National College of Ireland

Project Submission Sheet

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Olist: Implementation of a BI full suite and Business Analytics system

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Abstract:

The rapid evolution of technology has transformed traditional marketplaces, offering unprecedented growth opportunities for e-commerce. This project revolves around Olist, a prominent Brazilian e-commerce platform, aiming to identify key gaps and opportunities for optimization within the industry. The primary objective is to enhance the platform, empowering sellers to boost sales and revenue. Olist, founded in 2015 by Tiago Dalvi, has established a global presence, serving over 180 countries and engaging with a vast network of more than 45,000 shopkeepers and retailers. [1] With substantial funding, including a recent $186 million investment in December 2021 [1] Olist is poised for expansion and diversification into financial services for sellers.

The analysis identifies areas for improvement, such as streamlining the onboarding process, automating marketing strategies, and enhancing overall business visibility.

The database design revolves around essential elements, including information about sellers, products, customers, orders, payments, shipments, campaigns, discounts, reviews, and various analytics metrics. This structured database forms the backbone of Olist's operations, ensuring efficient data management and retrieval.

1. SCHEMA OF THE PROJECT

1.1. Entity Relationship Diagram (ERD) Overview:

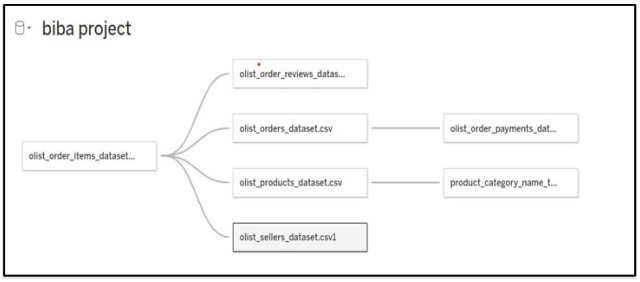

Figure 1 ERD of dataset

The ERD encapsulates the structural blueprint of the dataset [2], illustrating the relationships between key entities. At the core of this schema are four pivotal objects: Order review, Orders, Products, and Sellers. These entities serve as the linchpin for the primary functions of Services, Sales, and Marketing within the Olist ecosystem.

The schema delineates the connections and dependencies between these fundamental entities, laying the groundwork for a comprehensive Dataset Customer Relationship Management (CRM) solution tailor-made for Olist. It is the nexus around which crucial processes revolve, ensuring a seamless integration of data for efficient management and analysis.

1.2. Data Visualization Framework:

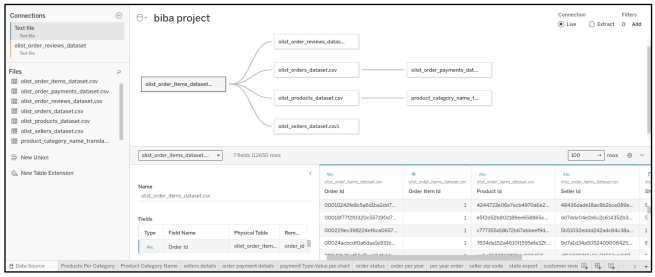

Figure 2 Data Visualization Framework

Leveraging the versatility of Tableau as the visualization tool of choice [2], a diverse range of plots was generated to offer a multifaceted perspective on the company's dynamics. [3] The visualization arsenal includes Line Plots, Bar Plots, Pie Charts, Symbol Maps, Box Whisker Plots, and Tree Maps. Each visualization serves a unique purpose, enabling a comprehensive exploration of data patterns, trends, and outliers.

Key Elements in the Schema:

- Order Review:

  Central to customer feedback and evaluation of Olist's services.

  Connects to Orders, Products, and Sellers for a holistic view of the customer experience.

- Orders:

  Anchors the transactional aspect of the dataset.

  Links to Order Review, Products, and Sellers, forming the backbone of service-related data.

- Products:

  Encompasses details about the various products available on the Olist platform.

  Connected to Orders, Order Review, and Sellers for a comprehensive understanding of product dynamics.

- Sellers:

  Represents the network of sellers partnered with Olist.

  Linked to Orders, Order Review, and Products, facilitating a 360-degree view of seller interactions.

