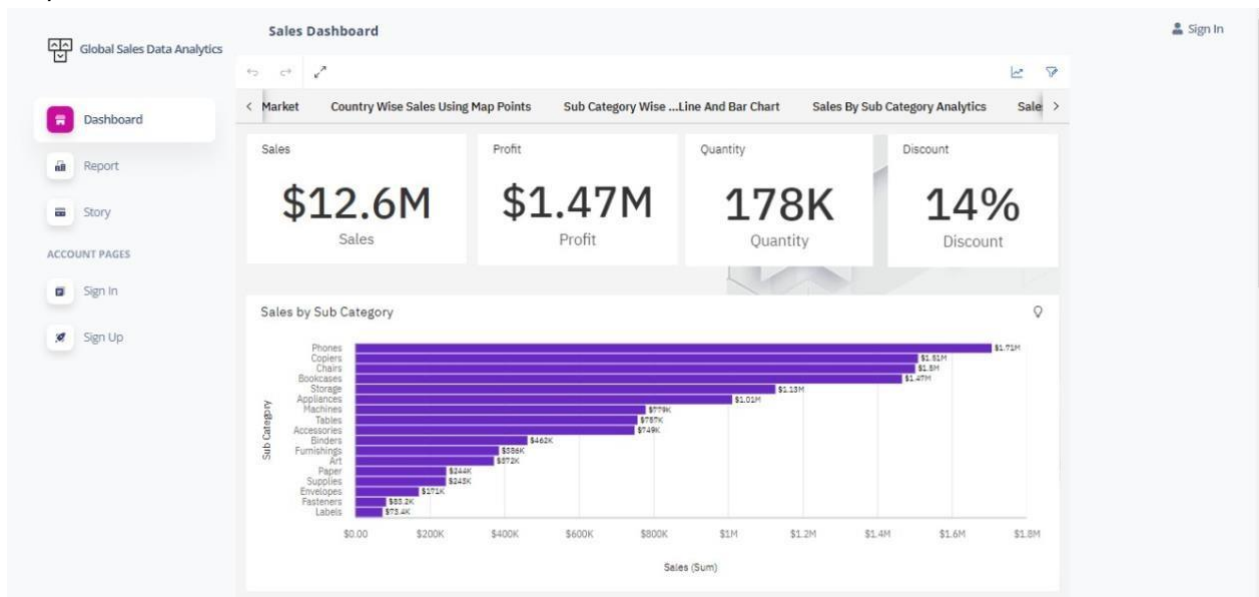
<!--End Navbar 7

<iframe src=[https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my\\_folders%2FData%2BModule%2FSales%2BDashboard&closeWindowOnLastView=true&ui\\_appbar=false&ui\\_navbar=false&shareMode=embedded&action=view&mode=dashboard&subView=model00000184806a4cce\\_00000000](https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FData%2BModule%2FSales%2BDashboard&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=view&mode=dashboard&subView=model00000184806a4cce_00000000) width="1000" height="1500" frameborder="0" gesture="media" allow="encryptedmedia" allowfullscreen=""></iframe>

