Business Intelligence & Business Analytics Project Implementation Report

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***Abstract*—This paper is a report on the Olist, an e-commerce company produced for the purpose of a team group project for the Business Intelligence Business Analytics course at the National College of Ireland in semester 1. The report will therefore explore in depth about subjects such as how business intelligence and analytics tools, as well as CRM, are implemented for the ecommerce firm.**

***Index Terms*—BI Dashboards, CRM, Balanced Scorecard, E-commerce**

I. Introduction

Olist is an online e-commerce platform that connects dealers and their items to Brazil's leading marketplaces. Tiago Dalvi started Olist in 2015, and company is based in Parana, Curitiba, Brazil. Olist is Brazil's biggest hypermarket in the marketplaces and the quickest merchant empowerment tool. Olist is a Brazilian e-commerce company that primarily operates through marketplaces. On another side, Olist offers to sellers who want to promote their products on marketplaces like B2W, Free-Market, Amazon, and Via Varejo. For a monthly fee, the company allows merchants to handle listings, inventory, orders, shipping, and messaging. The start-up was founded to use a SaaS licensing plan to help smaller firms all across the country gain market share [1]. On Kaggle, we found Olist data, which comprises an anonymized record of 100k orders placed on the Olist platform. Kaggle was used as a data source for this project. Marketing, Sales, and support are all managed in one system with Dynamic 365 customer relationship management software. CRM software is used to keep track of all customers, build and manage a customer database, and create business strategies. In addition, we use Power BI to build reports and integrate data into dynamic visuals, which improves decision-making. The Power BI report helps in generating insight from data and increasing organizational productivity.

II. DATA MANAGEMENT

The Olist E-commerce dataset which has was obtained from kaggle and after further research we came across Marketing

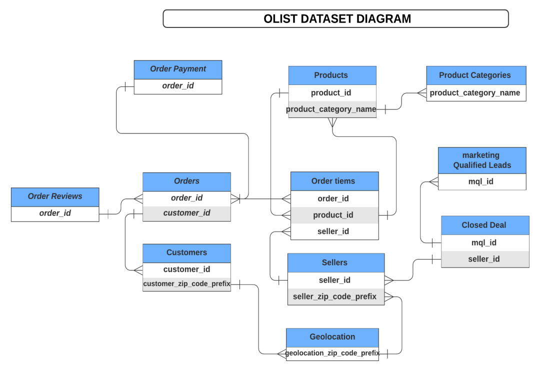

Fig. 1. Olist Data Relationship Diagram

Funnel data for the same company. There are 11 tables had been implemented into power BI and built up the relation of data table by using each tables primary key connect with other tables foreign key which provided the order_id, customer_id, product_id, seller_id,and geolocation_zip_code_prefix are the columns to build the relation for our dataset. The second dataset about the marketing funnel was joined together using the seller_id and mql_id. Hence we have used Power BI and CRM to analyze for a better understanding of the Olist dataset. The above ER diagram gives an clear idea about how different datasets have been connected depending upon their relationships.

III. Balanced Scorecard

As the name implies, a balance score card is a company's score card on several areas of the business. It's a strategic management performance metric for recognizing and enhancing various internal company activities as well as the external outcomes that follow. Kaplan and Norton conceived and executed the balanced scorecard for the first time in 1992, and it was widely available in book form by 1996. When BSC

was created, it was created for well-known companies that were already profitable, but it was later adapted for use by non-profits companies as well. BSCs let businesses to consolidate data into a single report, providing insight into service and quality in addition to financial performance, and assisting in the improvement of efficiency[2].
Olist's balanced score card can be designed as shown in fig below

	Strategy			
	Objectives	Measures	Targets	Initiatives
Financial	Reducing the cost of operation with the growing sale	Financial Data of company	Reduced operating costs by a 20% percentage while boosting sales by a 30% percentage	Negotiating cost of products with the supplier
Customer	Improve customer service process	Feedback from retailers	Implement one product / service based on customer feedback	Having quarterly meeting with new and existing retailers
Internal Business Processes	To be able to acquire deal with variety of vendors	How many new vendors are added	Every month, at least 5 new vendor should be added.	Running advertisement campaign for targeted audience
Learning & Growth	Increase Logistic efficiency and global expansion	decrease in order delays and increase in customer satisfaction	Reduced logistics issue by 25% and launch Olist in 3 more countries	Conducting marketing and Supply chain management training to staff

