"GLOBAL SALES DATA ANALYTICS"

IBM NALAIYATHIRAN PROJECT REPORT

Team Id : **PNT2022TMID29554**

Submitted by

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UNDER THE GUIDANCE OF

ANGAPPAN K (Faculty Mentor)

SHANAWAZ ANWAR (Industrial Mentor)

INDRA PRAKASH (Industrial Mentor)

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

Department of Information Technology

ARUNAI ENGINEERING COLLEGE

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1 INTRODUCTION

1.1 Project Overview

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

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

1.2 Purpose

By the end of this Project, you will:

• Know fundamental concepts and can work on IBM Cognos Analytics.

• Gain a broad understanding of plotting different visualizations to provide a suitable solution.

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

2 LITERATURE SURVEY

2.1 EXISTING PROBLEM

Crafting a good sales pitch from sales data analysis can be difficult. Getting the right data, hitting the right client pain points, crystallizing why your services are better than the competitors, all takes hard work. Honing your sales pitch to an art takes time, and even with a perfect picture, new clients take time to acquire. One of the best ways we've found to build a good sales pitch is to use data you already have. In the digital world, there is no shortage of data, which translates into no shortage of potential competitive insights and advantages. With databases, data warehouses, corporate intranets, best practice sharing, web analytics, voice of the customer information, and QA or Six Sigma data, you are well-poised for discovering good information.

2.2 References

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

under Big

2.3 Problem Statement:

Determine the crucial sales Key performance metrics you require, such as the win rate and average contract size. As leads move through your pipeline, use a solution (like Pipedrive's CRM) to track this information. Integrate this information in visual dashboards. Regularly compare the data to historical averages to track growth and problematic areas.

3. IDEATION & PROPOSED SOLUTION

3.1. Empathy Map Canvas

1. An empathy map is a widely-used visualization.
2. Empathy map is a square divided into four quadrants with the user or client in the middle.
3. Each of the four quadrants comprises a category that helps us delve into the mind of the user.
4. The four empathy map quadrants look at what the user says, thinks, feels, and does.

THINK & FEEL
The colours of the dashboard.
Order Priority data must be observed.
Where to start?

HEAR
Areas of sales improvement
Comparative chart data
How to build the dashboard?

SEE
Aesthetic of the dashboard
Filter controls
Exploratory Analysis

Views the dashboard
Discounts must be evaluated
"Which country has high profit in which region?"

SAY & DO

PAIN
Accuracy of the results
Constant updation of the Dataset

GAIN
Region-wise Sales Knowledge
Areas of expenditure can be known

3.2. Ideation & Brainstorming

Global Sales Data Analytics - Ideation

ARAVINDHAN A

- Comparative charts can help monitor the product-wise sales.
- The dashboard must be concise and user-friendly.
- Generating insights from sales data, trends, and metrics to set targets and forecast future sales performance
- Revenue outcome must be determined

DINESH RAJ S

- Segment-wise analysis can be performed. (ex. Consumer, Corporate etc.)
- Identify, optimize, and forecast sales
- Using diagnostic analytics, you can review current and past sales data from your company to understand less than stellar emerging issues better.
- Invest in the right sales opportunity

SHARUKH S

- Sub-categories can help identify which zone has which market.
- Customer IDs can be used for identifying customer recommendations.
- Discounts must be evaluated
- Order Date and Shipping Date will give insights about delivery duration.

VENGATAKRISHNAN V

- Can help with low chances of customer churn.
- Grow Sales and Improve Processes
- Order Priority data must be observed.
- Regional and Zone wise data exploration.

Top 3 Ideas

1. Revenue outcome must be Identify, optimize and forecast sales.
2. The dashboard must be user-friendly.
3. Generating insights from sales data, trends, and metrics to set targets and forecast future sales performance