<!--End Toggle Button 7

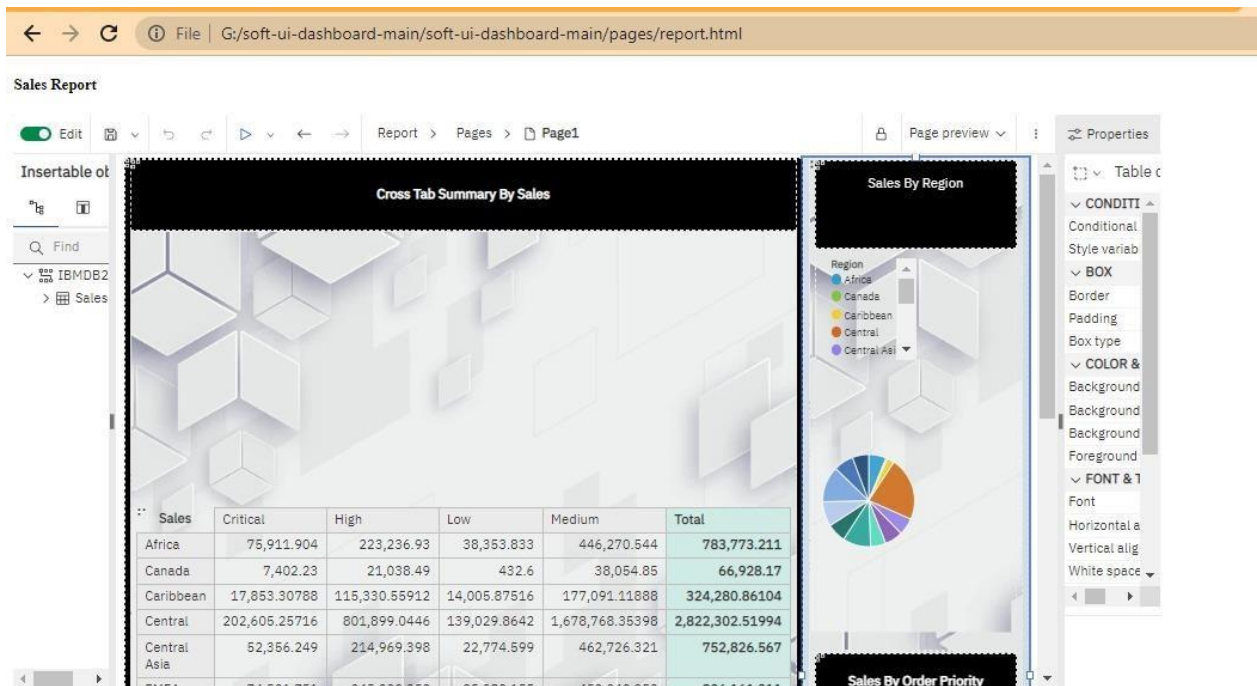
</body>

</html>



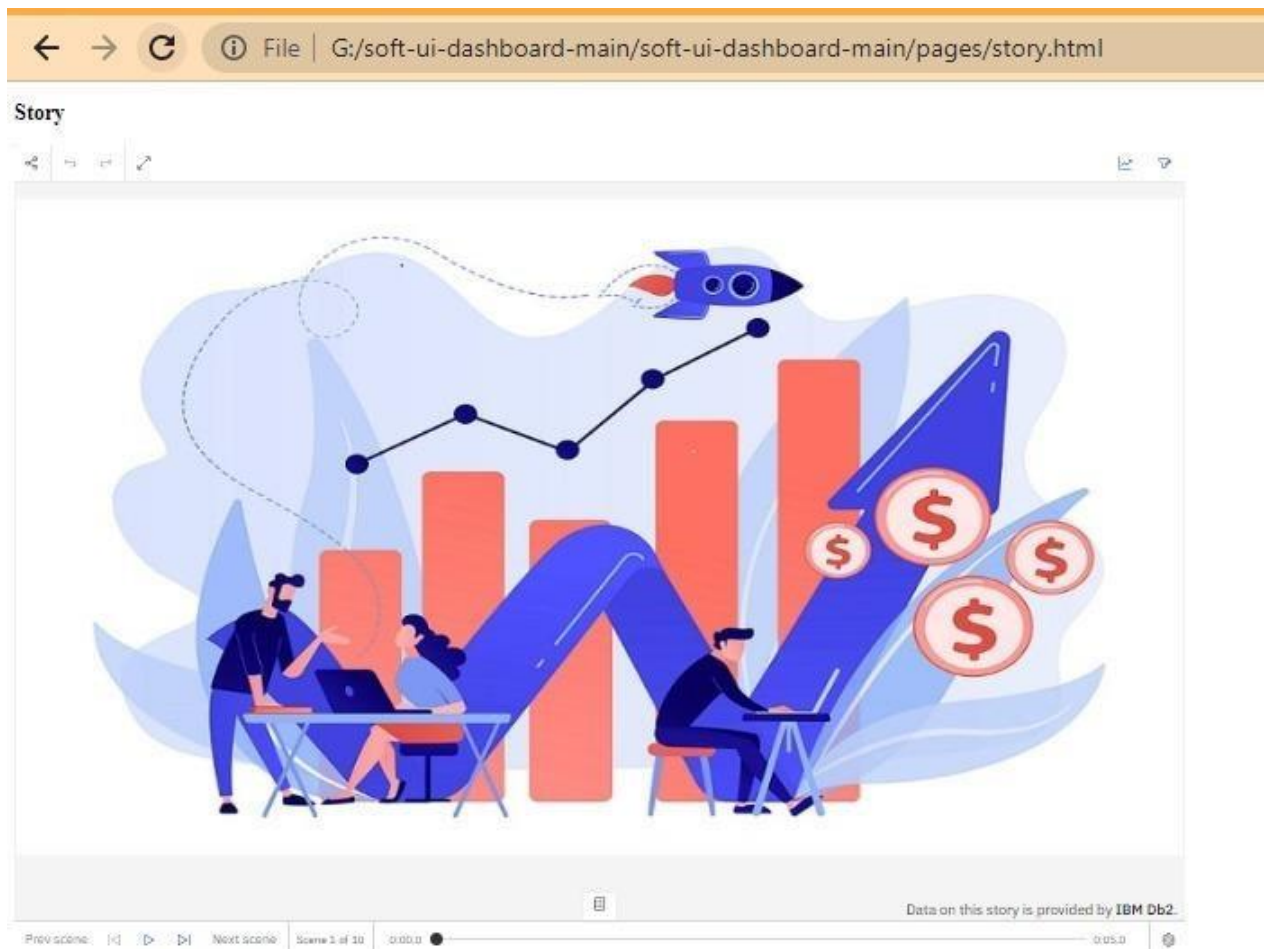
## Feature 2 - Embedding report to web app:

```
<iframe
src=https://us3.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FData%2BModule%2FSales%2BReport&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=edit width="1200" height="600" frameborder="0" gesture="media"
allow="encrypted-media" allowfullscreen=""></iframe>
```