The interconnectedness of these elements forms a robust schema, facilitating data-driven decision-making across services, sales, and marketing functions within the Olist ecosystem.

2. Data Management and Implementation

2.1. Workflows

In the context of data management and implementation, workflow refers to the systematic sequence of processes and tasks that data follows within the Olist platform. It encompasses the entire lifecycle of data from its creation or acquisition to its processing, analysis, and eventual presentation in the form of reports or dashboards. The workflow ensures a streamlined and efficient handling of data, contributing to the overall success of the business intelligence system.

Key Components of the Data Workflow:

- Data Acquisition:

  The workflow begins with the acquisition of data from various sources, including onboarding processes, customer interactions, sales transactions, and marketing activities.

- Data Processing:

  Once acquired, the data undergoes processing to clean, transform, and organize it into a structured format. This phase may involve handling missing values, standardizing formats, and ensuring data quality.

- Integration:

  The integrated data is then fed into the CRM, where it becomes a part of the comprehensive customer and seller profiles. Integration ensures that data from different sources coexists within the system.

- Analysis and Segmentation:

  The CRM and analytics components utilize the processed data to perform customer segmentation, sales performance analysis, and other key analytical tasks. This step is crucial for generating actionable insights.

- Dashboard Creation:

  The analyzed data is utilized to create dashboards using tools like Tableau and Salesforce[4]. These dashboards align with the analytical requirements and provide visual representations of key metrics and trends.

- Feedback Loop:

  The workflow incorporates a feedback loop where insights derived from dashboards may influence adjustments in marketing strategies, customer engagement initiatives, and overall platform improvements.

2.2. Profiles

Profiles within the Olist system refer to comprehensive representations of entities such as customers and sellers. These profiles aggregate relevant information, allowing for a holistic view of each entity's interactions and transactions within the platform.

Customer Profile:

- Personal Information:

  Includes details such as the customer's name, contact information, and address.

- Transaction History:

  Summarizes the customer's order history, including order dates, statuses, and total order amounts.

- Engagement Data:

  Captures customer interactions, preferences, and engagement with marketing campaigns.

- Support Interactions:

  Records any interactions with the customer support system, including inquiries, issues, and resolutions.

- Feedback and Ratings:

  Includes customer reviews, ratings, and feedback on products and overall platform experience.

Seller Profile:

- Business Information:

  Encompasses details about the seller's business, including name, contact person, and address.

- Product Listings:

  Provides information on the products offered by the seller, including descriptions, prices, and inventory levels.

- Order and Inventory Management:

  Summarizes the seller's order details, inventory status, and performance metrics.

- Marketing Engagement:

  Tracks the seller's participation in marketing campaigns, promotions, and their effectiveness.

- Technical Support Interactions:

  Documents any technical support interactions or issues faced by the seller.

Importance of Profiles:

Profiles play a pivotal role in data management as they serve as centralized repositories of information. They facilitate:

- Personalized Interactions:

  Customer and seller profiles enable personalized interactions, allowing Olist to tailor its services, recommendations, and communications based on individual preferences and behaviors.

- Data-Driven Decision-Making:

  Comprehensive profiles contribute to data-driven decision-making by providing a consolidated view of interactions and transactions. This aids in deriving insights for improving user experience and optimizing business processes.

- Efficient Support and Communication:

  Profiles enhance the efficiency of customer support and communication by providing support agents and marketing teams with a contextual understanding of individual customers and sellers.