3.3. Proposed Solution

Determine the crucial sales Key performance metrics you require, such as the win rate and average contract size. As leads move through your pipeline, use a solution (like Pipedrive's CRM) to track this information. Integrate this information in visual dashboards. Regularly compare the data to historical averages to track growth and problematic areas.
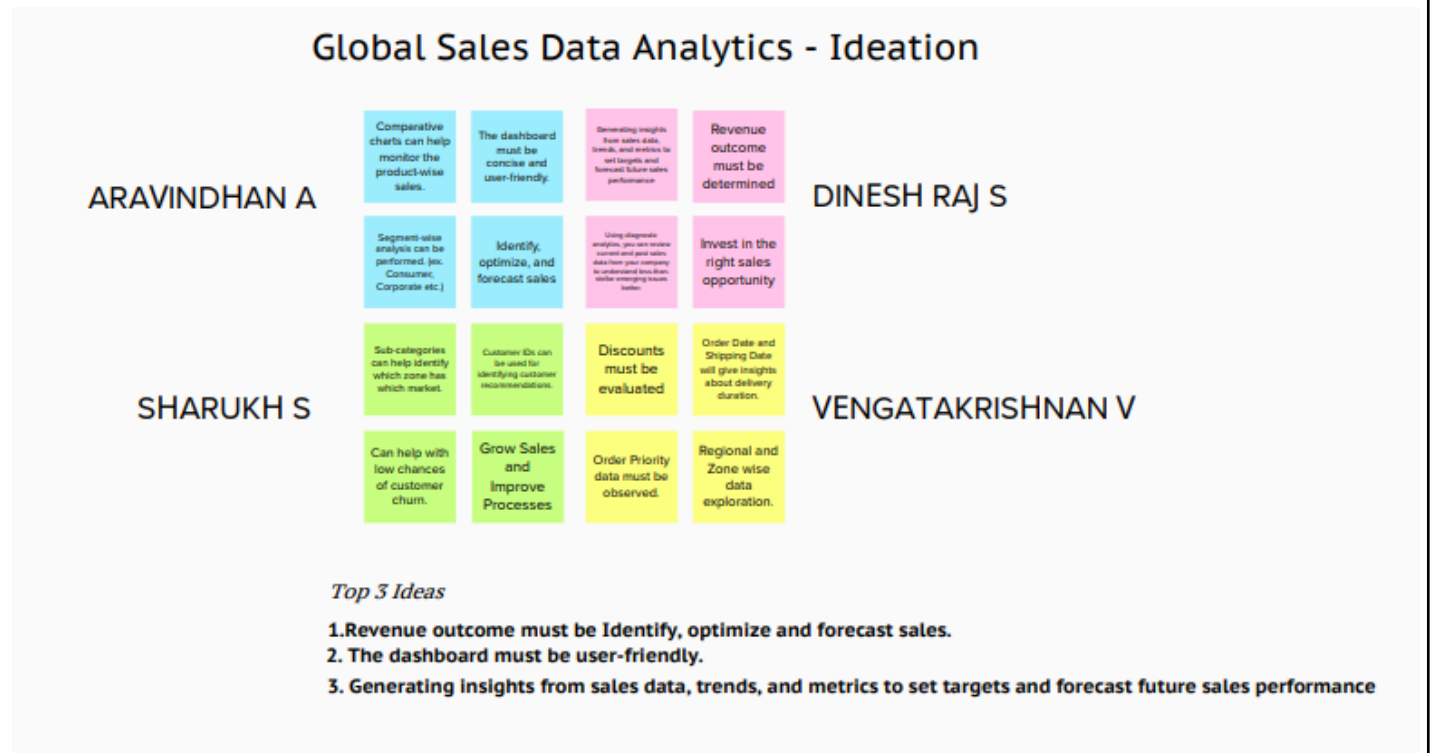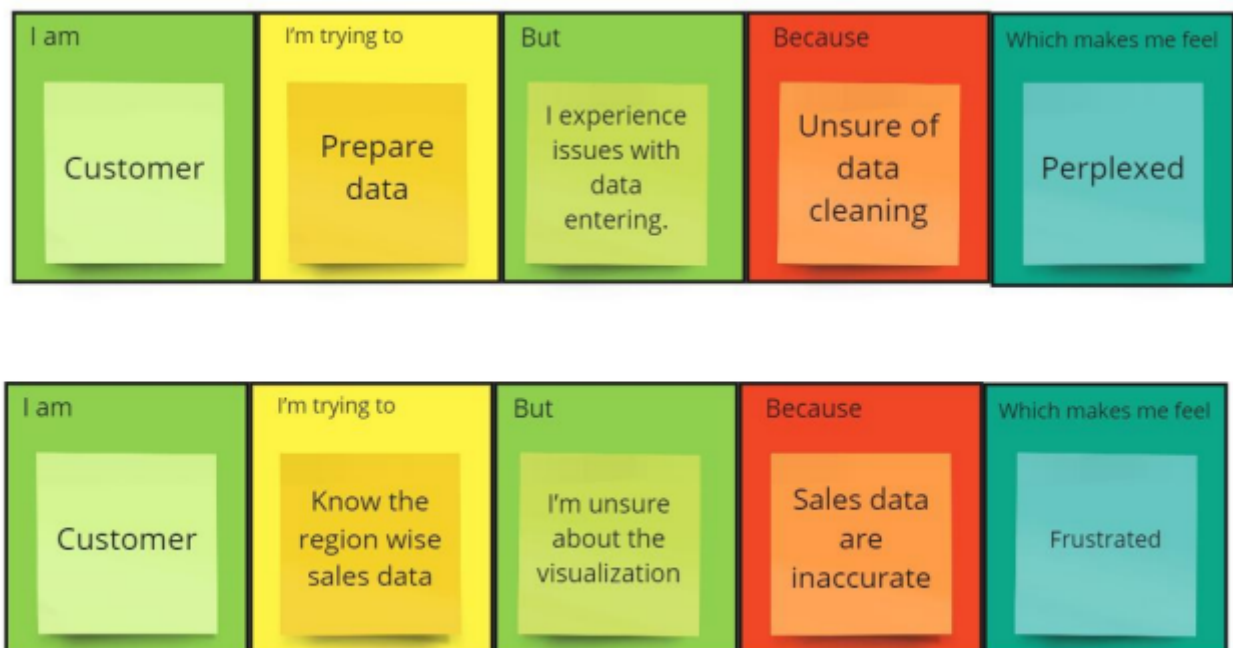
I am	I'm trying to	But	Because	Which makes me feel
Customer	Prepare data	I experience issues with data entering.	Unsure of data cleaning	Perplexed

I am	I'm trying to	But	Because	Which makes me feel
Customer	Know the region wise sales data	I'm unsure about the visualization	Sales data are inaccurate	Frustrated

miro

3.4. Problem Solution fit

Sales include all the actions involved in the product sale, consumer service and business service. For the sales and marketing team to review their performance data visualization techniques called sales analytics is used. In sales analytics, technology is used to collect and use the sales data to produce productive results and they are in turn used to identify and optimize the sales. Various attributes are used to plan an efficient sales model which will benefit both customers and business. During the analysis, extraction of new features will be done. With that, more understanding can be made and we can come up with better decisions which will increase the salesperson's profit.

Project Title: GLOBAL SALES DATA ANALYTICS   **Project Design Phase-I - Solution Fit**   **Team ID: PNT2022TMID29554**

Define CS, fit into CC	**1. CUSTOMER SEGMENT(S)** — CS ✓ A Bussiness owner who would like to understand more about his bussiness performance in global scale.	**6. CUSTOMER CONSTRAINTS** — CC ✓ No online payments available buy directly from us. ✓ Need to check input file structure before uploading.	**5. AVAILABLE SOLUTIONS** — AS ✓ The competition perform analytics and display Dashboard with autogenerated insights. ✓ Out product provides facility to add manual insight to the analytics performed.	Explore AS, differentiate
Focus on J&P tap into BE, understand RC	**2. JOBS-TO-BE-DONE / PROBLEMS** — J&P ✓ Determine input file structure. ✓ What analysis to perform to be useful and how to perform them ?	**9. PROBLEM ROOT CAUSE** — RC ✓ Customer satisfaction ✓ Product rating ✓ Product prices ✓ Availability	**7. BEHAVIOUR** — BE ✓ Collecting sales data and using office software to analyze it ✓ Un-intuitive way of analyzing data and lot of manual labour	Focus on J&P tap into BE, understand RC
Identify strong TR & EM	**3. TRIGGERS** — TR ✓ Have you ever felt that you are unwaer of how your bussiness is performing ? ✓ Have you ever had a decision fatigue ? **4. EMOTIONS: BEFORE / AFTER** — EM ✓ BEFORE : Anxiety, Decision fatigue, Lazyness ✓ AFTER : Clear mind, Peacefullness	**10. YOUR SOLUTION** — SL ✓ Creating an Interactive Dashboard. ✓ Providing details about the sales ✓ Responsive Design for every screen size. ✓ Manual insight for each interaction. One time payment.	**8. CHANNELS of BEHAVIOUR** — CH **8.1 ONLINE** ✓ Using third party services with automated insights and subscription based service to analyze data **8.2 OFFLINE** ✓ Using office software to analyze complex data in un-intuitive way	Identify strong TR & EM

4. REQUIREMENT ANALYSIS

4.1. Functional requirement

A functional requirement is a statement of how a system must behave. It defines what the system should do in order to meet the user's needs or expectations. Functional requirements can be thought of as features that the user detects. They are different from non-functional requirements, which define how the system should work internally (e.g., performance, security, etc.).Functional requirements are made up of two parts: function and behavior. The function is what the system does (e.g., "calculate sales tax"). The behavior is how the system does it (e.g., "The system shall calculate the sales tax by multiplying the purchase price by the tax rate.").