### Feature 3 - Embedding story to web app:

```
<iframe  
src=https://us3.ca.analytics.ibm.com/bi/?perspective=story&pa  
thRef=.my_folders%2FData%2BModule%2FSales%2BStory&closeWindow  
OnLastView=true&ui_appbar=false&ui_navbar=false&share  
Mode=embedded&action=view&sceneId=model0000018485276975_0  
0000000&sceneTime=0 width="1300" height="900" frameborder="0"  
gesture="media" allow="encrypted-media"  
allowfullscreen=""></iframe>
```



## **8. TESTING**

### **8.1 Test Cases**

#### **Test Scenarios**

- Verify user able to see login page
- Verify user able to login to application or not?
- Verify user able to navigate to create your account page?
- Verify user able to recovery password
- Verify login page elements

#### **Access visualizations**

- User able to see dashboard
- User able to see report
- User able to see stories

### **8.2 User Acceptance Testing**

- **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      | 9          | 6          | 3          | 1          | 19       |
| Duplicate      | 1          | 0          | 3          | 0          | 4        |
| External       | 6          | 5          | 0          | 2          | 13       |
| Fixed          | 13         | 3          | 4          | 18         | 38       |
| Not Reproduced | 0          | 0          | 0          | 0          | 0        |
| Skipped        | 0          | 0          | 0          | 0          | 0        |
| Won't Fix      | 0          | 0          | 0          | 0          | 0        |
| Totals         | 29         | 14         | 10         | 21         | 74       |

- **Test Case Analysis**

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

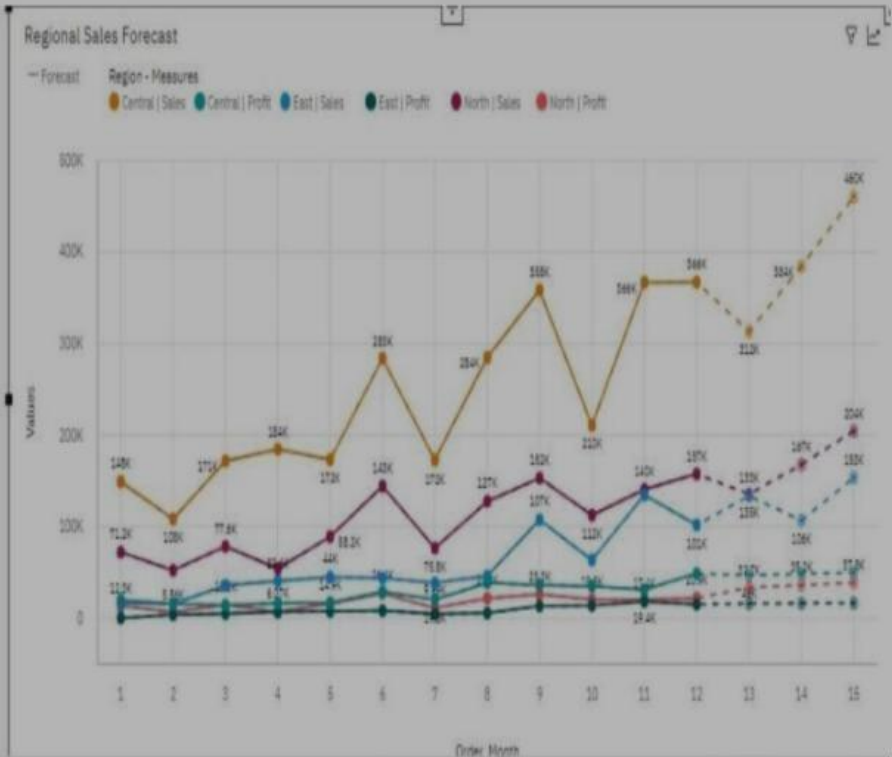
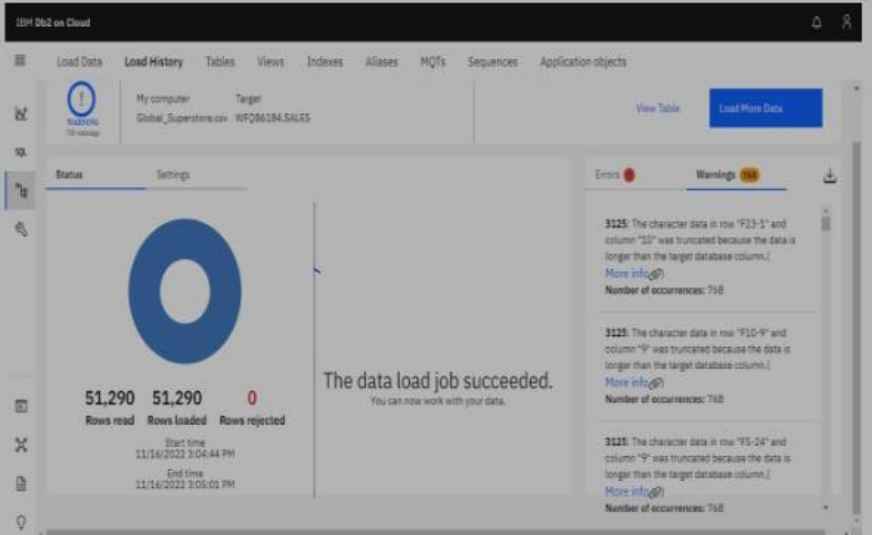
| Section             | Total Cases | Not Tested | Fail | Pass |
|---------------------|-------------|------------|------|------|
| Print Engine        | 5           | 0          | 0    | 5    |
| Client Application  | 38          | 0          | 0    | 38   |
| Security            | 3           | 0          | 0    | 2    |
| Outsource Shipping  | 9           | 0          | 0    | 9    |
| Exception Reporting | 5           | 0          | 0    | 5    |
| Final Report Output | 4           | 0          | 0    | 4    |
| Version Control     | 3           | 0          | 0    | 3    |