3. DASHBOARDS AND MANAGEMENT REPORTS

3.1. Product Dashboard

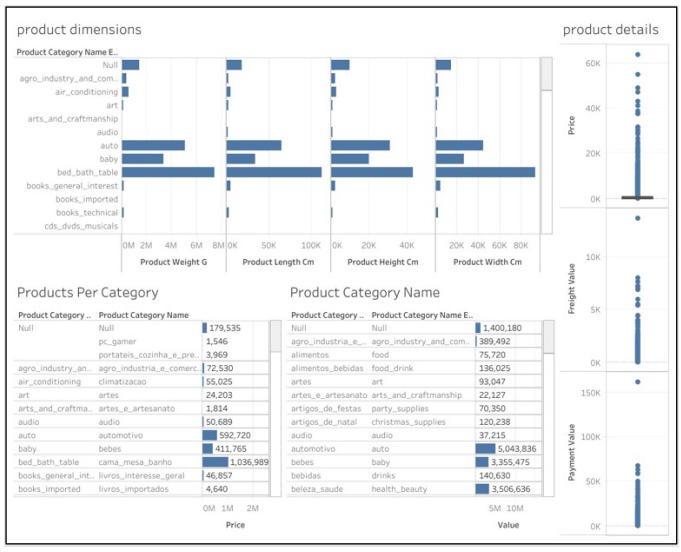

Figure 3 Product Dashboard

Inferences:

Products value (inclusive of all taxes):

The key departments that have significant contributions as per product value were identified to be housewares, furniture, decor, bed bath table and sports leisure.

- Products Dimensions

  According to the bar plot of dimensions across different product categories, bed_bath_table emerged as the largest category in terms of dimension. A bar plot of dimensions across different product categories was created considering the height, weight, width and weight of each product.

- Products per category:

  barplot of the amount invested by Olist to secure stock across different categories according to which bed_bath_table category emerged as the largest among all categories which makes sense as furniture is expensive and succumbing to its great made the organisation invest a great deal to secure stock in this category. barplot of the amount invested by Olist to secure stock across different categories according to which gift watches, health beauty products and furniture were the categories that emerged as the largest among all categories which makes sense as furniture is expensive and succumbing to its great made the organization invest a great deal to secure stock in this category.

- Products value(inclusive of all taxes):

  Bar plot of tax inclusive value of products sold on the Olist platform across different categories which demonstrates automotive category as the greatest among each category and these values are higher than invested value to acquire products in these categories because of inclusion of taxes and various other charges viz. hosting charge, delivery charge, etc as expected. Bar plot of tax inclusive value of products sold on the Olist platform across different categories which demonstrates automotive category as the greatest among each category and these values are higher than invested value to acquire products in these categories because of inclusion of taxes and various other charges viz. hosting charge, delivery charge, etc as expected.

- Payment value per order

  To maximize the usefulness of this visualization, a breakdown of payment values across categories or trends over specific periods could be explored, offering valuable information on customer spending patterns and revenue generation.

The Product Dashboard serves as a pivotal tool for Olist, providing actionable insights into product dimensions, investment distribution, overall product values, and payment dynamics. These insights empower Olist's product management and financial teams, fostering informed

decision-making for strategic growth and operational efficiency.

3.2. Seller Dashboard

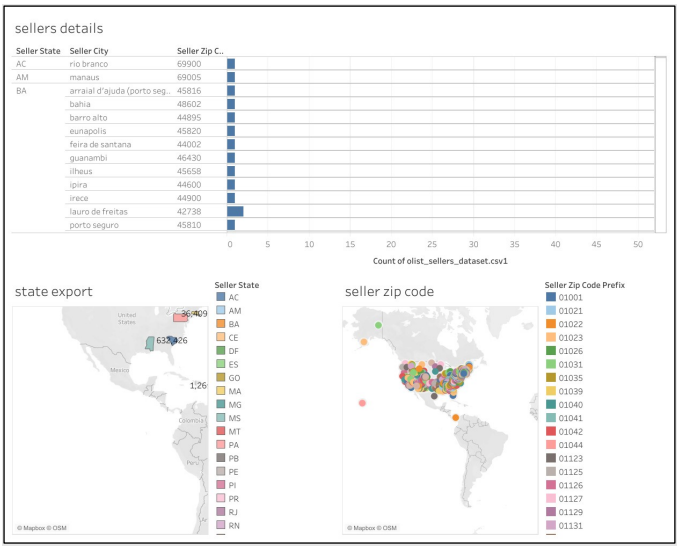

Figure 4 Seller Dashboard

Inferences:

Sellers details – city, state, zip code

Puerto Rico is the largest exporter of goods to be hosted on Olist platform for growing their business through Olist which took place based on screening of products for quality checks and if found satisfactory, helping expand these small organizations make their presence felt in ecommerce platform.