     User Registration : Registration through Form Registration through Gmail Registration.

User Confirmation : Confirmation via Email

Data Entry : User should be able to enter sales data

Data Generated : Sales reports should be generated 24 hours

Exploring Data : API interface to invoice system

4.2. Non-Functional requirements

The sales data is studied which will give knowledge about the trends in sales. Based on the understanding, the processed data is analyzed.An insight about the profit of the product is gained. An insight about the sales in different locations and time is gained.

Usability : The web application usability is now user friendly.so easily understand users.

Security : End to end encryption techniques will be used in our product.

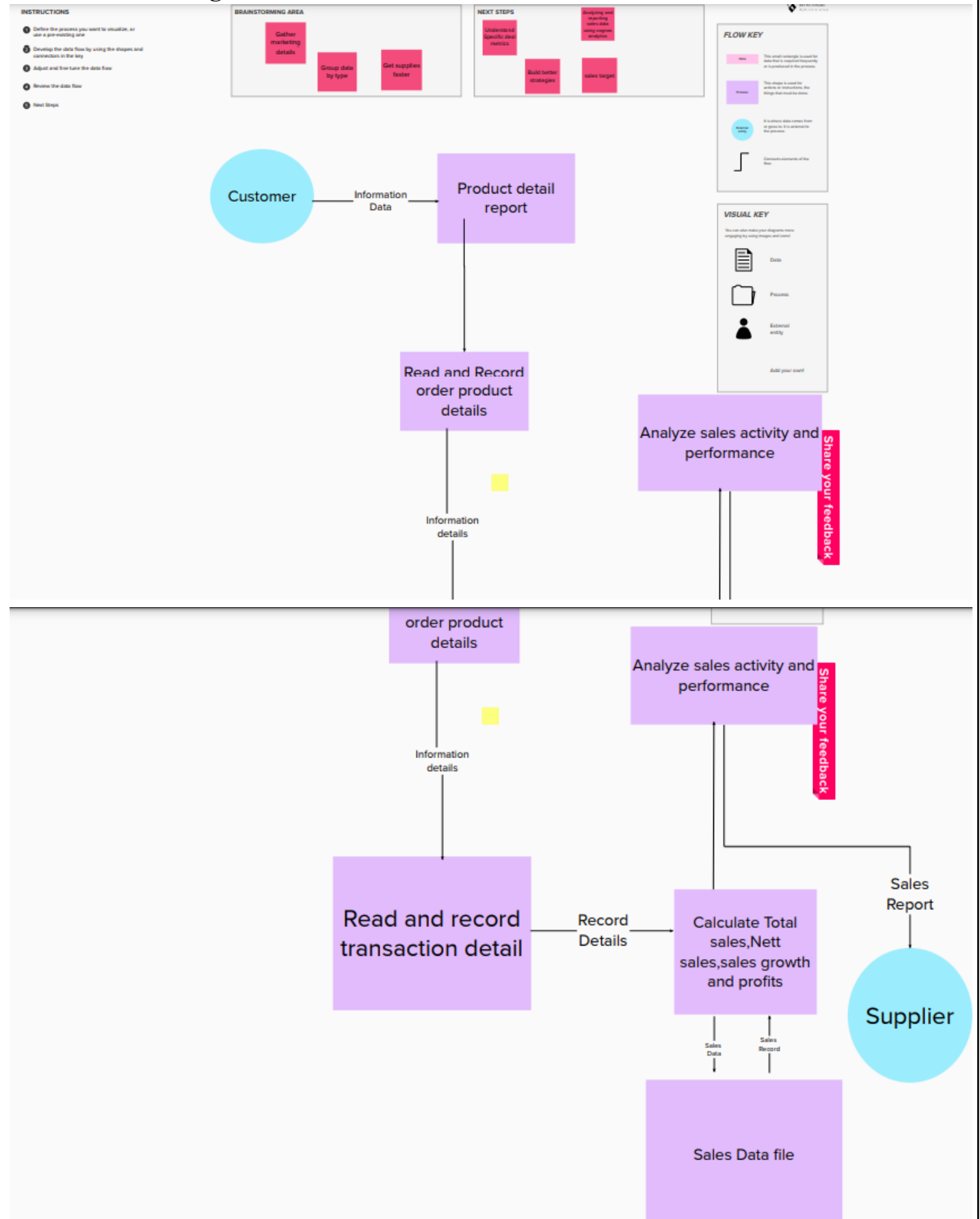Reliability : The web application must have a 99.9%uptime.

Performance : The home page should load within 1.5 seconds.

Availability : The web application must have a 99.9% uptime.

Scalability : The web application will be compatible for both windows mac machines.

5. PROJECT DESIGN

5.1. Data Flow Diagrams

5.2. Solution & Technical Architecture

Technical Architecture:

User Interface : The user will interact through web ui.

Preprocessing : The missing values are handled. New features are extracted.

Partition : The processed data is partitioned by four categories. They are customer details, product details, geography details and seasonal details.

Analyze : The application analyzes partitioned data.

Dashboard : Visualize the data graphically.

Cloud Database : Database service on cloud.

Application Characteristics :

Open-Source Frameworks : IBM Cognos Analytics tools like dashboard, report are used. Python packages like numpy,pandas, matplotlib and seaborn are used.

Security Implementations : It provides authentication and security.

Scalable Architecture : Small dataset to large dataset are used.

Availability The dashboard creation will be done at any time. Users can view and analyze data all the time.

Performance : This application provides high performance by producing analyzed data quickly.

5.3. User Stories

1. Most prospective customers start at the awareness phase, where a user has a problem or need and looks for an answer.

2.At this point customers mostly seek educational - content about services that could solve their problems.