### 8.3 MODEL PERFORMANCE TESTING

### Model Performance Testing:

Project team shall fill the following information in model performance testing template.

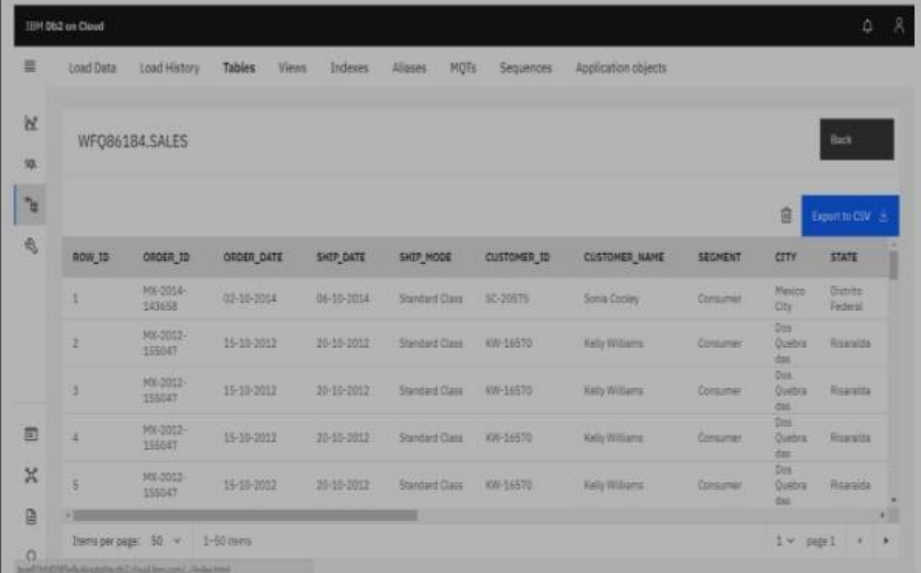
[illegible]

|    |                                       |  |
|----|---------------------------------------|--|
|    |                                       |  <p><b>Regional Sales Forecast</b></p> <p>Forecast Region - Measures</p> <p>Central   Sales Central   Profit East   Sales East   Profit North   Sales North   Profit</p> <p>Values</p> <p>Order Month</p>  |
| 2. | Data Responsiveness                   | The Visualizations are responsive enough to view the data and it fits the screen.  |
| 3. | Amount Data to Rendered (DB2 Metrics) | <p>Number of Rows Read : 51,290<br/>Number of Rows Loaded : 51,290</p>  <p>IBM DB2 on Cloud</p> <p>Load Data Load History Tables Views Indexes Aliases MQTs Sequences Application objects</p> <p>My computer Target<br/>Global_Superstore.com WFO06184.54165</p> <p>View Table Load More Data</p> <p>Status Settings</p> <p>51,290 51,290 0<br/>Rows read Rows loaded Rows rejected</p> <p>Start time<br/>11/16/2022 3:04:44 PM<br/>End time<br/>11/16/2022 3:05:01 PM</p> <p>The data load job succeeded.<br/>You can now work with your data.</p> <p>Errors Warnings</p> <p>3125: The character data in row "F23-1" and column "10" was truncated because the data is longer than the target database column.<br/>More info ⓘ<br/>Number of occurrences: 758</p> <p>3125: The character data in row "F10-9" and column "9" was truncated because the data is longer than the target database column.<br/>More info ⓘ<br/>Number of occurrences: 768</p> <p>3125: The character data in row "F5-24" and column "9" was truncated because the data is longer than the target database column.<br/>More info ⓘ<br/>Number of occurrences: 768</p> |