Several states in the US such as Montana, South Carolina, Pennsylvania, Massachusetts, and Mississippi were identified as potential lead companies.

Each seller was identified considering their state zip code.

maps are deduced by considering the latitude and longitude and zip code of the sellers.

Through the map visualizations we are able to infer that most of our sellers are from US.

3.3. Order Dashboard

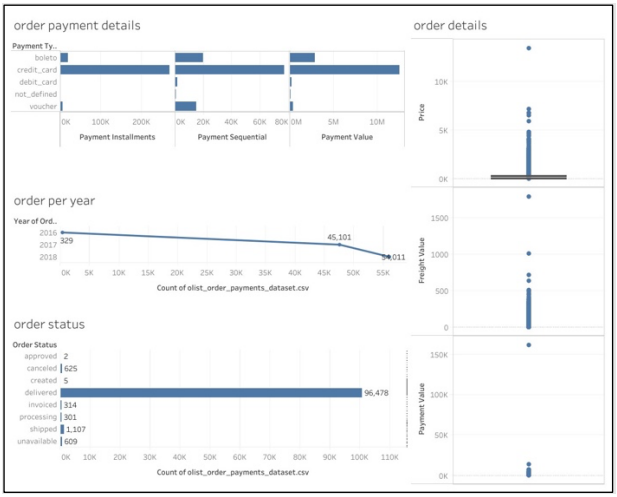

Figure 5 Order Dashboard

The Order Dashboard, showcased in Figure 5, provides valuable insights into Olist's order management dynamics. It simplifies complex data into easy-to-understand visuals, offering a quick overview of crucial aspects related to order processing.

Inferences:

order status: most of the goods were delivered on time regularly according to the order status bar plot. The number of orders which were cancelled were identified to be 625 and unavailable orders were 609.

order details: the freight value, prices and payment value of the goods were plotted on a line graph to show variability across products.

Order payment details: Credit card was identified as the most common method of payment amongst customers. This was done by plotting the method of payment against payment value. Customers also opted to use credit card as the payment method for payment through instalments.

Order per year: The count of order per year in the form of a line chart. The booming period of the company was identified from 2016 to 2017. The company continued to expand rapidly thereafter.

- Order Status:

  The bar plot representing order status indicates that the majority of goods were consistently delivered on time. This positive trend underscores Olist's commitment to timely fulfill the order, contributing to enhanced customer satisfaction.

- Order Details:

  A line graph illustrates key order details, including freight value, prices, and payment value. This visualization aids in understanding the variability in these parameters over specific periods. Identifying patterns in price fluctuations and payment dynamics is essential for Olist's financial planning and strategy.

- Order Payment Details:

  The dashboard suggests that credit card transactions were the most commonly used payment method. This inference provides valuable insights into customer payment preferences, enabling Olist to streamline payment processing and potentially explore tailored promotions or partnerships with credit card providers.

The Order Dashboard acts as a user-friendly tool for Olist's order management teams, offering quick insights into the efficiency of order processing, financial dynamics, and customer payment behaviours. By focusing on clear visualizations, this dashboard facilitates informed decision-making, aiding Olist in optimizing its order fulfilment processes and enhancing overall operational effectiveness.

3.4. Payment CEO Dashboard

Figure 6 CEO Dashboard

The Payment CEO Dashboard, presented in Figure 6, consolidates critical information related to payments on Olist's platform. This dashboard offers a comprehensive view of payment-related metrics, customer reviews, order status, and key financial data.

Inferences:

- Customer Review Score:

  The CEO Dashboard incorporates a visual representation of customer review scores. This crucial metric gauges customer satisfaction and overall experience. Consistently high review scores reflect positive customer sentiment, affirming Olist's commitment to delivering quality service.

- Order Status:

  A detailed overview of order status provides executives with real-time insights into the current state of order fulfilment. Monitoring order statuses allows for proactive decision-making, ensuring that potential issues are addressed promptly, and customer expectations are met.

- Type Value Pie Chart:

  The pie chart breaks down the type value across different payment categories. This visual aid assists executives in understanding the distribution of payment types used by customers. This information can be pivotal in shaping financial strategies and optimizing payment processing systems.