3.These customers prefer educational thought leadership over promotional or product oriented insights, so organizations shouldn't aggressively push products on customers.

4.During the consideration phase, customers compare one organization's offerings to its competitors.

5.Blog content, success stories, email nurturing campaigns and can help organizations continue engaging with audience members.

6.As CX teams engage with customers, they can reinforce the features their products and services offer so consumers can better understand their benefits.

7.Prospects in this phase may actively engage with brands they already consider.

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.	5	High	Aravindhan A Dinesh raj S
Sprint-1	Login	USN-2	As a user, I will receive confirmation email once I have registered for the application, and I can log into the application by entering email & password	5	High	Aravindhan A Dinesh raj S
Sprint-1	Data Collection	USN-3	As a user, I need to gather the data in the form of CSV/XLS files and clean the data to remove the null values	10	Low	Aravindhan A Sharukh S
Sprint-2	Upload dataset	USN-4	As a user, I will upload the data to IBM Cognos and view the data of the products	5	Medium	Aravindhan A Sharukh S
Sprint-2	Data Preparation	USN-5	As a user, I need to filter the data for visualization in IBM Cognos	5	High	Aravindhan A Vengatakrishnan V
Sprint-2	Data visualization	USN-6	As a user, I can easily visualize the data in the form of charts and graphs through IBM Cognos	10	High	Aravindhan A vengatakrishnan V

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-3	Dashboard	USN-7	As a user, I will create the dashboards based on the given data in IBM Cognos	5	High	Aravindhan A Dinesh raj S
Sprint-3	Dashboard	USN-8	As a user, I must plan visualizations in a way that I'm able to gain insights regarding the sales based upon the category of sales and the respective region	5	Medium	Aravindhan A Dinesh raj S
Sprint-3	Dashboard	USN-9	As a user, I must be able to gain insights from the charts/graphs through a variety of relationships established in the dashboard.	10	Medium	Aravindhan A Sharukh S
Sprint-4	Prediction	USN-10	As a user, I will predict the specific product's future sales expectation.	5	High	Aravindhan A Sharukh S
Sprint-4	Final Analysis	USN-11	As a user, I can Analyse the list of categorized products and their details as a report.	5	High	Aravindh A Vengatakrishnan V
Sprint-4	Report	USN-12	As a user, I can prepare the product and customer description information and more additional information as a Report	10	Medium	Aravindhan A Vengatakrishnan V

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	20	6 Days	24 Oct 2022	29 Oct 2022	20	30 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	06 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	13 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	20 Nov 2022

6.3 REPORTS FROM JIRA

Backlog

Board

DEVELOPMENT

</> Code

Project pages

Add shortcut

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Q AA 👤 Epic ∨

📈 Insights

Epic ✕

Start date
None

Due date
None

View all details

+ Create Epic

sprint. Select **Star**

+ Create issue

⇳

∨ **Backlog** (0 issues)

GSDA-18 🔒 ● 1 👍 ⤶ ⋯ ✕

🟪 Registration

📎 🔗 ⋯

To Do ∨

Description
Add a description...

Child issues Order by ∨ ⋯ +

━━━━━━━━━━━━━━━ 100% Done

▫ GSDA-21 As a user, I will log in t... ⊝ AA **DONE** ∨

▫ GSDA-20 As a user, I will receive ... ⊝ AA **DONE** ∨

▫ GSDA-19 As a user, I can register... ⊝ AA **DONE** ∨

Pinned fields ✕

Click on the ⚲ next to a field label to start pinning.

Details ∧

Assignee AA ARAVINDHAN A

Labels USN-1

Start date None

Due date None

Global Sales Data A...
Software project

PLANNING

🔀 Roadmap

📚 Backlog

▥ Board

DEVELOPMENT

</> Code

🗎 Project pages

⌐ Add shortcut

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Projects / Global Sales Data Analytics

Backlog   •••

[Q]   AA D   👤⁺   Epic ❶ ˅   Label ˅   Clear filters   📈 Insights

Epic	✕
Issues without epic	
⟩ ▮ Registration	
˅ ▮ Pre processing	
+ Create Epic	

˅ Sprint 2 9 Nov – 9 Nov (2 issues)   0 ❶ ❶   **Start sprint**   •••

▫ GSDA-24   As a user, I can perform Extract, Transf...   **PRE PROCESSING**   TO DO ˅   D

▫ GSDA-23   As a user, I can do the data cleaning pr...   **PRE PROCESSING**   TO DO ˅   D

+ Create issue

⇕

˅ Backlog (0 issues)   0 ❶ ❶   Create sprint

Your backlog is empty.

+ Create issue

Global Sales Data A...
Software project

PLANNING

🔀 Roadmap

📚 Backlog

▥ Board

DEVELOPMENT

</> Code

🗎 Project pages

⌐ Add shortcut

⚙ Project settings

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Projects / Global Sales Data Analytics

Sprint 2   𝌆 ☆ 🕐 0 days remaining   **Complete sprint**   •••

[Q]   AA D   👤⁺   Epic ˅   Label ˅   GROUP BY   None ˅   📈 Insights

TO DO	IN PROGRESS	DONE 2 ISSUES ✓	+
		As a user, I can perform Extract, Transform Load (ETL) process. **PRE PROCESSING** USN-5 ▫ GSDA-24 ✓ D	
		As a user, I can do the data cleaning process **PRE PROCESSING** USN-4	

💡 Quickstart ✕

Global Sales Data A...
Software project

PLANNING
- Roadmap
- Backlog
- Board

DEVELOPMENT
- Code

- Project pages
- Add shortcut

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Backlog

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| Q | AA VV | 👤 | Epic **1** ∨ | Label ∨ | Clear filters | | 📈 Insights |

Epic	×
Issues without epic	
> ▪ Registration	
> ▪ Pre processing	
> ▪ Dashboard	

∨ ▪ Report, Story and customer care

Start date
None

Due date
None

∨ **Sprint 4** 9 Nov – 9 Nov (3 issues)   0 **0** **0**   Start sprint ···

🔖 GSDA-41	As a user, I can modif...	REPORT, STORY AND CUSTOMER...	TO DO ∨	VV
🔖 GSDA-40	As a user, I can clear ...	REPORT, STORY AND CUSTOMER...	TO DO ∨	VV
🔖 GSDA-39	As a user, I can gener...	REPORT, STORY AND CUSTOMER...	TO DO ∨	VV

+ Create issue

▦ ◆ Your work ∨ Projects ∨ Filters ∨ Dashboards ∨ People ∨ Apps ∨ **Create**   Q Search   📣 ❓ ⚙ AA

Global Sales Data A...
Software project

PLANNING
- Roadmap
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- Board

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- Code

- Project pages
- Add shortcut

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Backlog

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Epic	×
Start date None	
Due date None	
View all details	
+ Create Epic	

∨ **Sprint 5** 9 Nov – 9 Nov (0 issu

Plan your sprint
Drag issues from t
sprint. Select **Star**

+ Create issue

🔲 GSDA-38   🔒 ◉ 1 👍 ⌁ ··· ×

▪ **Report, Story and customer care**

📎 ⛓ 🔗 ···

To Do ∨

Description
Add a description...

