

**“DATA ANALYSTICS AND VISUALIZATION TO IDENTIFY CLIENT
BEHAVIOR WITH REFERENCE TO I BACUS TECH”**

INTERNSHIP REPORT SUBMITTED TO THE BHARATHIAR UNIVERSITY
FOR THE AWARD OF THE DEGREE OF
MASTER OF BUSINESS ADMINISTRATION

By

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Affiliated to Bharathiar University, Approved by AICTE
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Sulur, Coimbatore – 641 402.

NOVEMBER 2024

CERTIFICATE

This is to certify that the Internship report, entitled “DATA ANALYSTICS AND VISUALIZATION TO IDENTIFY CLIENT BEHAVIOR WITH REFERENCE TO IBACUS TECH” submitted to the Bharathiar University, in partial fulfilment of the requirements for the award of the DEGREE OF MASTER OF BUSINESS ADMINISTRATION, is a record of original work done by Mr. GOWTHAM P, during the period MAY 2024 TO JULY 2024 of his internship in School of Management Studies - PG, RVS College of Arts and Science (Autonomous), Coimbatore - 641402, under my supervision and guidance and the internship report has not formed the basis for the award of any Degree / Diploma / Associateship / Fellowship or other similar title of any candidate of any University.

Date:

Director

Signature of the Guide

Date of Viva-voce Examination held on _____.

Internal Examiner

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DECLARATION

I, GOWTHAM P hereby declare that the internship, entitled “DATA ANALYTICS SERVICE WITH REFERENCE TO I BACUS TECH” submitted to the Bharathiar University, in partial fulfilment of the requirements for the award of the DEGREE OF MASTER OF BUSINESS ADMINISTRATION is a record of original and independent research work done by me during the period May 2024 to July 2024 under the supervision and guidance of **Dr . Suganya S**, Associate Professor school of Computer Studies-PG, RVS College of Arts and Science (Autonomous), Coimbatore – 641 402 and it has not formed the basis for the award of any other Degree / Diploma / Associateship / Fellowship or other similar title to any candidate of any University.

Date:

Signature of the Candidate

Acknowledgement

I would like to express my deepest gratitude and appreciation to everyone who contributed to the success of my internship at I BACUS TECH and the completion of this project report. This journey has been both enlightening and enriching, and it would have been not possible without the support, guidance, and encouragement of several individuals and the organization as a whole.

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CHAPTER - I

Introduction

During a two-month internship at I-BACUS-TECH, key tools such as XMIND, Tableau, and Power BI were learned and applied. These tools facilitated the creation of visual data presentations, simplifying complex information for better understanding. XMIND proved useful in organizing thoughts through mind maps, aiding in project planning. Tableau and Power BI helped convert data into clear visuals, allowing others to make informed decisions based on the insights presented.

This internship provided an enriching experience that sharpened data analysis skills and improved the ability to effectively communicate insights. The skills acquired will be valuable for future career endeavors.

1.1 The background of the study

In today's world, companies must understand and utilize data effectively to make informed decisions. This growing need has led to the development and increased adoption of various data analytics tools. At I-BACUS-TECH, an internship was focused on providing innovative solutions that help businesses harness the power of their data. Hands-on experience was gained with tools such as XMIND, Tableau, and Power BI, which are essential for transforming raw data into meaningful insights.

XMIND, a tool for brainstorming and visually organizing thoughts, enhances team communication by making ideas easier to share. Power BI, an interactive data visualization tool developed by Microsoft, enables business users to create reports and dashboards without needing advanced technical skills. Its integration with Microsoft products like Excel, Azure, and SharePoint adds value for organizations already using these tools.

During the internship, Power BI was used to analyze sales and financial data, generating interactive reports and visual dashboards. The ability to create data models and share insights facilitated team discussions on trends and key performance indicators (KPIs). Power BI's user-friendly interface and seamless integration with Microsoft tools streamlined the transformation of raw data into actionable insights.

Tableau, another widely-used business intelligence and data visualization tool, is known for its powerful data analysis capabilities and intuitive visual representations. Its drag-and-drop interface allows for the quick creation of complex visualizations and advanced analytics, even without deep technical expertise. Tableau was used during the internship for customer segmentation analysis and sales performance metrics, uncovering deeper insights such as customer patterns and market trends. Its capacity to handle large datasets efficiently made it ideal for data-heavy projects tackled during the internship.

1.2 The purpose of the study

Objectives:

- 1) **Evaluate Tool Effectiveness:** Assess the impact of XMIND, Tableau, and Power BI on improving data visualization and analysis processes within organizations.
- 2) **Enhance Decision-Making:** Explore how these tools facilitate better-informed business decisions through clear and interactive data presentations.
- 3) **Improve Communication:** Investigate the role of visual tools in effectively communicating complex data insights to diverse stakeholders.
- 4) **Identify Best Practices:** Determine the best practices for utilizing these tools to maximize benefits across various business scenarios.
- 5) **Analyze Impact:** Examine the overall influence of these data visualization tools on organizational efficiency and market competitiveness.

1.3 The scope of the work

- 1) **Data Analysis and Business Intelligence (BI):**
 - Utilizing Tableau and Power BI to develop dashboards, reports, and visualizations for clients.
 - Analyzing large datasets to uncover business insights, trends, and patterns. Automating data reporting processes to enhance decision-making efficiency.

2) Data Integration and Management:

- XMIND may be used for tasks related to data processing or integration, including managing, cleaning, or transforming data from multiple sources.
- Ensuring data quality, conducting data migration, and working with large databases.

3) Consulting and Client Solutions:

- Collaborating with clients to understand business needs and translating them into data-driven or technical solutions.
- Creating customized analytics solutions using BI tools to address specific client challenges.

4) Technology Implementation and Support:

- Implementing and configuring tools such as Tableau and Power BI for clients.
- Offering support and troubleshooting services for BI tools.

5) Predictive Analytics and Machine Learning:

- If advanced analytics is a focus, contributing to predictive models used to forecast business outcomes.

1.4 Methodology of the work

The methodology at I-BACUS-TECH, based on exposure to tools like XMIND, Tableau, and Power BI, likely followed a data-driven approach to problem-solving. Below is a general outline of the methodology that may have been used during the internship:

1. Problem Definition and Requirement Gathering

- **Client Interaction:** The process begins with understanding the client's needs and defining the problem that requires a solution.
- **Objective Setting:** Clear objectives and goals are established to define the project's purpose, such as enhancing data visualization, improving reporting processes, or deriving insights from data.