- Product Category to Payment:

  Understanding the correlation between product categories and payment methods is vital for strategic planning. This part of the dashboard explores how customers prefer to pay for products in specific categories. Such insights empower executives to tailor marketing and promotional strategies based on payment preferences.

- Payment Value per Order:

  A clear depiction of payment values per order helps executives track the financial performance of individual transactions. Monitoring this metric provides insights into average order values and aids in identifying trends that may influence pricing, promotions, or financial forecasting.

The Payment CEO Dashboard serves as a powerful tool for Olist's top executives, offering a concise yet comprehensive overview of critical payment-related metrics. This dashboard's strategic focus enables executives to make informed decisions, aligning financial strategies with customer preferences and market trends.

3.5. Leads

The main function of Leads is to help Olist is to track and manage potential Sellers/Retailers before they are qualified as prospects and converted into Sellers.

Leads page serve as a repository for information about potential customers, and contains contact details, company information such as email, website, address, phone, and any other relevant data gathered during the initial stages of the sales process.

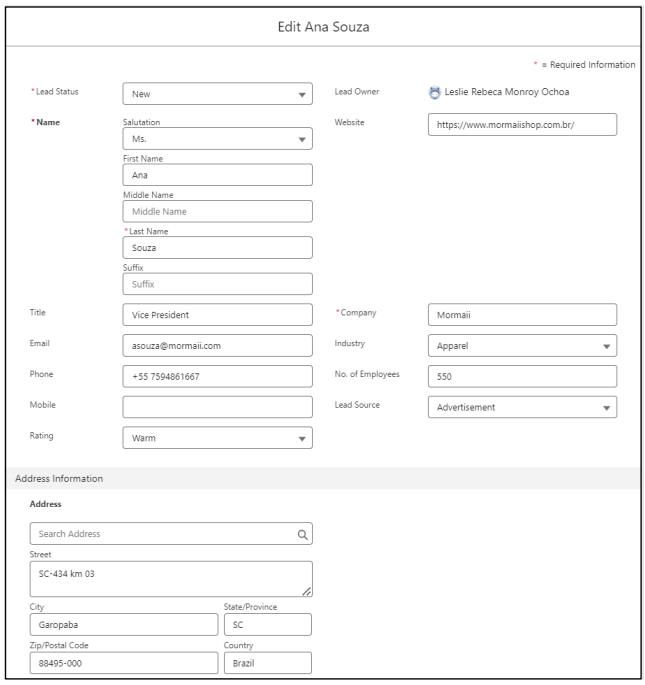

Figure 7. Lead information

3.6. Overview:

The view provides relevant information to the Sales team and scoring mechanisms to prioritize the leads based on their engagement, interaction (last activity) and demographics.

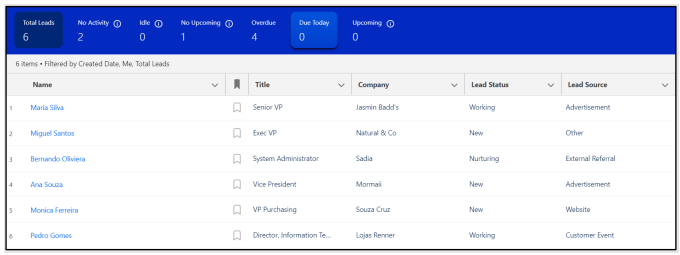

Figure 8. Leads Overview

- Leads Overview

  The Leads Overview is a crucial component empowering the Sales team with real-time insights into potential Sellers/Retailers. The view not only displays basic contact details but also incorporates scoring mechanisms. These mechanisms prioritize leads based on their engagement level, last activity, and demographic information. This prioritization ensures that the sales team focuses on leads with the highest probability of conversion, optimizing their efforts and resources.

3.7. Marketing

This dashboard offers a visual representation of key marketing performance metrics and insights, marketing campaigns, lead generation efforts, and marketing strategies.

Olist Marketing Dashboard provides the sale team information about the leads, status, source, and the industry of each lead. Relevant information to make decisions.