Child issues   Order by ∨ ··· +
████████████ 100% Done

🔖 ~~GSDA-39~~	As a user, I can generat...	⊙	VV	DONE ∨
🔖 ~~GSDA-40~~	As a user, I can clear qu...	⊙	VV	DONE ∨
🔖 ~~GSDA-41~~	As a user, I can modify ...	⊙	VV	DONE ∨

Pinned fields   ×

Click on the ☆ next to a field label to start pinning.

7. CODING & SOLUTIONING

7.1. Feature 1


```
<!-- ======= Portfolio Section ======= -->
<section id="portfolio" class="portfolio">
  <div class="container" data-aos="fade-up">

    <div class="section-title">
      <h2><a href="portfolio-details.html">Portfolio</a></h2>
      <p>Below is a dashboard we created for one of our clients.
Through this dashboard our client was able to make impactful business decisions.</p>
    </div>

    <iframe src="https://us3.ca.analytics.ibm.com/bi/?
perspective=dashboard&amp;pathRef=.public_folders%2FNew%2BProject%2FGlobal_Superstore%
2BDashboard&amp;closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_navbar=false&amp;shareMode=embedded&amp;
action=view&amp;mode=dashboard" width="1400" height="600"
 frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>

  </div>
</section><!-- End Portfolio Section -->

<!-- ======= Team Section ======= -->
<section id="team" class="team section-bg">
  <div class="container" data-aos="fade-up">

    <div class="section-title">
      <h2>Team</h2>
      <p>Meet the team behind ARUNAI Devlopers.</p>
      <span>Team ID :<b> PNT2022TMID29554</b></span>
    </div>

    <div class="row">

      <div class="col-lg-6">
        <div class="member d-flex align-items-start" data-aos="zoom-in" data-aos-delay="100">
          <div class="pic"><img src="assets/img/team/defaultprofilepic.jpg" class="img-fluid" alt=""></div>
          <div class="member-info">
            <h4>ARAVINDHAN A</h4>
            <span>Team Leader</span>
            <span>ROLLNO :<b> 510419205003</b> </span>
            <div class="social">
              <a href=""><i class="ri-mail-fill"></i></a>
              <a href=""><i class="ri-github-fill"></i></a>
```

This is an 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.

7.2. Feature 2

```
<!-- ======= Portfolio Section ======= -->
<section id="portfolio" class="portfolio">
  <div class="container" data-aos="fade-up">

    <div class="section-title">
      <h2><a href="portfolio-details.html">Portfolio</a></h2>
      <p>Below is a dashboard we created for one of our clients.
Through this dashboard our client was able to make impactful business decisions.</p>
    </div>

    <iframe src="https://us3.ca.analytics.ibm.com/bi/?
perspective=dashboard&amp;pathRef=.public_folders%2FNew%2BProject%2FGlobal_Superstore%
2BDashboard&amp;closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_navbar=false&amp;shareMode=embedded&amp;
action=view&amp;mode=dashboard" width="1400" height="600"
 frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>

  </div>
</section><!-- End Portfolio Section -->

<!-- ======= Team Section ======= -->
<section id="team" class="team section-bg">
  <div class="container" data-aos="fade-up">

    <div class="section-title">
      <h2>Team</h2>
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      <span>Team ID :<b> PNT2022TMID29554</b></span>
    </div>

    <div class="row">

      <div class="col-lg-6">
        <div class="member d-flex align-items-start" data-aos="zoom-in" data-aos-delay="100">
          <div class="pic"><img src="assets/img/team/defaultprofilepic.jpg" class="img-fluid" alt=""></div>
          <div class="member-info">
            <h4>ARAVINDHAN A</h4>
            <span>Team Leader</span>
            <span>ROLLNO :<b> 510419205003</b> </span>
            <div class="social">
              <a href=""><i class="ri-mail-fill"></i></a>
              <a href=""><i class="ri-github-fill"></i></a>
              <a href=""> <i class="ri-linkedin-box-fill"></i> </a>
          </div>
          ...
```

Thus, the final model can be used by the small stores as well as the MNC's. Also, this solution is easily accessible and acquires less memory.

8. TESTING

8.1. Test Cases

Model Performance Testing:

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

S.No.	Parameter	Screenshot / Values
1.	Dashboard design	No of Visulizations / Graphs - 14
2.	Data Responsiveness	Users and Analyst or developers
3.	Amount Data to Rendered (DB2 Metrics)	Specified area level informations.
4.	Utilization of Data Filters	Simple or Gravity , hot and vacuum Filteration.
5.	Effective User Story	No of scene added - 14
6.	Descriptive Reports	No of Visulizations / Graphs - 5

8.2. User Acceptance Testing

1. 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).

2. 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	3	2	3	17
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	11	2	4	20	36
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	5	2	1	8
Totals	22	13	13	26	74

9. RESULTS

9.1. Performance Metrics
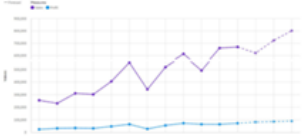
Project Development Phase
Model Performance Test

Date	10 November 2022
Team ID	PNT2022TMID29554
Project Name	Global Sales Data Analytics
Maximum Marks	10 Marks

Model Performance Testing:

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

S.No.	Parameter	Screenshot / Values
1.	Dashboard design	Country wise sales using Map Points ... Totally we have done 20 dashboard.
2.	Data Responsiveness	We have done all the works in Working with Dataset and Data Visualization
3.	Amount Data to Rendered (DB2 Metrics)	We have almost done all the dashboard, reports and story. Totally we have done 20.
4.	Utilization of Data Filters	We have maxolevs utilized all the given charts in the cognos.
5.	Effective User Story	Sales by Market ... We have used all the types of story invester to view them in an ...
6.	Descriptive Reports	... Totally we have 20 reports in the cognos.