4.

## Utilization of Data Filters

The filters are used to see only the relevant data about the use case.



| ROW_ID | ORDER_ID       | ORDER_DATE | SHIP_DATE  | SHIP_MODE      | CUSTOMER_ID | CUSTOMER_NAME  | SEGMENT  | CITY            | STATE             |
|--------|----------------|------------|------------|----------------|-------------|----------------|----------|-----------------|-------------------|
| 1      | MX-2014-143698 | 02-10-2014 | 04-10-2014 | Standard Class | SC-20876    | Sonia Cooley   | Consumer | Mexico City     | Districto Federal |
| 2      | MX-2012-155047 | 15-10-2012 | 20-10-2012 | Standard Class | KW-16570    | Kelly Williams | Consumer | Dos Quebras das | Ribeirao          |
| 3      | MX-2012-155047 | 15-10-2012 | 20-10-2012 | Standard Class | KW-16570    | Kelly Williams | Consumer | Dos Quebras das | Ribeirao          |
| 4      | MX-2012-155047 | 15-10-2012 | 20-10-2012 | Standard Class | KW-16570    | Kelly Williams | Consumer | Dos Quebras das | Ribeirao          |
| 5      | MX-2012-155047 | 15-10-2012 | 20-10-2012 | Standard Class | KW-16570    | Kelly Williams | Consumer | Dos Quebras das | Ribeirao          |

5.

## Effective User Story

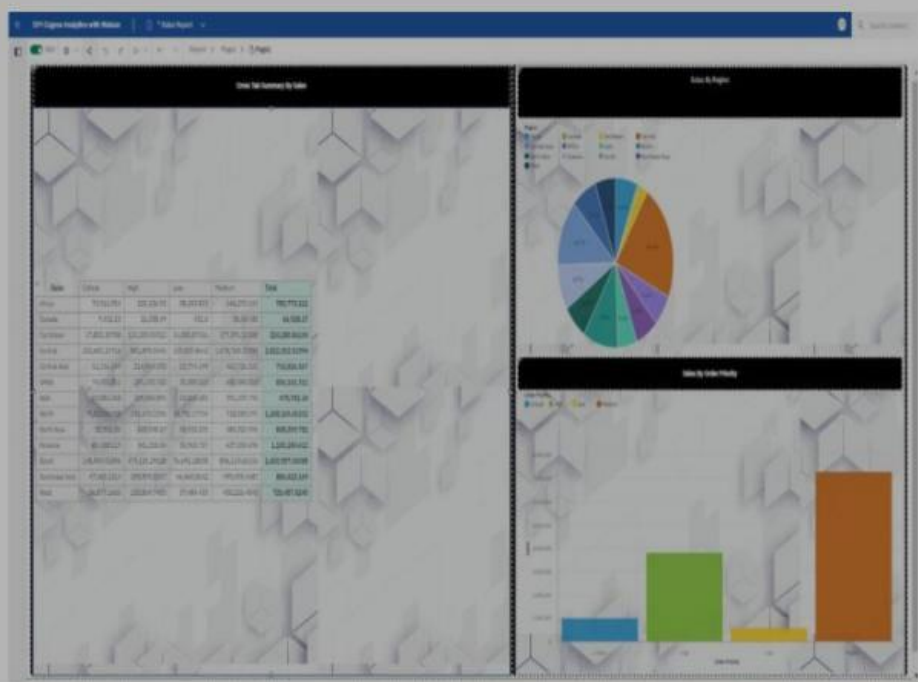
No of Scene Added – 10





|    |                     |
|----|---------------------|
| 6. | Descriptive Reports |
|----|---------------------|