Fig. 2. Olist's BSC

The four aspect are explained below thoroughly:

1) Learning and Growth: Learning and growth of the company can be verified by looking at employees. How well the employees are suitable for work in company. This can be improved by giving training and opportunities to employ of company to grow themselves.
2) Customer: It is important to understand who our customers are and what they look for. With this we can provide the services to our customers along with this we can gather customer feedback to determine customer satisfaction with product or service quality, pricing, and availability.
3) Internal Business Process: What should we be best at? Objectives and metrics that determine how well the business is functioning and if the products or services meet the needs of the consumers. Internal procedures may be streamlined to decrease some of the highest cost items.
4) Finance: It can be easily verified by looking at the finance of the company. By looking at the expenses, sales and income can be used to look at this perspective.

IV. CUSTOMER RELATIONSHIP MANAGEMENT

Customer Relationship Management is a tool to strategize about topics such as ways to increase sales and improve customer experience by employing a range of activities, procedures, and technologies. It typically involves a company's sales, marketing, and customer service operations. It is critical for every business to ensure that both existing and new clients are satisfied with the services they get [3]. A customer rela-

Fig. 3. CRM

tionship management system helps companies to keep track of sales opportunities, marketing programs, and gain insights on best way to develop customer relationships. Microsoft's Dynamic CRM is the most often used CRM solution in today's market. It is a tool for organizing and optimizing the company's customer relationship operations. The following process flow will be used in this project to implement Dynamic CRM for Olist.

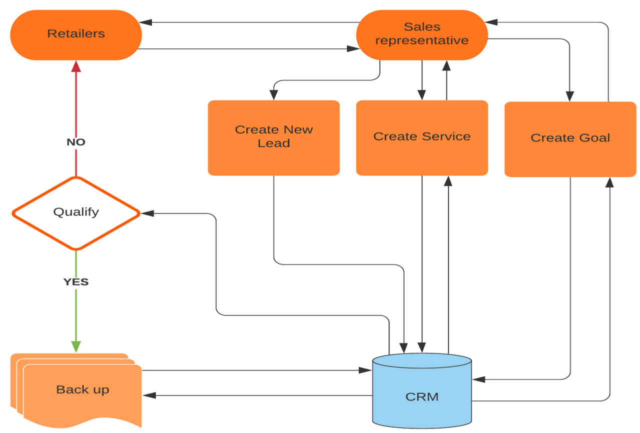

Fig. 4. Olist CRM Workflow Diagram

The steps in a CRM business flow would be as follows:

- Creating New Lead after meeting retailers or when a retailer approaches the company
- Disqualify or Qualify Lead and back up in database for future references
- Create Service for Qualified Lead by the Sales representative
- Create Goal for the sales representative to Develop and Explore new retailers
- The CRM will present a dashboard and back up all the processed record

A. Creating New Lead

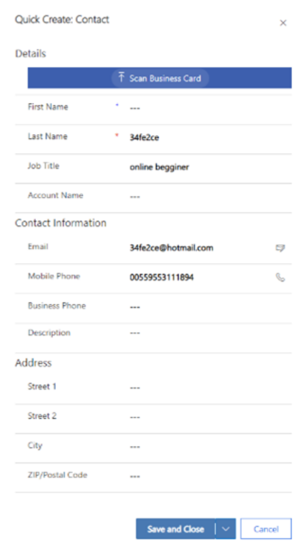

Fig. 5. Lead Creation Form

The first step is workflow is that either the Olist sales representative will scout for potential client/retailers or the retailer will contact Olist by completing the request form on the landing page of Olist website. We can then record and update retailers information in the CRM system. This is the important step in the beginning for potential leads before they have been qualified to use the platform and doing further business with the company.