Figure 9 Marketing Dashboard

- Marketing Leads by Source Report
  This report shows the original channel through potential customers in this case potential Sellers were generated, found, or acquired:

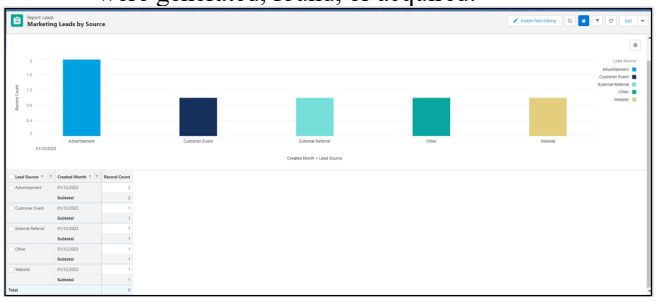

Figure 10 Marketing Leads

The Marketing Leads by Source report helps lead generation by providing an attribution analysis. This report identifies the specific channels like advertisement, customer events customer reference, website and others that are most effective in bringing in potential Sellers. It tracks how leads progress through different stages, providing insights into where leads might drop off and identifying opportunities for optimization.

3.8. Opportunities

Opportunities is a record that shows a potential revenue for the company. This view will help Olist to track and manage deals and sales transactions.

Offers a view of the name of the Opportunity, the account administrator, the actual stage, the estimated close date:

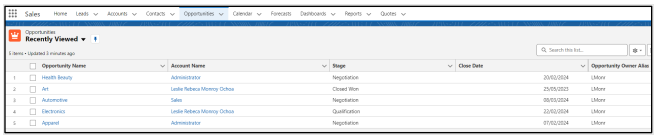

Figure 11. Opportunities Salesforce

- Revenue Forecasting:

  The Opportunities Salesforce view helps tracking and managing deals; it serves as a key tool for revenue forecasting. By associating each opportunity with a potential revenue figure, Olist gains visibility into the expected financial impact of ongoing and potential transactions.

- Collaboration and Accountability:

  This view helps for collaboration within the sales team by clearly displaying the account administrator responsible for each opportunity. It fosters a sense of accountability and ensures that team members are aligned in their efforts to move opportunities through the sales cycle.

3.9. Sales and Pipeline

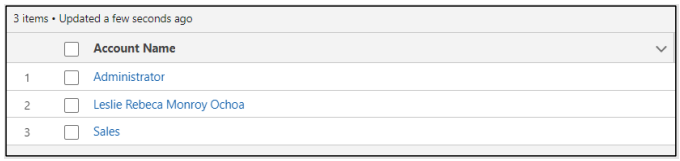

Figure 12. Sales Accounts

- Pipeline report
  This report offers a visual representation of the sales pipeline, considering different stages that a potential sale moves through the process from the initial contact to closing.

The report offers the sales team a view of the existing Business (Sellers) and the New Business (Potential Sellers)

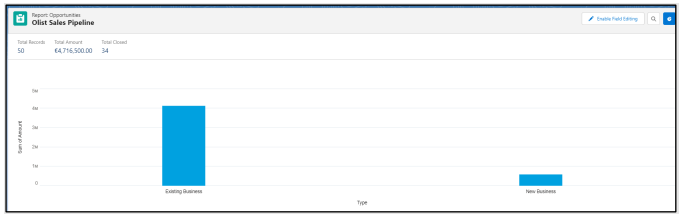

Figure 13. Olist Sales Pipeline Report 1

- Comprehensive Pipeline Overview:

  The Sales Pipeline Report provides a comprehensive overview of the sales pipeline, categorizing potential sales into different stages. This categorization includes both existing business (Sellers) and new business (Potential Sellers). This holistic view assists the sales team in understanding the distribution of opportunities and allocating resources strategically.

- Forecasting Trends:

  By analyzing historical data and current pipeline status, the Sales Pipeline Report aids in forecasting sales trends. This forecasting capability allows Olist to proactively adjust strategies, anticipate demand, and capitalize on emerging opportunities.