10. ADVANTAGES & DISADVANTAGES

Advantage:

1. Cost efficiency

2. Receive full-scale services

3. Maximize Presentation

4. Savetime

Disadvantage:

1. Risk of choosing the wrong provider

2. Lack of on-site support

3. Less Control

4. Data Security

11. CONCLUSION

By implementing this analytics solution, the company brought their competitive and sales data reporting in-house, cut costs and increased the accuracy of their reporting and analysis. As the company moves forward with this new solution, their sales reporting costs will most likely be reduced by 50 to 70%. They are now able to analyze raw data themselves, respond more quickly to changes in market trends and perform root cause analysis to determine those shifts in the market. By securing quicker access to their data with the new solution, the company was also able to reduce the risk associated with delayed responses to changes in their markets.With the new solution, the company can now process sales reports faster than the outsourced solution, reducing turnaround time between 50% to 60%. The reporting needs of the company have been streamlined, consolidating over 10 reports into the centralized dashboard solution. The company's competitive analysis group is also able to more quickly respond to internal data requests given they have the ability to pull the information themselves. With this quicker response, the company is better able to react to changes in the market and predict opportunities for its sales force.The business also experienced an increase in the overall understanding of their sales data throughout the organization. The Company now has great flexibility in the presentation of their sales and competitive data, while also being able to integrate sales data with other key data points for the organization.

12. FUTURE SCOPE

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

13. APPENDIX

Source Code

File Name: Index.html

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

<head>
  <meta charset="utf-8">
  <meta content="width=device-width, initial-scale=1.0" name="viewport">

  <title>Data Analytics</title>
  <meta content="" name="description">
  <meta content="" name="keywords">

  <!-- Favicons -->
  <link href="assets/img/favicon.png" rel="icon">
  <link href="assets/img/apple-touch-icon.png" rel="apple-touch-icon">

  <!-- Google Fonts -->
  <link
href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600i,700,7
00i|Jost:300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:300,300i,400,400i,500,500i,6
00,600i,700,700i" rel="stylesheet">

  <!-- Vendor CSS Files -->
  <link href="assets/vendor/aos/aos.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap-icons/bootstrap-icons.css" rel="stylesheet">
  <link href="assets/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">
  <link href="assets/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">
  <link href="assets/vendor/remixicon/remixicon.css" rel="stylesheet">
  <link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">

  <!-- Template Main CSS File -->
  <link href="assets/css/style.css" rel="stylesheet">

  <!-- =======================================================
  * Template Name: Arsha - v4.9.1
  * Template URL: https://bootstrapmade.com/arsha-free-bootstrap-html-template-corporate/
```

```html
   * Author: BootstrapMade.com
   * License: https://bootstrapmade.com/license/
   ============================================================ -->
</head>

<body>

  <!-- ======= Header ======= -->
  <header id="header" class="fixed-top ">
    <div class="container d-flex align-items-center">

      <h1 class="logo me-auto"><a href="index.html">IBM
NALAIYATHIRAN<br><h6>Team ID : PNT2022TMID29554</h6></a></h1>
      <!-- Uncomment below if you prefer to use an image logo -->
      <!-- <a href="index.html" class="logo me-auto"><img src="assets/img/logo.png" alt=""
class="img-fluid"></a>-->

      <nav id="navbar" class="navbar" style="font-weight:bolder;">
        <ul>
          <li><a class="nav-link scrollto active" href="#hero">Home</a></li>
          <li><a class="nav-link scrollto" href="#about">About</a></li>
          <li><a class="nav-link scrollto" href="#why-us">Services</a></li>
          <li><a class="nav-link scrollto" href="#portfolio">Portfolio</a></li>
          <li><a class="nav-link scrollto" href="#team">Team</a></li>
          <li><a class="getstarted scrollto" href="#portfolio">Get Started</a></li>
        </ul>
        <i class="bi bi-list mobile-nav-toggle"></i>
      </nav><!-- .navbar -->

    </div>
  </header><!-- End Header -->

  <!-- ======= Hero Section ======= -->
  <section id="hero" class="d-flex align-items-center">

    <div class="container">
      <div class="row">
        <div class="col-lg-6 d-flex flex-column justify-content-center pt-4 pt-lg-0 order-2
order-lg-1" data-aos="fade-up" data-aos-delay="200">
          <h1>Global Sales Data Analytics</h1>
          <h2>Better Solutions For Your Business</h2>
          <h4 style="color:white;">All your Sales Solutions in One Place</h4>
          <div class="d-flex justify-content-center justify-content-lg-start">
            <a href="#portfolio" class="btn-get-started scrollto">Get Started</a>
            <!-- <a href="https://www.youtube.com/watch?v=jDDaplaOz7Q" class="glightbox
btn-watch-video"><i class="bi bi-play-circle"></i><span>Watch Video</span></a> -->
          </div>
        </div>
        </div>
```

```html
      <div class="col-lg-6 order-1 order-lg-2 hero-img" data-aos="zoom-in"
data-aos-delay="200">
        <img src="assets/img/hero-img legal.png" class="img-fluid animated" alt="">
      </div>
    </div>
  </div>

 </section><!-- End Hero -->

 <main id="main">

  <!-- ======= About Us Section ======= -->
  <section id="about" class="about">
   <div class="container" data-aos="fade-up">

    <div class="section-title">
     <h2>About Us</h2>
    </div>

    <div class="row content">
     <div class="col-lg-6">
      <p>
        At Noob Dev we offer one of a kind business solutions to our customers in order too
boost their sales and profits. You can expect the following from our services :
      </p>
      <ul>
       <li><i class="ri-check-double-line"></i> Interactive visualizations</li>
       <li><i class="ri-check-double-line"></i> Ease of use</li>
       <li><i class="ri-check-double-line"></i> Integration capabilities</li>
      </ul>
     </div>
     <div class="col-lg-6 pt-4 pt-lg-0">
      <p>
        As employees, we encourage each other to grow and innovate. As a company, we
roll up our sleeves to plant roots in the communities we call home. Our software is powerful
and flexible and scales to meet the needs of any business. Even yours.
      </p>
      <!-- <a href="#" class="btn-learn-more">Learn More</a> -->
     </div>
    </div>