2. Data Collection and Preparation

- **Data Sourcing:** Data is collected from various sources such as databases, spreadsheets, or APIs, both internal and external, depending on project requirements.

- **Data Cleaning:** The collected data undergoes cleaning to remove errors, duplicates, and missing values, ensuring consistency across datasets.
 - **Data Transformation:** Using tools like XMIND, data is transformed into suitable formats for analysis, which may involve normalizing, aggregating, or splitting the data as needed.
3. **Data Analysis and Visualization**
- **Exploratory Data Analysis (EDA):** Tableau or Power BI is used to explore data for trends, patterns, correlations, and anomalies.
 - **Data Modeling:** For more complex tasks, models are created using advanced algorithms or machine learning techniques, depending on the project's scope.
 - **Visualization:** Data is visualized through dashboards, charts, and interactive elements in Tableau or Power BI, making it easier for stakeholders to understand the findings.
4. **Insights and Reporting**
- **Insights Generation:** Meaningful insights are generated from the analysis, supporting decision-making, identifying growth opportunities, or addressing inefficiencies.
 - **Reporting:** Customized reports are created using Power BI or Tableau, which are then shared with clients or internal teams. These reports can be real-time and dynamic, ensuring quick delivery of actionable insights.
5. **Feedback and Iteration**
- **Client Review:** After presenting insights and reports, client feedback is gathered and integrated into the next project iteration.
 - **Continuous Improvement:** Projects go through multiple cycles of refinement to ensure accuracy and precision in the insights delivered.

Tools Used:

- **XMIND:** Likely used for data transformation and manipulation, ensuring that the data is prepared for analysis.
- **Tableau:** Primarily used for interactive data visualization, creating dashboards, and presenting findings.
- **Power BI:** Used for dynamic reporting and building real-time dashboards for business intelligence needs.

CHAPTER - II:

About Company

I-BACUS TECH, a leading digital transformation company based in India, is dedicated to revolutionizing businesses on a global scale. Through innovative solutions and cutting-edge technologies, the company specializes in driving growth and success for organizations across various industries, from startups to Fortune 500 corporations. The transformative approach has benefited organizations in India, the USA, Canada, and the UAE.

A team of experts combines industry knowledge with technical expertise to deliver customized solutions tailored to meet the unique needs and objectives of each client. Whether it's through AI-driven automation, the development of intuitive mobile applications, or the optimization of cloud infrastructure, I-BACUS TECH empowers businesses to adapt, evolve, and stay competitive in the fast-changing digital landscape.

As a trusted partner in digital transformation, I-BACUS TECH helps businesses unlock new growth opportunities with its innovative solutions. The company's focus on innovation and excellence aims to propel businesses to new heights in today's rapidly evolving digital environment.

2.1 Key Focus Areas

1. Business Intelligence (BI):

The focus is likely on delivering BI solutions using tools such as Power BI and Tableau, enabling organizations to convert raw data into actionable insights through effective visualization and reporting.

2. Data Analytics:

Data analytics services likely involve extracting, cleaning, transforming, and analyzing large datasets to uncover trends, improve decision-making, and optimize operational efficiency.

3. **Custom Software Development:**

The company may develop custom software solutions aligned with client business objectives, ensuring scalability, security, and user-friendliness.

4. **Automation and Digital Transformation:**

By helping businesses automate processes and transition into the digital space, I-BACUS TECH likely works on automation solutions such as automated reporting systems or AI-driven analytics to enhance operational efficiency.

2.2 Culture and Work Environment

As a technology company focused on cutting-edge solutions, I-BACUS TECH likely cultivates an environment that prioritizes:

1. **Innovation and Continuous Learning:** Access to the latest technologies fosters skill development and continuous learning for employees.
2. **Collaboration:** Cross-functional teamwork is likely emphasized, especially since projects in BI and analytics often require collaborative efforts.
3. **Client-Centric Approach:** A strong focus is likely placed on meeting the unique needs of clients through customized solutions.

2.3 Opportunities

1. **Digital Transformation:**

Many Indian companies, particularly in traditional industries like manufacturing and healthcare, are undergoing digital transformation. Tailored analytics, BI, and automation solutions from I-BACUS TECH could help these companies optimize processes and improve decision-making.

2. SME Growth:

Small and medium enterprises (SMEs) in India are expanding and seeking affordable yet impactful technology solutions. I-BACUS TECH can cater to this segment with cost-effective, scalable data analytics and business intelligence tools that facilitate growth.

3. Government Initiatives:

Programs such as Digital India and Startup India encourage technology adoption across sectors. I-BACUS TECH can capitalize on these initiatives by offering solutions for government projects or startups needing analytics and software solutions.

4. Expanding E-Commerce and Fintech:

The growing e-commerce and fintech sectors generate large amounts of data. I-BACUS TECH can provide data analytics services to help these industries extract insights from customer behavior, financial data, and operational metrics.

5. AI and Machine Learning:

As businesses increasingly recognize the value of advanced analytics, demand for AI and machine learning-based solutions is rising. I-BACUS TECH can integrate AI-driven insights into its BI offerings to create predictive models for clients.

2.4 Future Trends

1. Rise of Cloud-Based Analytics:

With the increasing adoption of cloud technologies in India, more companies are migrating their data and analytics processes to the cloud. I-BACUS TECH can leverage cloud-based BI and analytics tools to offer flexible, scalable solutions.

2. Real-Time Data Processing:

The need for real-time analytics and decision-making is growing, especially in sectors like e-commerce, financial services, and healthcare. Offering real-time data processing could be a key value proposition for I-BACUS TECH.

3. Adoption of Advanced BI Tools:

As businesses grow more sophisticated, the demand for advanced BI tools incorporating AI and machine learning capabilities will rise. I-BACUS TECH can integrate these features into its offerings to maintain a competitive edge.

4. Increased Focus on Data Privacy:

With tightening global data privacy regulations, including those in India, there will be increased demand for compliant analytics solutions. I-BACUS TECH can focus on building privacy-compliant solutions for clients.

5. Industry-Specific Solutions:

Developing specialized data solutions for specific industries, such as patient data analytics for healthcare or supply chain optimization for retail, can allow I-BACUS TECH to target niche markets and deliver more specialized value.