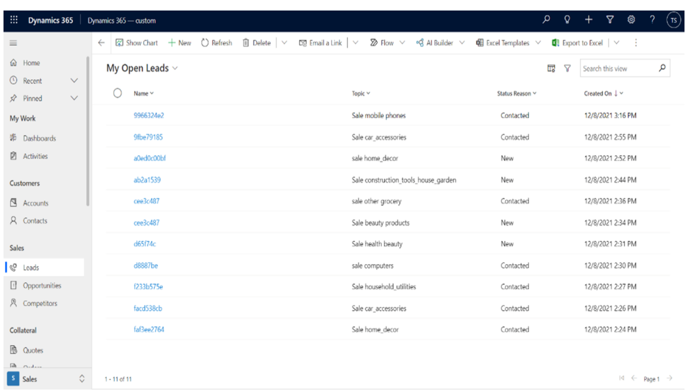

Fig. 6. My Open Leads Page

We can see these open leads in the My Open Leads page, this page displays information such as the initial stage of our leads, topics and their status. There are a few leads that are still fresh could be our potential clients as seen from the below screenshot

B. Disqualify or Qualify Lead

This second step would be assign the respective statues to the leads which are Qualify, Development, Propose, and Close . This page shows an information about the opportunity that the specific client and the record which has related to the contact record of our sales representative with a client who is hoping to do business with us.

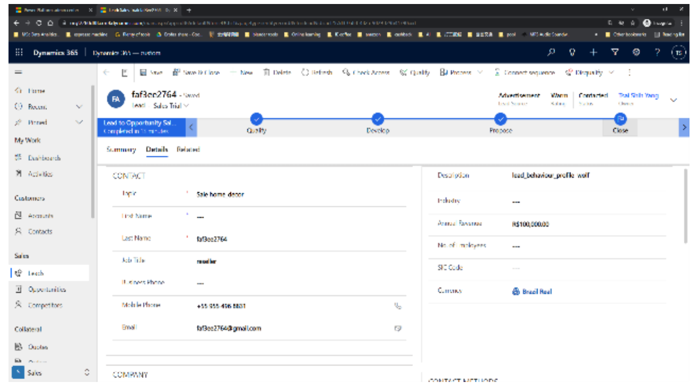

Fig. 7. Lead to Opportunity Sales Page

C. Create Service for Qualified Lead

After the open lead has been converted to qualified lead, the assigned sales representative will then carefully assess the type of business and products the retailers offers to its end user and create its services which can be offered to the retailers. These services include e-commerce product hosting training, market analysis, and any domain specific training or services.

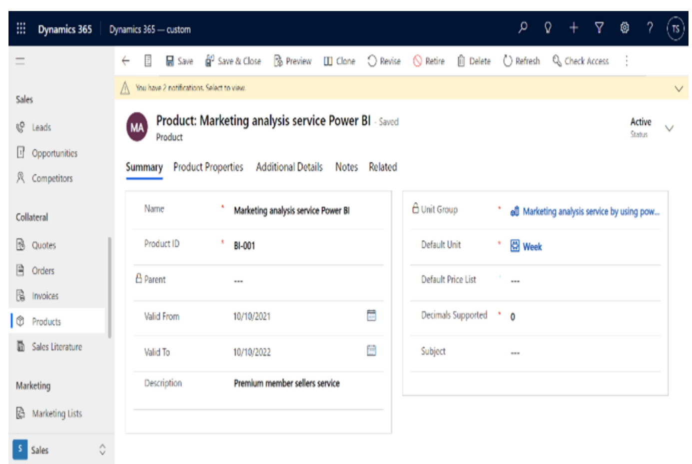

Fig. 8. Products Creation Page

D. Creating Goal for sales representative

The higher management can set different goals for the sales representative working on different segments. These goals may include acquiring new client, increasing the product sales, exploring new potential geolocation areas for expanding customer base. The goal helps staff stay focused on the objective and work towards it.