   </div>
  </section><!-- End About Us Section -->

  <!-- ======= Why Us Section/Services ======= -->
  <section id="why-us" class="why-us section-bg">
   <div class="container-fluid" data-aos="fade-up">
```

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

      <div class="col-lg-7 d-flex flex-column justify-content-center align-items-stretch
order-2 order-lg-1">

        <div class="content">
         <strong><h3>Services</strong></h3>
         <p>
           Data is at the heart of your analytics. Before you can dive into any sales analysis,
you need to understand the metrics and key performance indicators (KPIs) you're looking at
and why you're measuring them. Your team can track and analyze a variety of sales metrics,
including:
         </p>
        </div>

        <div class="accordion-list">
         <ul>
          <li>
           <a data-bs-toggle="collapse" class="collapse"
data-bs-target="#accordion-list-1"><span>01</span> Sales Growth <i class="bx
bx-chevron-down icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
           <div id="accordion-list-1" class="collapse show"
data-bs-parent=".accordion-list">
             <p>
               Sales growth shows how much your revenue increases (or decreases) over a
specific period of time. This metric provides a bird's-eye view of sales and how your team is
performing.
             </p>
           </div>
          </li>

          <li>
           <a data-bs-toggle="collapse" data-bs-target="#accordion-list-2"
class="collapsed"><span>02</span> Sales Target <i class="bx bx-chevron-down
icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
           <div id="accordion-list-2" class="collapse" data-bs-parent=".accordion-list">
             <p>
               Sales target evaluates current sales and compares them to your bigger,
long-term goals.
             </p>
           </div>
          </li>

          <li>
           <a data-bs-toggle="collapse" data-bs-target="#accordion-list-3"
class="collapsed"><span>03</span> Sales per rep <i class="bx bx-chevron-down
icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
           <div id="accordion-list-3" class="collapse" data-bs-parent=".accordion-list">
```

```
      <p>
        Sales per rep measures the individual performance of your agents.
      </p>
     </div>
    </li>

    <li>
     <a data-bs-toggle="collapse" data-bs-target="#accordion-list-4"
class="collapsed"><span>04</span> Sales per region <i class="bx bx-chevron-down
icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
     <div id="accordion-list-4" class="collapse" data-bs-parent=".accordion-list">
      <p>
        Sales by region dives into the volume of sales in key geographical areas for
your business.
      </p>
     </div>
    </li>

    <li>
     <a data-bs-toggle="collapse" data-bs-target="#accordion-list-5"
class="collapsed"><span>05</span> Sell-through rate <i class="bx bx-chevron-down
icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
     <div id="accordion-list-5" class="collapse" data-bs-parent=".accordion-list">
      <p>
       The sell-through rate assesses how quickly a business can sell its inventory.
      </p>
     </div>
    </li>

    <li>
     <a data-bs-toggle="collapse" data-bs-target="#accordion-list-6"
class="collapsed"><span>06</span> Sales per product <i class="bx bx-chevron-down
icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
     <div id="accordion-list-6" class="collapse" data-bs-parent=".accordion-list">
      <p>
        Sales per product, also called product performance, shows the profitability of
each product you sell.
      </p>
     </div>
    </li>

    <li>
     <a data-bs-toggle="collapse" data-bs-target="#accordion-list-7"
class="collapsed"><span>07</span> Pipeline velocity <i class="bx bx-chevron-down
icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
     <div id="accordion-list-7" class="collapse" data-bs-parent=".accordion-list">
      <p>
        Pipeline velocity measures how quickly leads and prospects move through your
```

```html
sales pipeline.
              </p>
            </div>
          </li>

          <li>
            <a data-bs-toggle="collapse" data-bs-target="#accordion-list-8"
class="collapsed"><span>08</span> Quote to close <i class="bx bx-chevron-down
icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
            <div id="accordion-list-8" class="collapse" data-bs-parent=".accordion-list">
              <p>
                Quote to close determines the percentage of prospects who turn into paying
customers.
              </p>
            </div>
          </li>

          <li>
            <a data-bs-toggle="collapse" data-bs-target="#accordion-list-9"
class="collapsed"><span>09</span> Average purchase value <i class="bx bx-chevron-down
icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
            <div id="accordion-list-9" class="collapse" data-bs-parent=".accordion-list">
              <p>
                Average purchase value, or average sale value, examines the average value of
each transaction.
              </p>
            </div>
          </li>
        </ul>
      </div>

    </div>

    <div class="col-lg-5 align-items-stretch order-1 order-lg-2 img"
style='background-image: url("assets/img/why-us legal.png");' data-aos="zoom-in"
data-aos-delay="150"> </div>
    </div>

  </div>
  </section><!-- End Why Us/Services Section -->

  <div class="row">
    <div class="btn-group" role="group" aria-label="Basic outlined example">
    <button type="button" class="btn btn-outline-primary"><a
href="https://github.com/IBM-EPBL/IBM-Project-50640-1666862022/blob/main/Project%20
Design%20%26%20Planning/Ideation%20Phase/Problem%20Statement.docx%20(1).pdf">P
roblem Statement</a></button>
```

```html
      <button type="button" class="btn btn-outline-primary"><a
href="https://github.com/IBM-EPBL/IBM-Project-50640-1666862022/blob/main/Project%20
Design%20%26%20Planning/Ideation%20Phase/Global%20Sales%20Data%20Analytics%2
0-%20Ideation%20(1).pdf">Proposed Solution</a></button>

      <button type="button" class="btn btn-outline-primary"><a
href="https://github.com/IBM-EPBL/IBM-Project-50640-1666862022/blob/main/Project%20
Design%20%26%20Planning/Project%20Design%20Phase%20I/Solution%20Architecture%
20(2).pdf">Technical Architecture</a></button>

      <button type="button" class="btn btn-outline-primary"><a
href="https://github.com/IBM-EPBL/IBM-Project-50640-1666862022/blob/main/Final%20D
eliverables/Performance%20Metrices%20%26%20Future%20Scope.docx.pdf">Performance
Metrics & Future Scope</a></button>

    <button type="button" class="btn btn-outline-primary">Demo Video</button>