2.5 ORGANISATIONAL PROFILE

Company Profile



LOCATION	COIMBATORE, TAMIL NADU, INDIA
INDUSTRY	INFORMATION TECHNOLOGY, DATA ANALYTICS, BUSINESS INTELLIGENCE, SOFTWARE DEVELOPMENT
FOUNDED	2014
FOUNDER AND DIRECTOR	DHANESH P K
MANAGE	BALAJI S

Mission:

We envision a future where businesses seamlessly integrate digital technologies to unlock their full potential, revolutionizing industries and making a positive impact on society.

Vision:

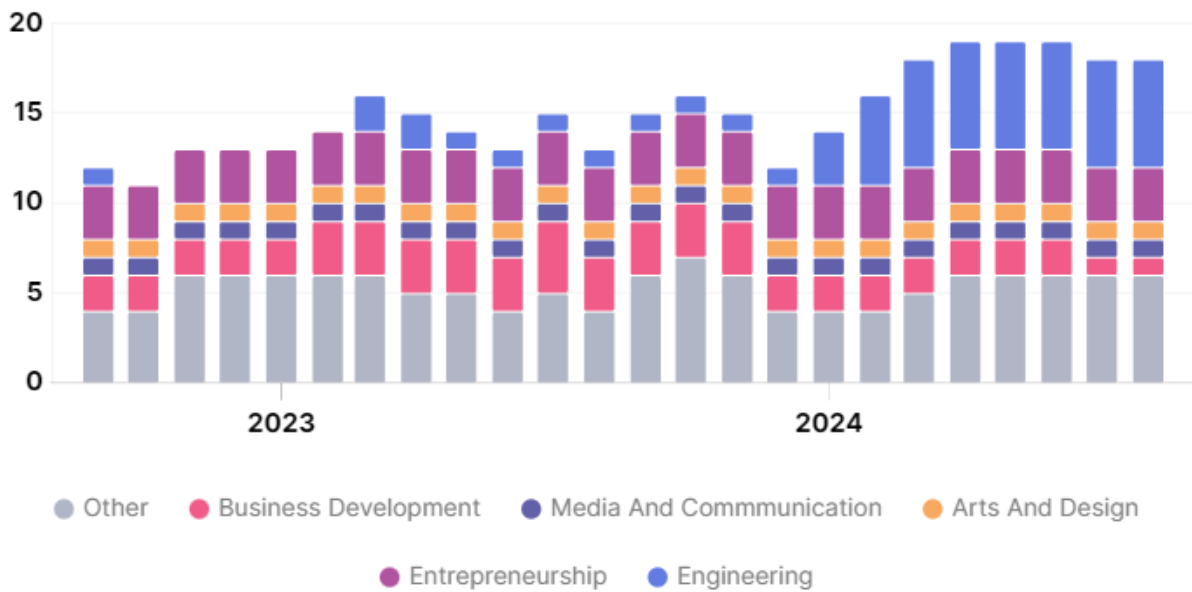
Our mission is to be the catalyst for positive change in the business world by delivering transformative digital solutions that enhance productivity, competitiveness, and customer experience.

Passion:

At I Bacus Tech, we are passionate about helping businesses unlock the potential of their data. We strive to create impactful, customized solutions that simplify complex data challenges, enabling clients to make informed, strategic decisions.

I-BACUS-TECH industries

Employee Metrics: TOTAL EMPLOYEE COUNT



Employee Metrics: EMPLOYEE RETENTION



Services Provided in I-BACUS-TECH:



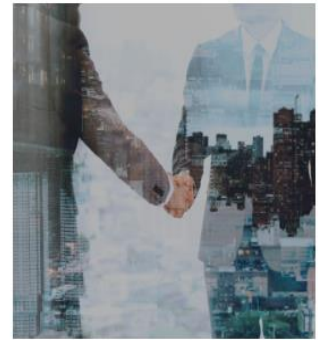
Digital Transformation



Application Development



Data Analytics



Business Analytics



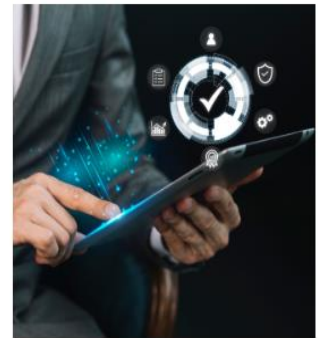
AI & ML



Business Consulting



Training

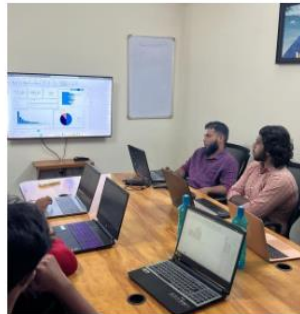


Technology Consulting

Trainings Conducted by I-BACUS-TECH



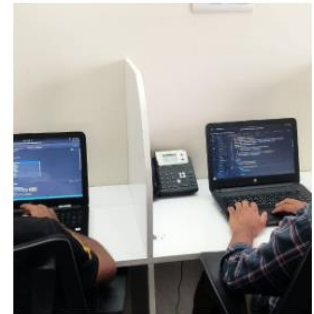
200+ Workshops



500+ Internships



50+ ReactJs



100+ Full Stack Development



500+ Power BI



400+ Tableau



1000+ Placement Assistance



500+ MS Excel

CLIENTS



CHAPTER - III:

AREA OF WORK

Data Analytics:

Comprehensive data analytics services are provided to assist businesses in transforming raw data into actionable insights. This involves data mining, processing, and advanced analytics to understand business performance, customer behavior, and operational efficiency.

Business Intelligence (BI):

BI tools such as Power BI and Tableau are implemented and customized to help organizations visualize data and generate interactive reports and dashboards for real-time decision-making. BI solutions focus on key performance indicators (KPIs) and business metrics to enhance management and strategic planning.

3.1 Data Collection and Preparation

Data Collection:

The process of gathering data from various sources relevant to a business problem or objective, including:

- **Internal Data:** Company databases, sales records, customer data, employee performance, etc.
- **External Data:** Market research, third-party databases, social media, web analytics, APIs, or publicly available datasets (e.g., Kaggle).
- **Methods:** Data collection may be conducted through manual input, automated systems, or APIs, depending on the source.

Data Preparation:

Data preparation involves cleaning, organizing, and structuring collected data to make it suitable for analysis. Key steps include:

1. **Data Cleaning:** Eliminating errors, duplicates, missing values, and inconsistencies in the data.
2. **Data Transformation:** Formatting data, normalizing or aggregating it, and structuring it for analysis, which includes converting data types and merging different datasets.
3. **Data Integration:** Combining data from multiple sources to provide a unified view for analysis.
4. **Data Enrichment:** Adding supplementary information (e.g., demographic details) to provide more context for analysis.