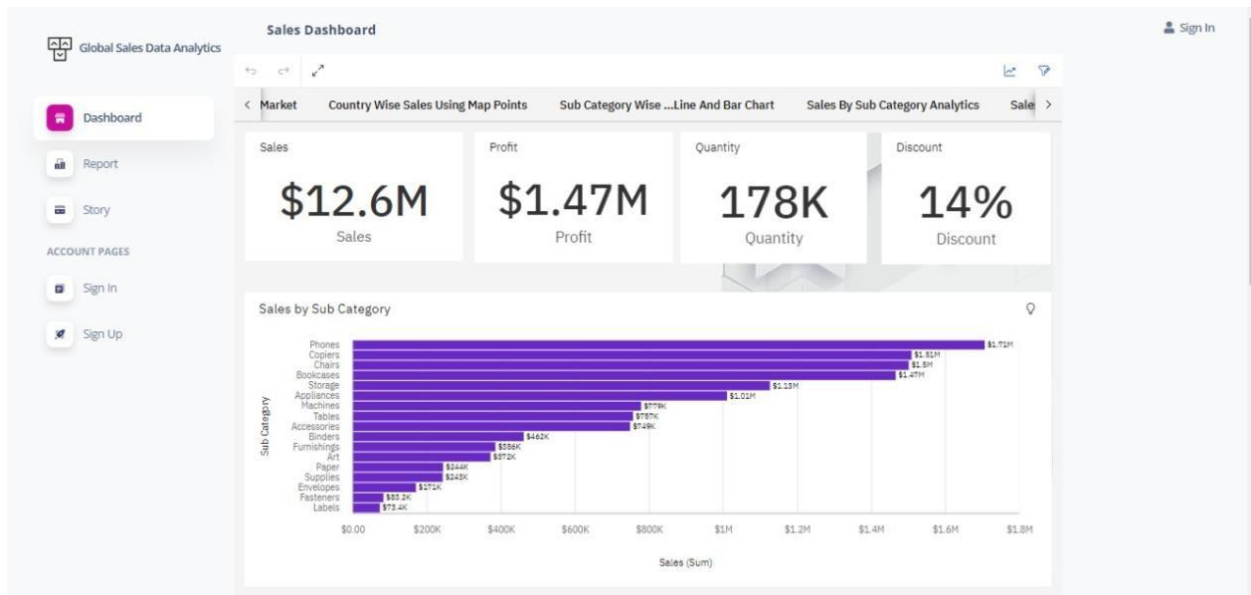
No of Reports – 1



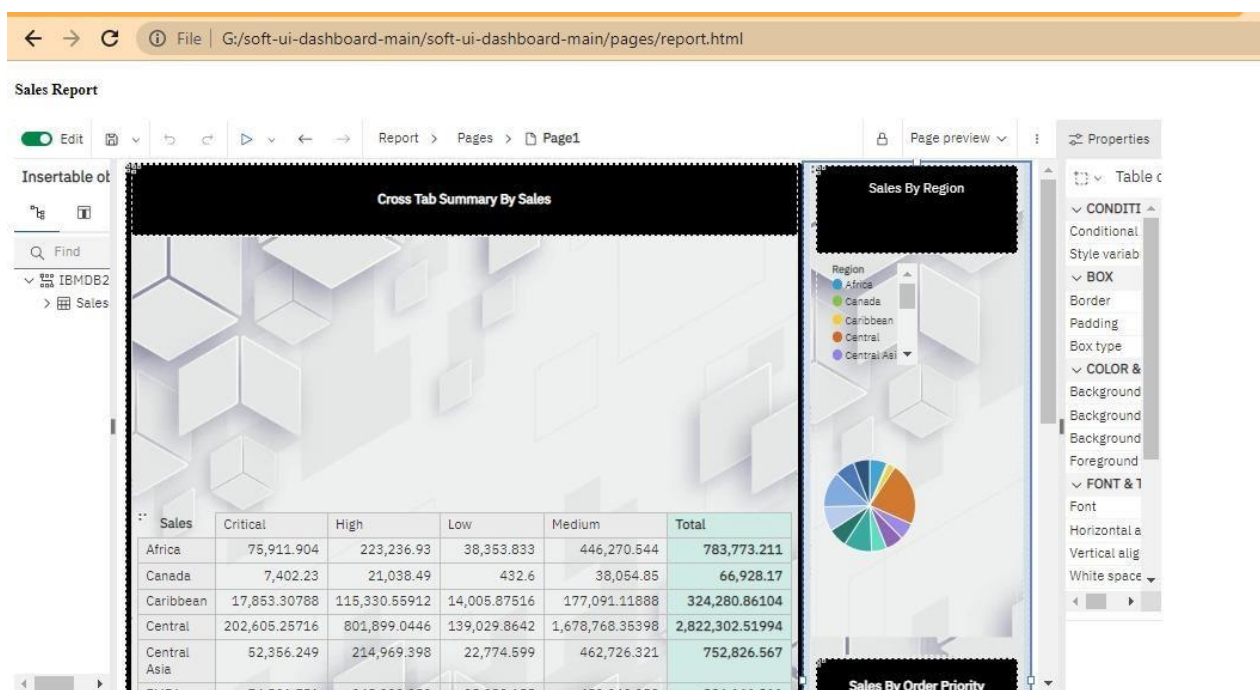
## 9. RESULTS

### Screenshots of web application:

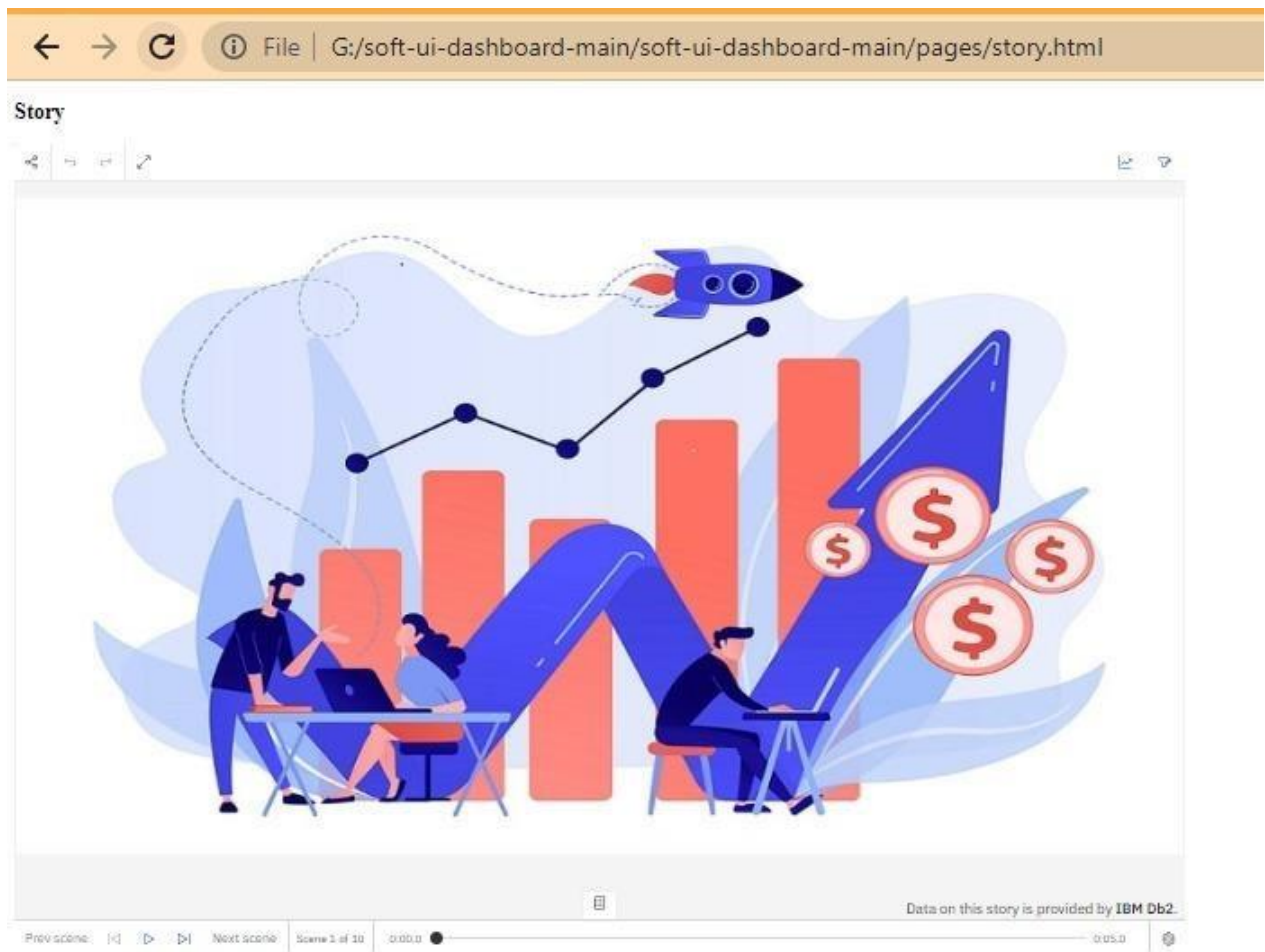
#### DASHBOARD:



#### REPORT:



STORY:



## **10. ADVANTAGES & DISADVANTAGES**

### **Advantages:**

- It is used to identify, optimize, and forecast sales.
- Sales data will help a company to take a future decision in terms of inventory management, marketing activities, schemes or offers to be rolled and changes in manufacturing processes if applicable.
- An efficient sales model that generates higher revenue for the business.
- Better prediction, Profit function performance.
- Helps to review their strategies and performance in order to make improvements.