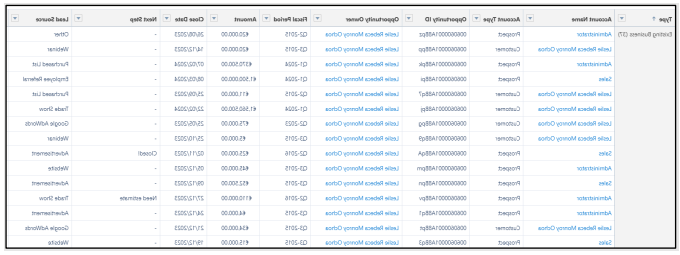

Figure 14. Sales Pipeline Report 2

3.10. CEO Dashboard – Key metrics

This dashboard is crucial for the CEO. Provide a visually appealing overview of key sales performance metrics, real-time insights into sales performance for the current fiscal year, revenue, opportunity trends, and top accounts to enable quick and informed decision-making by executives.

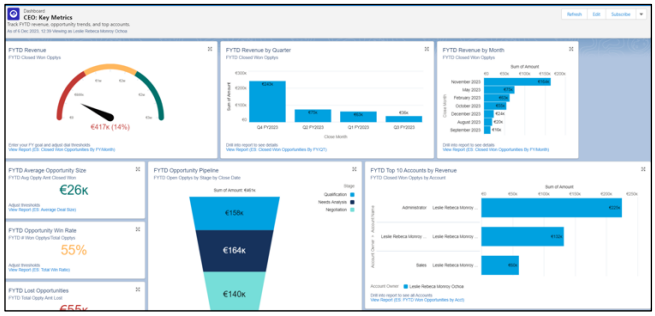

Figure 15 CEO Key Metrics

These additional details provide a more comprehensive picture of how each component contributes to the effectiveness of the Olist BI Full Suite and Business Analytics System. The emphasis on integration, dynamic visualization, and strategic insights reinforces the role of these tools in driving informed decision-making and optimizing overall business performance.

4. WORKLOAD DISTRIBUTION

After the group selection we scheduled the first checkpoint to meet with the team members and talk about the project and guidelines, since the beginning of the planning process we encountered communication and availability difficulties.

We started the project by individually searching for potential datasets for later decide which dataset to use. This task was particularly difficult since we could not find a suitable dataset that matched with the project requirements. We decided to work with a supermarket chain dataset, I developed the Project Proposal and Dhruv assisted with the submission. Later, as the classes and discussions progressed, we realized that the chosen dataset was not usable, so we decided to look for more options, selecting Olist dataset, selected primarily because the topic is very relevant in current times, as well as a young and rapidly expending industry – subjects of interest to us all.

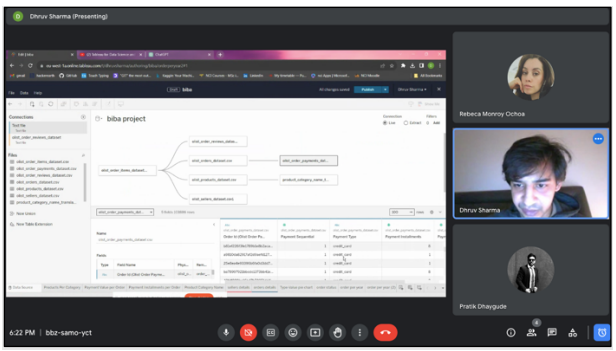

Figure 16 Team Meeting

4.1. Continuous Adaptation and Task Management:

As classes and discussions progressed, it became evident that continuous adaptation was crucial. Task management tools were employed to oversee the workflow, with an overview of tasks categorized by planner and to-do lists (Figure 16 Overview of Tasks by Planner and To Do).