3.2 Data Modelling

Data Modeling:

This process involves organizing and structuring data to facilitate analysis and generate meaningful insights. It creates visual representations, such as diagrams or rule sets, that define how data elements relate to each other, ensuring efficient and accurate analysis.

Key Steps:

1. **Defining Data Entities:** Identifying key data points or entities relevant to the business problem (e.g., customers, sales, products).
2. **Establishing Relationships:** Determining how entities relate to one another (e.g., customer purchases, product categories).
3. **Creating Logical and Physical Models:**
 - **Logical Data Model:** Defines data structures, attributes, and relationships in a platform-independent manner.
 - **Physical Data Model:** Specifies how data is stored in databases or data warehouses.

Types of Data Models:

- **Conceptual Models:** High-level models for understanding overall structures and relationships.

- **Logical Models:** Detailed models defining data elements and structured relationships.
- **Physical Models:** Database-specific models focused on the actual storage of data.

3.3 Data Visualization

Data Visualization:

Graphical representation of data that simplifies complex datasets into visual insights, allowing users to easily identify trends, patterns, and outliers. This makes it easier for decision-makers to understand and act on data.

Key Elements:

1. Types of Visuals:

- **Bar and Column Charts:** Useful for comparing categories or tracking trends over time.
- **Pie Charts:** Ideal for displaying proportions or percentages.
- **Line Charts:** Suitable for showing trends and changes over time.
- **Heatmaps:** Helpful for visualizing data intensity or distribution across a spectrum.
- **Dashboards:** Interactive collections of visuals, often combining multiple charts, maps, and KPIs, allowing for real-time data exploration.

2. Tools for Data Visualization:

- **Tableau:** Known for its intuitive drag-and-drop interface and dynamic dashboards.
- **Power BI:** Offers robust data integration and real-time reporting, suitable for enterprise-level needs.
- **Excel:** Effective for simpler visualizations and quick chart generation.

3. Best Practices:

- **Simplicity:** Keep visuals clear and avoid unnecessary clutter.
- **Consistency:** Use consistent color schemes, labels, and formats for ease of interpretation.

- **Interactivity:** Offer users interactive dashboards to allow them to drill down into specific data points.

3.4 Reporting and Analysis

Reporting:

The process of structuring data into formats that convey information to stakeholders. This includes creating reports, dashboards, and visual summaries that highlight key metrics, performance indicators, and trends.

Types of Reports:

1. **Operational Reports:**

Focus on daily operations, offering insights on performance metrics, process efficiencies, and operational effectiveness.

2. **Financial Reports:**

Summarize financial data, including income statements, balance sheets, and cash flow statements, to present a clear overview of a company's financial status.

3. **Analytical Reports:**

Delve deeper into data to provide insights, analysis, and recommendations based on specific business objectives or questions.

4. **Dashboards:**

Interactive visual displays that showcase real-time data and key performance indicators (KPIs), allowing dynamic monitoring of performance and trends.

Tools for Reporting:

- **Tableau:**

Facilitates the creation of interactive and visually engaging reports and dashboards.

- **Power BI:**

Integrates effectively with Microsoft products, enabling real-time data updates and robust reporting capabilities.

➤ **Excel:**

Widely used for basic reporting, generating charts, and conducting simple analyses.

Analysis:

The process of examining and interpreting data to derive insights, uncover patterns, and support decision-making. It uses statistical techniques and tools to understand data trends and make predictions.

Types of Analysis:

1. **Descriptive Analysis:**

Summarizes historical data to understand past events, including basic statistics such as averages, totals, and trends.

2. **Diagnostic Analysis:**

Explores why certain outcomes occurred by identifying correlations and underlying causes behind trends, often through deeper investigation of specific data points or anomalies.

3. **Predictive Analysis:**

Leverages historical data and statistical models to forecast future outcomes, helping businesses anticipate trends, customer behavior, and potential challenges.

4. **Prescriptive Analysis:**

Offers recommendations on possible actions based on data insights, guiding businesses on the optimal steps to achieve specific objectives.

Importance of Reporting and Analysis:

1. **Informed Decision-Making:**

Accurate reports and thorough analysis provide insights that support strategic decisions and operational improvements.

2. **Performance Tracking:**

Regular reports enable organizations to monitor performance against KPIs, ensuring alignment with business objectives.

3. **Resource Allocation:**

Analysis identifies inefficiencies and guides effective resource allocation to maximize impact.