### **Disadvantages:**

- Sales pattern can be changed
- insufficient data may lead to wrong path.
- data may have been collected for historical reasons may not be suitable to answer the questions that we ask today.
- business users do not see results immediately

## **11. CONCLUSION**

Analyzing sales helps businesses in understanding their most profitable products and the ones that are not moving, most profitable customers, and potential sales opportunities thereby providing sales which match customer needs and meets their satisfaction. An efficient sales model that generates higher revenue for the business. It helps in the perception of profit about particular product and perception of sales in different locations and times.

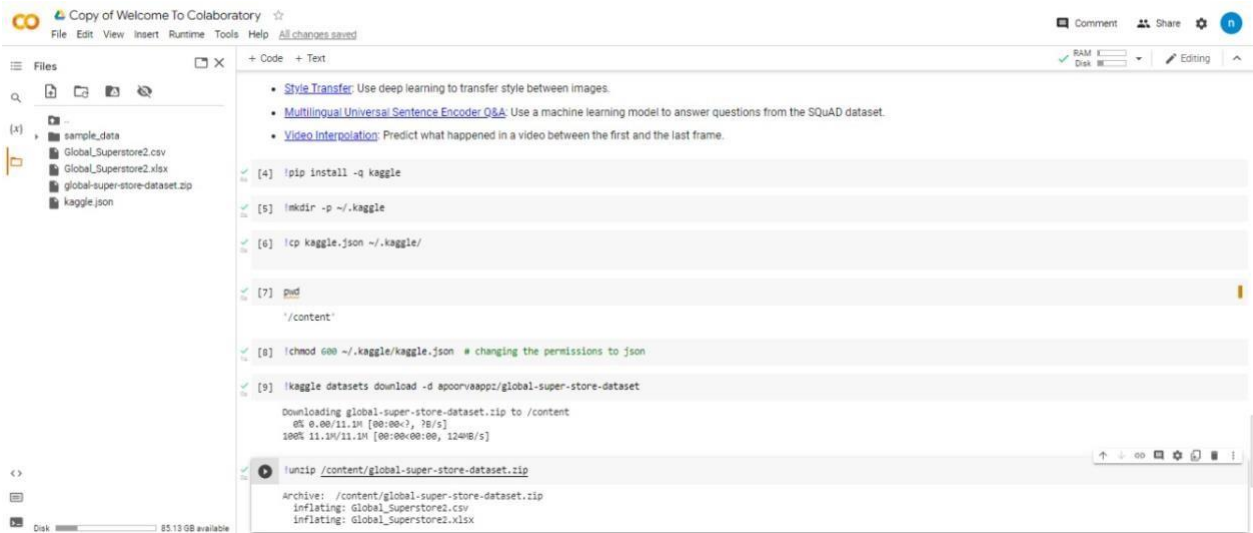
## **12. FUTURE SCOPE**

Use the technology to collect and use sales data to derive actionable insights. It is used to identify, optimize, and forecast sales. An efficient sales model that generates higher revenue for the business. An efficient sales model that generates higher revenue for the business.

## 13. APPENDIX 13.1 Source

### Code

### kaggle api to gather the dataset



The screenshot shows a Google Colaboratory notebook titled "Copy of Welcome To Colaboratory". The left sidebar displays a file explorer with the following files: "sample\_data", "Global\_Superstore2.csv", "Global\_Superstore2.xlsx", "global-super-store-dataset.zip", and "kaggle.json". The main area contains a code cell with the following commands and output:

```
[4] !pip install -q kaggle
[5] !mkdir -p ~/.kaggle
[6] !cp kaggle.json ~/.kaggle/
[7] pwd
'/content'
[8] !chmod 600 ~/.kaggle/kaggle.json # changing the permissions to json
[9] !kaggle datasets download -d apoorvaappz/global-super-store-dataset

Downloading global-super-store-dataset.zip to /content
8% 0.00/11.1M [00:00<?, 78/s]
100% 11.1M/11.1M [00:00<00:00, 1240B/s]

!unzip /content/global-super-store-dataset.zip
Archive: /content/global-super-store-dataset.zip
  inflating: Global_Superstore2.csv
  inflating: Global_Superstore2.xlsx
```

The output of the last command shows the files being inflated: "Global\_Superstore2.csv" and "Global\_Superstore2.xlsx".

### **13.2 Github & Project Demo Link:**

#### **GitHub:**

Link: <https://github.com/IBM-EPBL/IBM-Project-24520-1659944133>

Demo link:

[https://drive.google.com/file/d/1xDtnXitSVxhdXp0pbuZ\\_ksf24nYQaal3/view?usp=sharing](https://drive.google.com/file/d/1xDtnXitSVxhdXp0pbuZ_ksf24nYQaal3/view?usp=sharing)