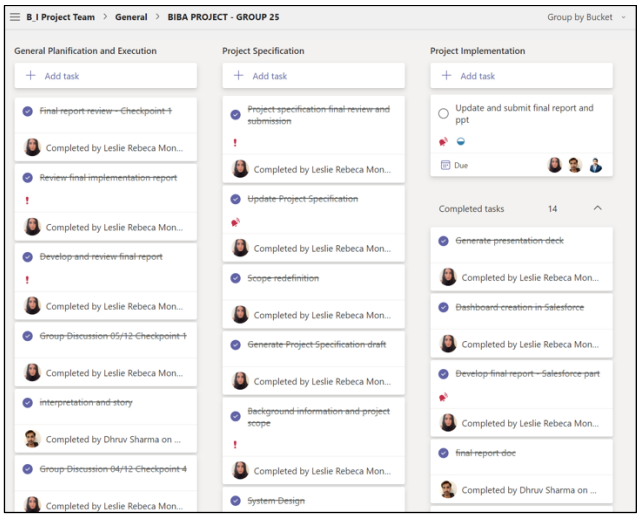

Figure 17 Overview of Tasks by Planner and To Do

A graphical representation of task management further enhanced the team's understanding of progress, showcasing the distribution of tasks over time (Figure 17 Graphical view of Task Management).

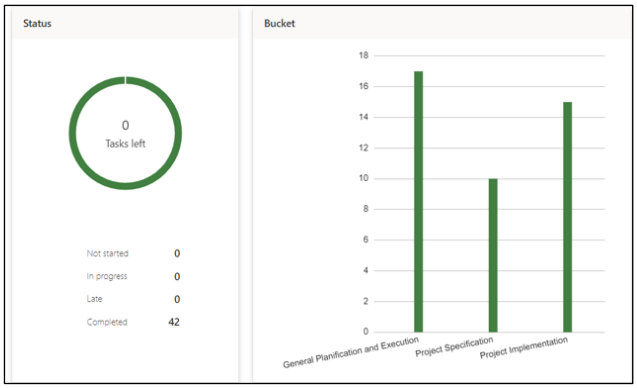

Figure 18 Graphical view of Task Mangement

4.2. Individual Contributions:

A member-wise breakdown of tasks clarified the distribution of responsibilities, ensuring equitable participation and highlighting each team member's contributions (Figure 18 Graphical view of Member-wise Task Management).

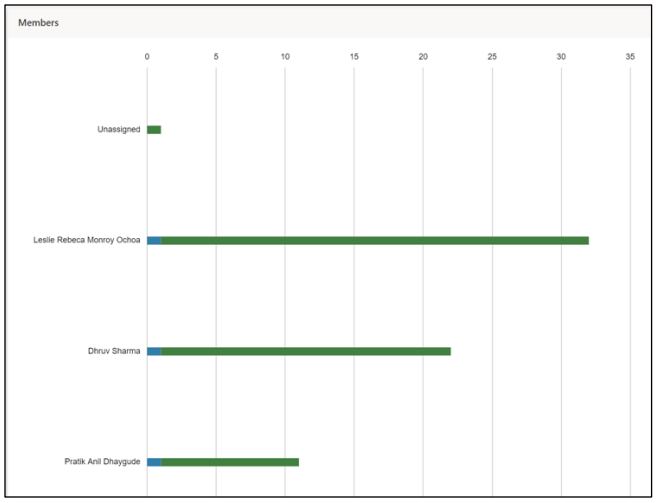

Figure 19 Graphical view of Member vise Task Mangment

In summary, the workflow distribution evolved through effective communication, adaptive strategies, and the collective effort of all team members. Each phase, from project initiation to dataset challenges and proposal development, showcased a collaborative spirit with an emphasis on flexibility and continuous improvement. The graphical representations provided a visual aid, ensuring transparency and accountability in task management.

CONCLUSION

The implementation of the Olist project has been a collaborative and iterative process, encompassing various phases from requirements analysis to data visualization. The project's foundation lies in the intricate interplay of data management, analytics, and dashboard design, all tailored to elevate Olist's capabilities in the competitive e-commerce landscape.

In summary, the implementation report tells the story of how we transformed Olist's online shopping platform. By carefully handling data, gaining useful insights from analytics, and creating visually appealing dashboards, we've made Olist more competitive. Now, Olist is better prepared to succeed in the ever-changing world of online retail.

REFERENCES

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[2] For Tableau – data visualization https://eu-west-1a.online.tableau.com/#/site/dhruvsharma/workbooks/1113413/views [Accessed: 20/11/2023]

[3] For dataset https://data.world/adas086/olistcustomersdataset [Accessed: 05/11/2023]

[4] For Learning https://www.tableau.com/learn/training [Accessed: 20/11/2023]