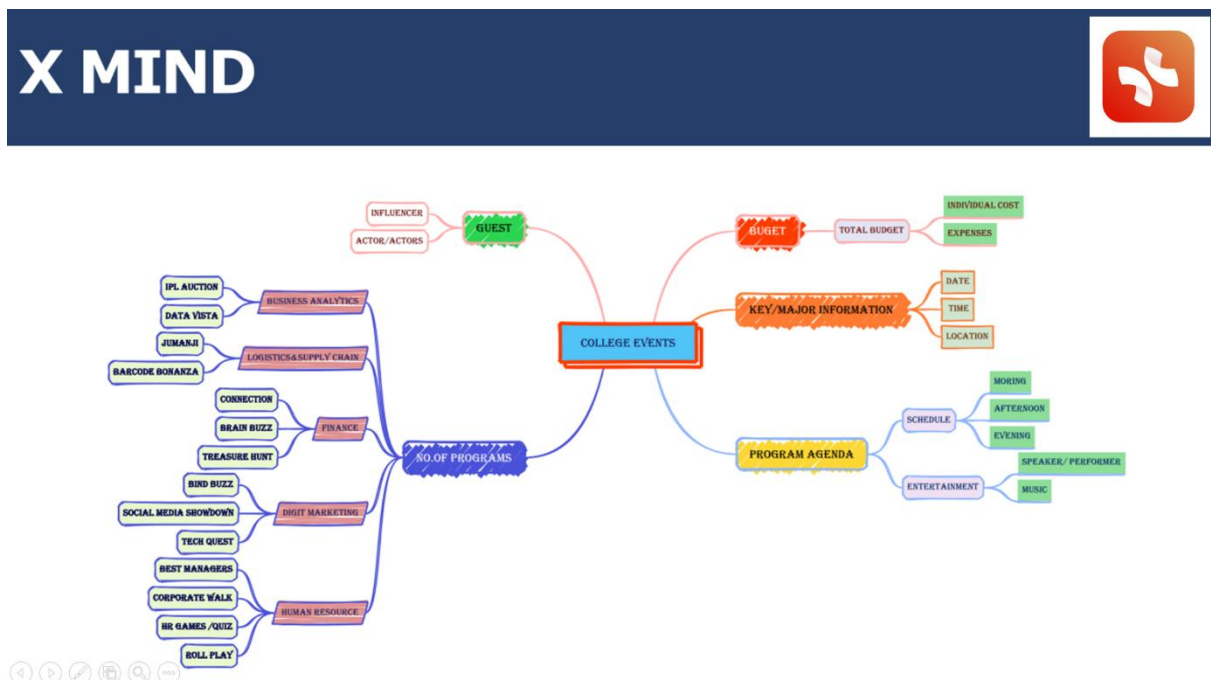
CHAPTER – IV

DATA INSIGHTS

4.1 college event dataset using xmind

OBJECTIVES:

The Mind map presents a structured framework for organizing college events, focusing on essential elements like guest involvement, program planning, budgeting, and logistics. It covers categories such as guest speakers (influencers, actors), major event details (date, time, location), program agenda (morning, afternoon, evening activities), entertainment, and a detailed budget breakdown (individual costs, total expenses). It also includes various event types across domains such as Business Analytics, Finance, Digital Marketing, and Human Resources, featuring activities like IPL Auction, Brain Buzz, Social Media Showdown, and Corporate Walk.



1. Central Theme:

College Events - The mind map revolves around organizing college events with multiple key branches.

2. Key Components:

- **Guests:** This section mentions potential guests such as influencers and actors/celebrities, indicating a focus on inviting prominent figures for events.
- **Budget:** Covers total budget, individual costs, and overall expenses, which are crucial for event planning and resource allocation.
- **Key/Major Information:** Details include important logistical information like the date, time, and location of the events.
- **Program Agenda:** The agenda seems divided into parts of the day (morning, afternoon, evening), with added elements like entertainment, music, and speaker/performer slots.

3. Number of Programs:

- **Business Analytics:** Events like IPL Auction, Data Vista, Jumanji, and Barcode Bonanza.
- **Finance:** Connection, Brain Buzz, and Treasure Hunt.
- **Digital Marketing:** Social Media Showdown and Tech Quest.
- **Human Resources:** Events like Corporate Walk, HR Games/Quiz, Role Play, etc.

4.2 Super Store dataset Using Powerbi

Objectives:

Using Power BI to analyze a Super Store dataset helps identify sales trends, optimize product and regional performance, and understand customer behavior. It enables tracking of sales by region, segment, and payment mode while highlighting top-selling products and categories. Additionally, Power BI helps monitor shipping efficiency, identify peak sales periods, and analyze profit

margins across different areas. These insights support data-driven decisions for improving sales strategies, inventory management, and overall business growth.



Dashboard insights:

- **Total Sales:** \$972.68K; **Profit:** \$972.68K; **Quantity Sold:** 14K units.
- **Top Region:** West (54% of sales).
- **Top Segment:** Consumer (47% of sales).
- **Preferred Payment Mode:** COD (43% of payments).
- **Sales Peak:** September to December (seasonal spike).
- **Top Category:** Office Supplies (\$0.39M).
- **Top Sub-Categories:** Phones, Chairs, and Binders (~\$0.11M each).

Key Takeaways:

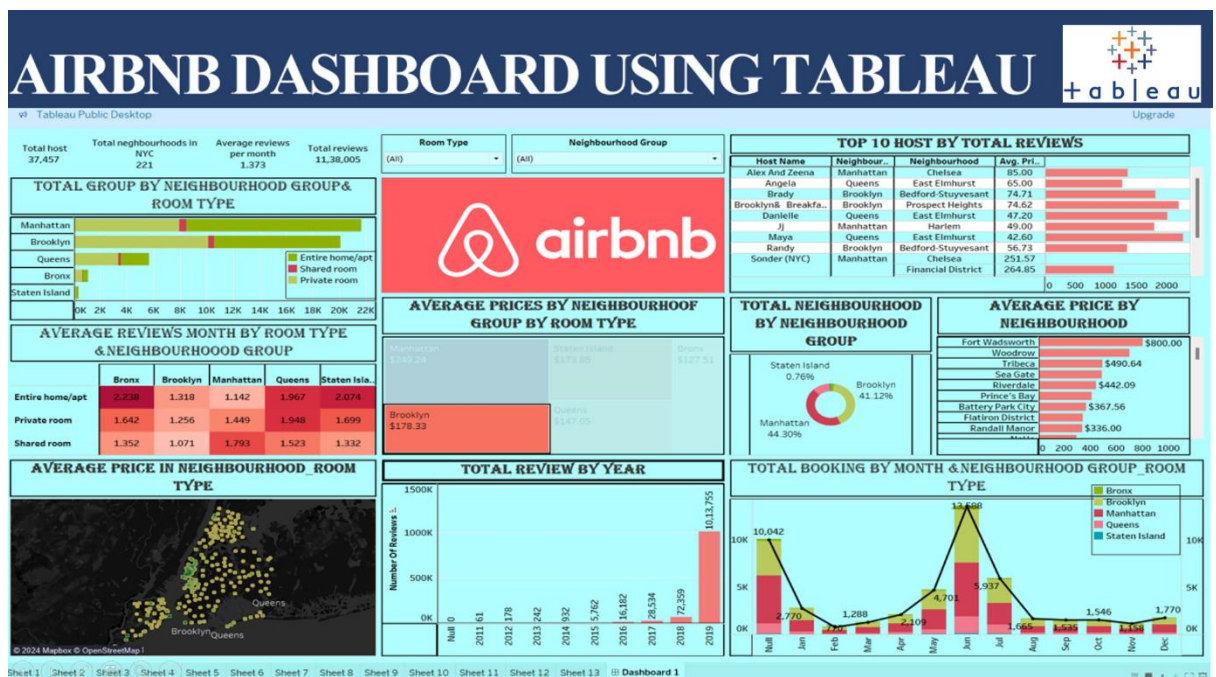
- The **West** region and **Consumer** segment are driving the majority of sales.
- **COD** is the most preferred payment method.

- Sales tend to peak towards the end of the year, particularly from September to December.
- **Phones, Chairs, and Office Supplies** stand out as top-selling products.