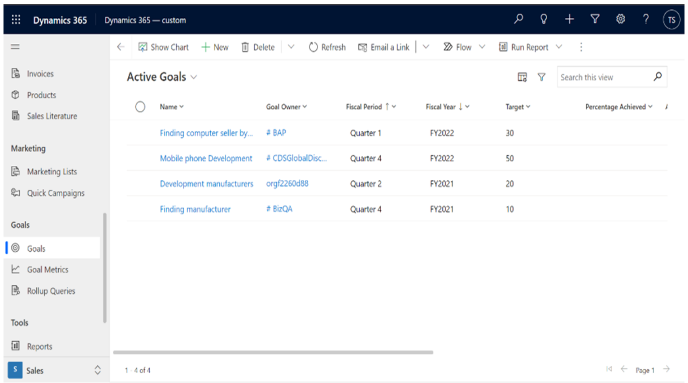

Fig. 9. Products & Bundles Page

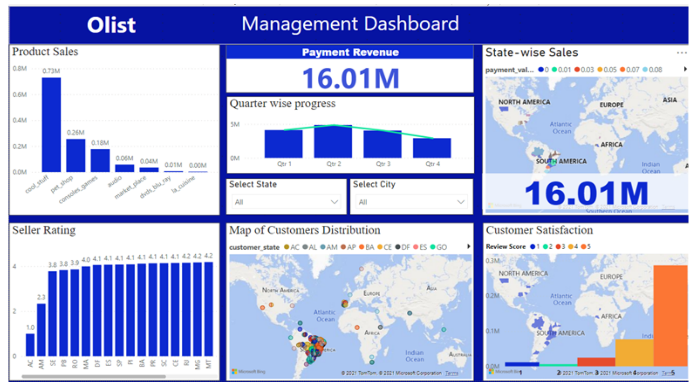

Fig. 11. Management Dashboard

E. *Sales Activity Social Dashboard:*

This is homepage of the dynamic CRM system, which displays important data about the open opportunities, open leads, notification section. The open opportunities and leads section gives a brief overview of the current status in form of a funnel and pie chart. The sales rep can utilize this information to get insights about their current performance, future goals and daily tasks.

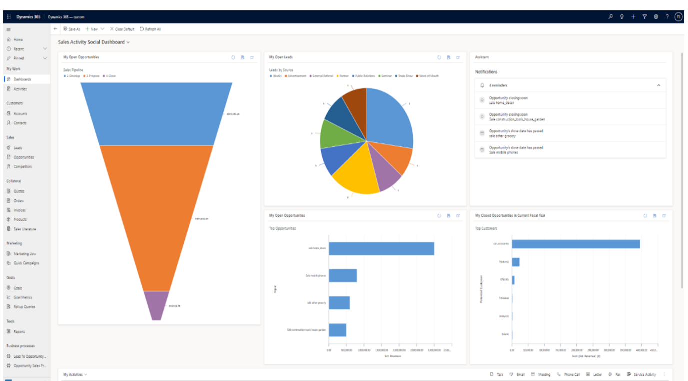

Fig. 10. Sales Dashboard

V. Reports And Dashboard

We have developed three dashboard management dashboards, retailer dashboard, and Marketing Sales dashboard. These dashboards are very intuitive and provide valuable insights to the parties involved which will help them track progress and make informed decisions.

A. *Management Dashboard:*

The Management dashboard will be utilized by the people from the mid and upper management to gain insights about the current status of the company. The above dashboard has the following elements:

1) Select State / Select City: These filters are used to select the state/city to view all the insights as per the selected location
2) Product Sales: This visual helps us determine which product category/ product is generating the highest payment income. There is a hierarchy between product category and product that has been established to help users to drill down on the visual.
3) Quarter-wise Progress: This compares how we performed on each quarter and helps us track the progress.
4) Payment Revenue: This Card shows the Amount of total revenue generated from payments.
5) State-wise Sales: This visual shows the state-wise Sales distribution on the map.
6) Seller Rating: This visual shows the average seller rating of the desired location.
7) Map of customer distribution: This shows the location of all customers based on orders placed by the customers.
8) Customer Satisfaction: This shows customer Satisfaction according to their rating for each location that is desired.

B. *Retailer Dashboard*

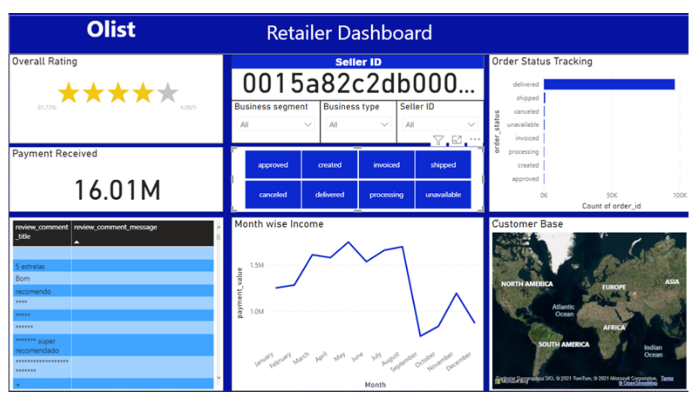

Fig. 12. Retailer's Dashboard

The Retailer dashboard is intended to be utilized by the customers of the Olist i.e. the Retailers. The retailers will be able to gain information about their performance, status, overall customer ratings. The above dashboard consists of following information:

1) Business segment/ business type/Seller Id filters: These filters help us filter out the desired values and search for the required retailer/ seller.
2) Order status slicer: This slicer is used to select and filter out data according to the current order status.
3) Seller ID: this card will show the seller Id of the selected seller.
4) Overall rating: This visual shows the overall rating of the seller out of 5 based on ratings provided by the customer.
5) Payment Received: This visual shows the total payment amount received by the seller.
6) Reviews table: this table shows the review titles and messages that were left by the customer for the seller for their order.
7) Month-wise Income: this shows the month-wise income the seller gained from his orders. This line chart will help to track the monthly pattern in sales for sellers.
8) Customer Base: This map visual shows the customer location of the retailer from data of all the customers who have ordered from them
9) Order Status Tracking: This shows the number of orders at each status level for the selected seller.

C. Marketing & Sales Dashboard

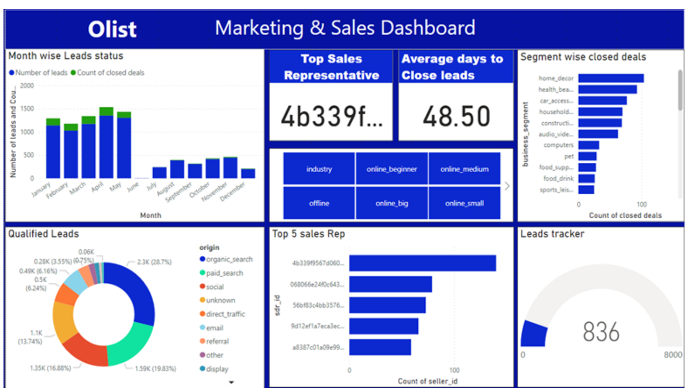

Fig. 13. Marketing & Sales Dashboard

The Marketing and Sales dashboard was developed with the intent that it could be helpful for the employees in the sales and marketing division as it contains charts and figures which could come in useful to make future decisions and know the current situation. This dashboard has following information:

1) Business segment: This splicer is used to filter our data based on the various business segment in our data.
2) Top Sales Representative: This card shows the top seller representatives based on the number of closed deals.
3) Average days to close a deal: This card shows the average number of days required to close a deal from the day of the first contact of the lead.
4) Month-wise lead status: This visual shows the number of lead enquiries and closed deals over the period.
5) Qualified deals: This donut chart shows the distribution of all qualified deals based on the origin of the lead.
6) Top Sales Rep: this visual shows the top 5 sale reps for the desired filter that is selected.
7) Leads Tracker: This visual shows the number of qualified leads and the number of those qualified leads that were closed.
8) Segment-wise closed deals: This visual shows a bar chart of different business segment deals that were closed.

VI. TEAMWORK AND DISCUSSION

We are a group of five. In the project scouting phase, we discovered the Olist dataset. This dataset piqued our interest in all of us as it was an quite rich and engaging information. Our project's key phases were dataset relationship implementation, as well as their connection to Power BI for dashboard creation, performing SWOT analysis, CRM configuration, and generating report and presentation. The completion of our project was the result of everyone's united efforts. We held bi-weekly meetings to help clarify any questions and monitor the status of the project.

VII. FUTURE WORK

- Before entering a new market, market research data on new geographical regions would be obtained to gather insights and formulate strategies.
- Machine learning algorithms can be used to determine the likelihood of converting a potential lead into a client.

VIII. CONCLUSION

To summarize, we can confidently assert that the e-commerce business creates massive amounts of data each year, and having a sophisticated and scalable BI-solution can be beneficial in assessing strengths and weaknesses, as well as assisting in strategic decision making. These requirements are satisfied by the BI-solution developed in this project.

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