    </div>

  </div>



  <!-- ======= Portfolio Section ======= -->
  <section id="portfolio" class="portfolio">
    <div class="container" data-aos="fade-up">

      <div class="section-title">
       <h2><a href="portfolio-details.html">Portfolio</a></h2>
       <p>Below is a dashboard we created for one of our clients.
Through this dashboard our client was able to make impactful business decisions.</p>
      </div>

      <iframe src="https://us3.ca.analytics.ibm.com/bi/?
perspective=dashboard&amp;pathRef=.public_folders%2FNew%2BProject%2FGlobal_Supe
rstore%2BDashboard&amp;closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_
navbar=false&amp;shareMode=embedded&amp;
action=view&amp;mode=dashboard" width="1400" height="600"
 frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>

    </div>
  </section><!-- End Portfolio Section -->



  <!-- ======= Team Section ======= -->
  <section id="team" class="team section-bg">
    <div class="container" data-aos="fade-up">

      <div class="section-title">
```

```html
      <h2>Team</h2>
      <p>Meet the team behind ARUNAI Devlopers.</p>
      <span>Team ID :<b> PNT2022TMID29554</b></span>
    </div>

    <div class="row">

      <div class="col-lg-6">
        <div class="member d-flex align-items-start" data-aos="zoom-in"
data-aos-delay="100">
          <div class="pic"><img src="assets/img/team/defaultprofilepic.jpg"
class="img-fluid" alt=""></div>
          <div class="member-info">
            <h4>ARAVINDHAN A</h4>
            <span>Team Leader</span>
            <span>ROLLNO :<b> 510419205003</b> </span>
            <div class="social">
              <a href=""><i class="ri-mail-fill"></i></a>
              <a href=""><i class="ri-github-fill"></i></a>
              <a href=""> <i class="ri-linkedin-box-fill"></i> </a>
            </div>
          </div>
        </div>
      </div>

      <div class="col-lg-6 mt-4 mt-lg-0">
        <div class="member d-flex align-items-start" data-aos="zoom-in"
data-aos-delay="200">
          <div class="pic"><img src="assets/img/team/defaultprofilepic.jpg"
class="img-fluid" alt=""></div>
          <div class="member-info">
            <h4>DINESH RAJ S</h4>
            <span>Team Member 1</span>
            <span>ROLLNO :<b> 510419205006</b> </span>
            <div class="social">
              <a href=""><i class="ri-mail-fill"></i></a>
              <a href=""><i class="ri-github-fill"></i></a>
              <a href=""> <i class="ri-linkedin-box-fill"></i> </a>
            </div>
          </div>
        </div>
      </div>

      <div class="col-lg-6 mt-4">
        <div class="member d-flex align-items-start" data-aos="zoom-in"
data-aos-delay="300">
          <div class="pic"><img src="assets/img/team/defaultprofilepic.jpg"
class="img-fluid" alt=""></div>
```

```html
          <div class="member-info">
            <h4>SHARUKH S</h4>
            <span>Team Member 2</span>
            <span>ROLLNO :<b> 510419205025</b> </span>
            <div class="social">
              <a href=""><i class="ri-mail-fill"></i></a>
              <a href=""><i class="ri-github-fill"></i></a>
              <a href=""> <i class="ri-linkedin-box-fill"></i> </a>
            </div>
          </div>
        </div>
      </div>

      <div class="col-lg-6 mt-4">
        <div class="member d-flex align-items-start" data-aos="zoom-in"
data-aos-delay="400">
          <div class="pic"><img src="assets/img/team/defaultprofilepic.jpg"
class="img-fluid" alt=""></div>
          <div class="member-info">
            <h4>VENGATAKRISHNAN V</h4>
            <span>Team Member 3</span>
            <span>ROLLNO :<b> 510419205035</b> </span>
            <div class="social">
              <a href=""><i class="ri-mail-fill"></i></a>
              <a href=""><i class="ri-github-fill"></i></a>
              <a href=""> <i class="ri-linkedin-box-fill"></i> </a>
            </div>
          </div>
        </div>

      </div>

    </div>
  </section><!-- End Team Section -->



</main><!-- End #main -->

<!-- ======= Footer ======= -->
<footer id="footer">



  <div class="footer-top">
    <div class="container">
      <div class="row">
```

```html
      <div class="col-lg-8 col-md-10 footer-contact">
        <h3>AEC Dev</h3>
        <p>Velu Nagar, Mathur, <br>
          Tiruvannamalai-606603<br>
          Tamilnadu. INDIA<br><br>
          <strong>Phone:</strong><a> +91 4175 255101/255102/255103</a><br>
          <strong>Email:</strong><a
href="aectvm1993@gmail.com">aectvm1993@gmail.com</a><br>
          <strong>Web:</strong> <a href="https://arunai.org/">Arunai Engineering
College</a><br>
        </p>
      </div>

      <div class="col-lg-3 col-md-6 footer-links">
        <h4>Useful Links</h4>
        <ul>
          <li><i class="bx bx-chevron-right"></i> <a href="#">Home</a></li>
          <li><i class="bx bx-chevron-right"></i> <a href="#why-us">Our Services</a></li>
          <li><i class="bx bx-chevron-right"></i> <a href="#portfolio">Portfolio</a></li>

        </ul>
      </div>
    </div>
  </div>

  <div class="container footer-bottom clearfix">
    <div class="copyright">
    &copy; Copyright <strong><span>AEC Dev</span></strong>. All Rights
Reserved</div>
    <div class="credits">
      <!-- All the links in the footer should remain intact. -->
      <!-- You can delete the links only if you purchased the pro version. -->
      <!-- Licensing information: https://bootstrapmade.com/license/ -->
      <!-- Purchase the pro version with working PHP/AJAX contact form:
https://bootstrapmade.com/arsha-free-bootstrap-html-template-corporate/ -->
      Designed by <a href="">Arunai Students</a>
    </div>
  </div>
</footer><!-- End Footer -->

<div id="preloader"></div>
<a href="#" class="back-to-top d-flex align-items-center justify-content-center"><i
class="bi i-arrow-up-short"></i></a>

<!-- Vendor JS Files -->
<script src="assets/vendor/aos/aos.js"></script>
<script src="assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
```

```
<script src="assets/vendor/glightbox/js/glightbox.min.js"></script>
<script src="assets/vendor/isotope-layout/isotope.pkgd.min.js"></script>
<script src="assets/vendor/swiper/swiper-bundle.min.js"></script>
<script src="assets/vendor/waypoints/noframework.waypoints.js"></script>
<script src="assets/vendor/php-email-form/validate.js"></script>

<!-- Template Main JS File -->
<script src="assets/js/main.js"></script>

</body>

</html>
```

GitHub : -
https://github.com/IBM-EPBL/IBM-Project-50640-1666862022/tree/main/Final%20Deliverables/Final%20Code

Project Demo Link :-

https://youtu.be/4Et5mpQO7aE