4.3 Airbnb dataset Using tableau

Objectives:

Using Tableau to analyse an Airbnb dataset helps track booking trends, optimize pricing across neighbourhoods and room types, and understand host and guest preferences. It provides insights into popular neighbourhoods, guest reviews, and satisfaction factors, helping identify top hosts and optimal pricing strategies. Additionally, it highlights potential growth areas by spotting regions with high demand but fewer listings, enabling better decision-making for business expansion.



Dashboard insights:

1. **Total Hosts: 37,457; Total Reviews: 11.38M**

2. **Top Neighborhoods:** Manhattan (44.3%) and Brooklyn (41.12%)
3. **Highest Prices:** Manhattan (\$249.24), Brooklyn (\$178.33), Queens (\$147.05)
4. **Top Booking Month:** June (13,668 bookings)
5. **Top Hosts by Reviews:** Alex and Zeena (Chelsea), Sonder (Financial District)
6. **Most Expensive Neighborhood:** Fort Wadsworth (\$800)
7. **Review Spike:** 2019 (103,755 reviews)

Key Takeaways:

- **Manhattan** and **Brooklyn** dominate the Airbnb market in NYC, with higher average prices in Manhattan.
- **June** is the peak booking month, indicating a strong seasonal trend.
- Hosts in popular neighborhoods like Chelsea and Financial District attract the most reviews.

CHAPTER - V

LEARNING OUTCOMES, CHALLENGES FACED AND RECOMMENDATIONS

5.1 Learning outcome

1. Data Analysis Skills:

Improved proficiency in utilizing data analytics tools like Tableau and Power BI to extract insights from data, enhancing decision-making capabilities.

2. Understanding Data Management:

Acquired knowledge of effective techniques in data collection, preparation, and modeling, essential for accurate reporting and analysis.

3. Visual Communication:

Developed the ability to create compelling and informative visual reports through data visualization, effectively communicating findings to stakeholders.

4. Business Intelligence Integration:

Learned how to integrate various business intelligence solutions, providing comprehensive insights into business operations and performance metrics.

5. Project Management:

Enhanced project management skills by coordinating tasks, managing real-world projects, and ensuring timely delivery of data solutions.

5.2 Challenges Faced

Numerous challenges were encountered during the two-month internship, particularly with Power BI and Tableau, and embedding dashboards into Power Apps for clients. These experiences tested technical skills while also improving problem-solving abilities with the support of AI tools and mentor guidance.

1. Data Quality Issues:

Dealing with incomplete, inconsistent, or inaccurate data posed challenges, affecting the quality of analysis and insights derived.

2. **Complexity of Data Integration:**

Integrating data from multiple sources proved difficult, complicating the process of achieving a unified view of data for reporting.

3. **Client Expectations:**

Managing fluctuating client expectations in terms of deliverables, timelines, and project scope required adaptability.

4. **Skill Gaps:**

Recognized the need for additional training, particularly in advanced analytics and specific tools, to better meet project demands.

5. **Time Constraints:**

Tight deadlines limited the ability to conduct thorough analysis and comprehensive reporting, leading to potential oversights.

5.3 Recommendations

Several key recommendations can enhance future projects and improve overall workflow based on the learning outcomes and challenges faced during the internship.

1. **Invest in Data Quality Management:**

Implement robust data quality assurance processes to regularly clean, validate, and maintain data accuracy, ensuring high-quality input for analysis.

2. **Enhance Training Programs:**

Develop comprehensive training programs to improve team skills in data analytics tools, data integration techniques, and advanced analytics methods.

3. **Focus on Client Communication:**

Establish regular communication with clients to clarify expectations, provide project updates, and address concerns promptly, fostering stronger relationships.

4. **Create Standard Operating Procedures (SOPs):**

Develop SOPs for data collection, preparation, analysis, and reporting to streamline processes, ensure consistency, and minimize errors.

5. **Promote a Data-Driven Culture:**

Encourage clients to adopt a data-driven approach by demonstrating the benefits of analytics and providing training to enhance data literacy within their teams

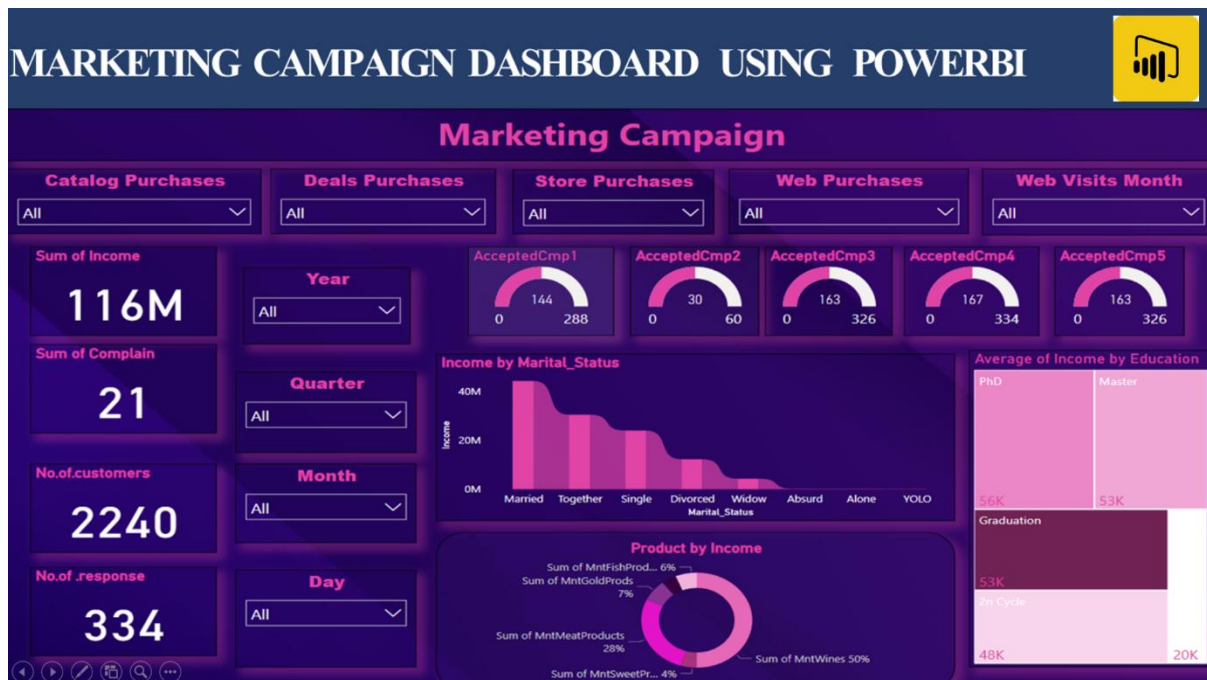
CHAPTER – VI

OTHER PROJECTS

6.1 Marketing campaign dashboard using PowerBi

OBJECTIVES:

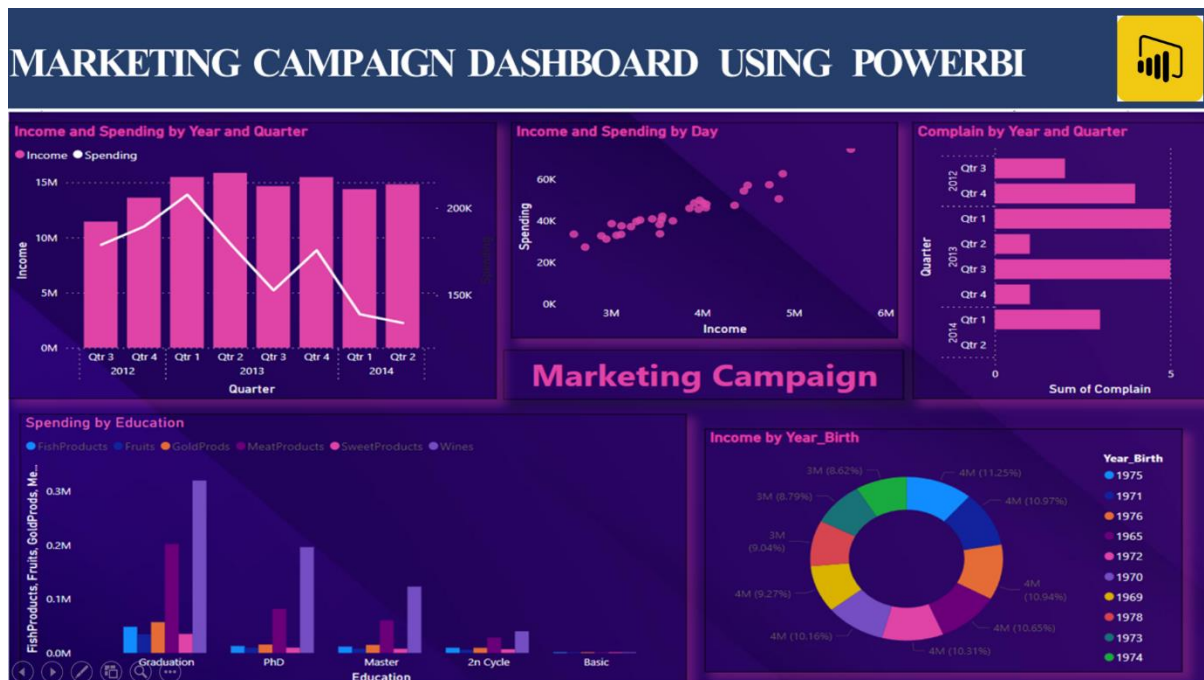
The Power BI dashboard for the Marketing Campaign provides a comprehensive overview of various purchasing behaviours (catalog, deals, store, and web purchases) along with key performance indicators such as income, complaints, and customer responses. It tracks campaign acceptance across multiple campaigns and breaks down income by marital status and education levels. Additionally, it highlights product preferences by income distribution, enabling data-driven insights for decision-making. The objective is to provide a visual, data-driven summary to help marketers optimize campaigns, understand customer demographics, and assess overall campaign performance in real time



DASHBOARD INSIGHTS

1. **Campaign Performance:** Campaigns 3, 4, and 5 show higher acceptance rates, indicating they were more successful, while Campaign 2 had significantly lower engagement.

2. **Income Segmentation:** Married customers contribute the highest income, followed by those in a "Together" relationship, suggesting these groups are the most valuable targets for future campaigns. Income drops sharply for other marital statuses, such as "Single" and "Divorced."
3. **Product Preferences:** The highest spending is on wines (50%), indicating that wine-related products are a key revenue driver. Other categories like meat (28%) and gold products (7%) also contribute but to a lesser extent.
4. **Customer Demographics:** Higher income is strongly associated with education levels, with PhD holders averaging \$56K in income, followed closely by those with a Master's and Graduation degree, suggesting a correlation between education and purchasing power.
5. **Complaint Management:** With 21 complaints registered out of 2240 customers, the complaint rate is low, indicating good customer satisfaction but still a potential area to monitor closely.



DASHBOARD INSIGHTS

1. **Income vs Spending (by Year and Quarter):** Income and spending are inconsistent over time. Income was highest in Q1 of 2013, but spending dropped significantly in Q2 of 2014.
2. **Daily Income and Spending:** As income increases, spending also rises. Higher-income days tend to correlate with higher spending.

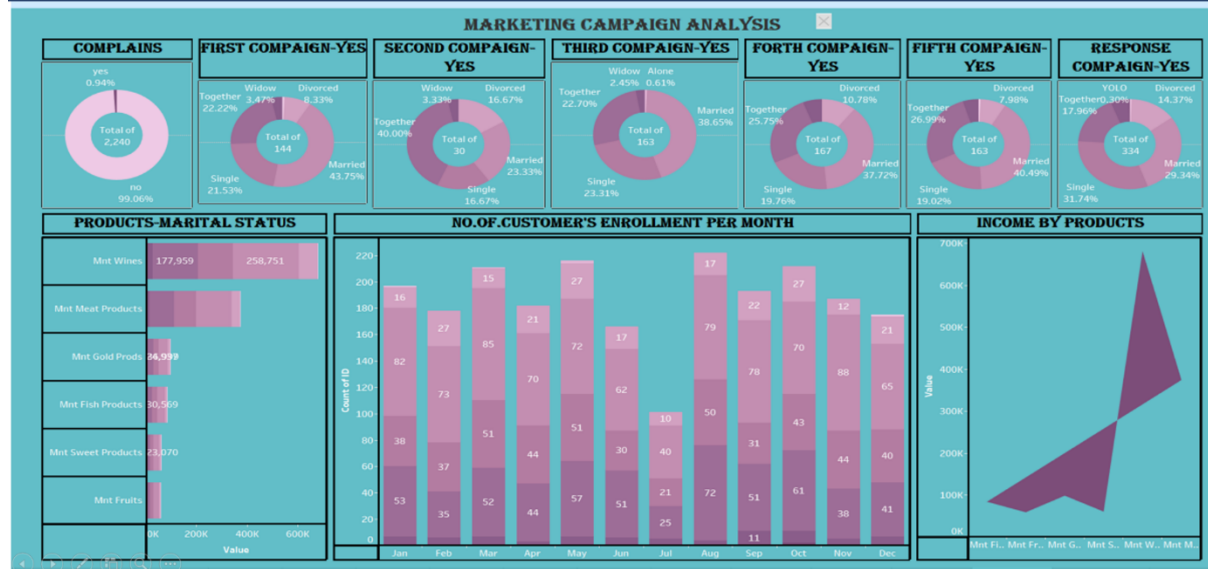
3. **Complaints by Year and Quarter:** Most complaints occurred in Q3 of 2013 and Q1 of 2014. There was a notable spike in complaints during these periods.
4. **Spending by Education:** Graduates and PhD holders spend the most, especially on meat products and wine. Other education levels, like those with basic education, spend significantly less.
5. **Income by Year of Birth:** People born in 1965, 1970, and 1971 generate the highest income, with others (like those born in the early 1970s) contributing somewhat equally.

6.2 Marketing campaign dashboard using tableau

OBJECTIVES:

Tableau in this marketing campaign dashboard is to visually represent and analyse customer data across various dimensions, such as product preferences, customer engagement through multiple campaigns, and demographic factors like marital status. The dashboard highlights metrics such as the number of complaints, campaign responses, monthly customer enrolment, and income generated by products. This allows for a comprehensive overview of the marketing efforts, helping stakeholders assess campaign effectiveness, product popularity, and customer segmentation to make data-driven decisions and optimize future marketing strategies

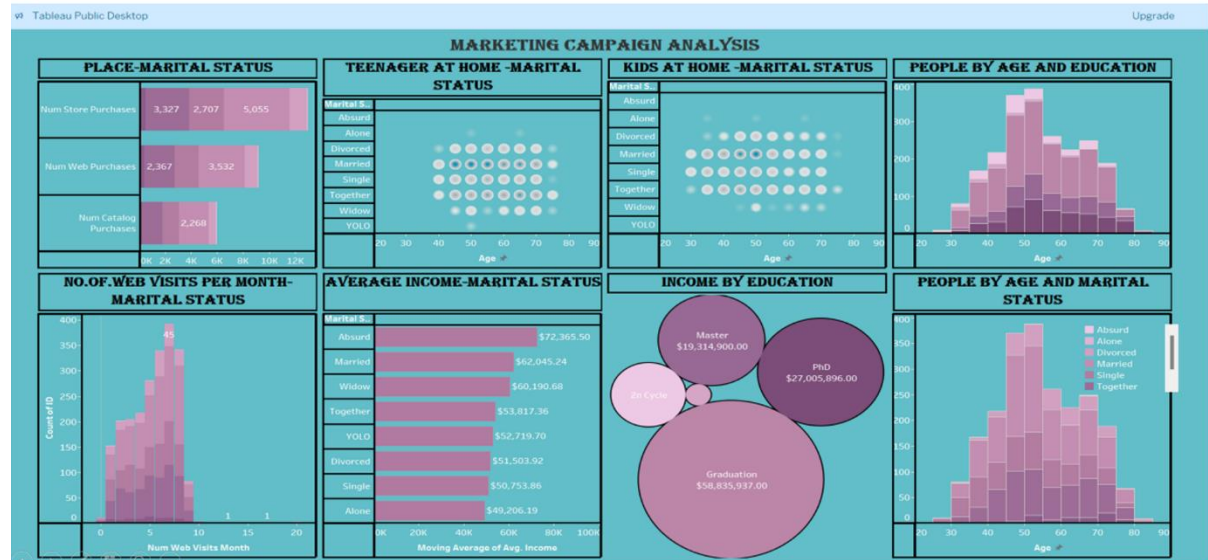
MARKETING CAMPAIGN DASHBOARD USING TABLEAU



DASHBOARD INSIGHTS

- Complaint Rate:** The percentage of customer complaints is extremely low at 0.94%, indicating overall customer satisfaction with the campaigns.
- Campaign Participation:** As the campaigns progress, participation tends to decline. For example, the first campaign had 144 respondents, while only 30 customers responded to the second campaign. However, the participation picks up in later campaigns, with the fifth campaign reaching 163 respondents again.
- Marital Status Impact:** Married customers consistently form a significant portion of respondents across all campaigns, particularly in the first (43.75%), third (38.65%), and fifth (40.49%) campaigns. This suggests that marital status could be a key factor in engagement levels.
- Customer Segmentation by Marital Status:** Product consumption is segmented by marital status, with married customers purchasing significantly more "Mnt Wines" and "Mnt Meat Products" compared to other customer groups.
- Monthly Enrollment Trends:** There is fluctuation in customer enrollment throughout the year, with significant spikes in March (85 customers) and August (88 customers). However, months like February, June, and December show lower enrollments, indicating potential areas for targeted campaigns.

MARKETING CAMPAIGN DASHBOARD USING TABLEAU



DASHBOARD INSIGHTS

- Purchasing Trends:** Married people buy the most, both in stores and online. Single people also shop a lot, especially online.
- Website Visits:** Most people visit the website less than once a month, meaning there's room to improve online engagement. Singles and married individuals are the most frequent visitors.
- Income and Spending:** Married people have the highest average income, followed by widows. This suggests that people with higher incomes are buying more.
- Education and Income:** People with college degrees or higher, especially graduates and PhD holders, earn more and are likely to spend more on products.
- Age and Engagement:** Most active customers are between 40 and 60 years old, particularly married and divorced people. Younger people (20-30 years) are less involved, so there's an opportunity to target them.
- Families with Kids:** Households with kids or teenagers are fairly evenly distributed, mainly with parents aged 30-40, which could help with family-targeted campaigns.

6.3 REFERENCE

1. https://www.novvypro.com/all_dashboards
2. <https://www.tableau.com/community/public>
3. <https://datavis.blog/2019/05/13/tableau-public-api/>
4. <https://www.reddit.com/r/PowerBI/>

CHAPTER – VII

ANNEXURE

7.1 Attendance

7.2 Work sheet / Work Diary