

Capstone Project

E-commerce Business
Performance Analysis

Scott Fasuyi

Index

Info and Objectives – Page 3

SQL Analysis and Insights – Page 4,5

Business Case - 6

PYTHON Analysis and Insights - 7,8

Business Case – 9

EXCEL Analysis and Insights 10,11

Business Case 12

TABLEAU Analysis 13,14

Business Case 15

Final Business Report 16

Info and Objectives

- **Your company, Olist, operates an online marketplace, where third-party sellers list products.**
- **Despite a growing customer base, recent reports indicate fluctuations in sales, inconsistent profitability, and customer satisfaction challenges.**
- **Management has tasked you with conducting an end-to-end data analysis to uncover key drivers of business performance, identify risks and opportunities, and provide actionable recommendations.**
- **For this project, you will use SQL, Python, Excel, and Tableau to analyze a real-world dataset containing sales transactions, customer reviews, lead conversion, and seller performance metrics.**

SQL Analysis

- Objective -We came to this analysis by performing the following Tasks:
 - - Load the dataset into a SQL database.
 - - Clean and preprocess data (handle duplicates, NULL values).
 - - Write optimized queries to:
 - - Identify top-selling and underperforming sellers.
 - - Calculate average delivery times per seller.
- **Findings**
 - Our findings showed that there were no duplicates, nor null values in our data
 - We identified the top selling sellers
 - The number of orders is not linear to the higher \$ amounts. The top 5 sellers showed that the Highest performer completed 1132 orders, which amassed to \$229,472.63, but the second highest performer used 358 orders which resulted in \$222,776.05. It shows that this seller is selling more high ticket items than the Highest performer.

SQL continues

- In our findings we found that the average for the top 5 sellers in the group ranged from 8 down to 3.5 total sales per order.
- The delayed orders ranged from 189 minutes to 59 minutes.
- The total price for sold was high and total cost low for the top 5 sellers increases the profitability.
- The total profitability ranges from \$209,304.56 to \$136,311.34.

SQL Business Case

- How do sellers impact order fulfillment efficiency?

We see that the sellers impact order fulfillment based on order items per order and the estimated shipping time for arrival. The larger the order, the more time it will take for the product to arrive. Also, efficiency depends on setting expectations for the customer in terms of shipping time. If not, could lead to some cancellations and returns back to our company, which would be a lost to the company (if product is not resalable).

Python Analysis

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Tasks:

Load the dataset into Pandas and clean data.

- Perform sentiment analysis on customer reviews.
- Analyze lead conversion rates across different sources.
- Identify factors driving customer retention and churn.
- Visualize trends using Matplotlib/Seaborn.
- Data cleaning steps.
 - Analysis scripts.
 - Visualizations.

Python continues

- I performed a sentiment analysis between review scores and reviews id, by counting the total leads and converted leads per source. This is all on score of 5. Sentimental analysis shows that 57,328 had 5-star reviews, and 11424 had 1-star review.
- Analyzing the lead conversion rates across different source, allowed me to merge the qualified leads and the closed leads and perform conversion analysis on both these tables. I saw that the mql id was a common column shared in both tables. The table shows the number of leads closed(wins) vs. qualified leads, and it showed that the origins that the leads came from the most was the organic search, at 271 closes. # I determined that the "unknown" origin has the highest conversation rate at 16%
- The churn rate is going down because of the agreeable rate. Churn rate was calculated by the relationship between year and price.
- When visualizing the trends using Matplotlib/Seaborn, I did a line graph for the Average Price per year showing that it was trending downwards from 2016 to 2020. I also performed Bar chart for the performance rates per origin reflecting the response above and I did a Pie chart to reflect the Review Score.

Python Business Case

- **What factors influence customer satisfaction and lead conversion success?**

Even though 57.8% of the reviews were excellent, it still leaves a gap 42.2% that were not. Things such as Lead Quality, Speed and Personalization of follow-ups, Marketing Alignment are among the reasons. My solution is that we reach out to the sellers that average high reviews and gain insight as to what is netting high customer satisfaction and share it with the team.

Excel Analysis

Tasks:

- Use Pivot Tables to summarize:
- Payment trends across different methods.
- Shipping cost impact on profitability.
- Pricing patterns for top-selling products.
- Create statistical formulas and interactive charts.

Excel Continuing

- The amount of orders and the payment value is showing in favor of Credit Cards. They reported 76,795 orders resulting in \$12,542,084.19.
- I found that religious presents reporting the highest probability at \$164,307.77, followed by Beleza Saude at \$163,697.54.
- I noticed that the number of orders do not impact the amount of sales produced. The leading seller had generated \$63,885 on 195 sales where as the 3rd leading seller generated \$48,899.34.

Excel Business Case

- **How do payment methods, product pricing, and shipping costs impact profitability?**

These three factors — payment methods, product pricing, and shipping costs — have a direct impact on both profit margins and customer satisfaction, which together influence your overall profitability.

We notice that Credit cards are used mainly for big purchased and that products based on customers' requests may generate profitability for us given the buying patterns.

One solution that we can recommend if not being done yet is to cross-sell these items, give them a discount on the total order and the shipping costs, to generate more orders. Win for the customer because they are selling. Win for us because we are generating more profits.

Tableau Analysis

- Tasks
- Build an interactive dashboard with:
- Lead conversion rates across sources.
- Top-performing sellers by region.
- Customer satisfaction trends.
- Include filters and drill-down options for exploration.

Tableau Continued

- Visualized Leads vs. Industries. Noticed that Online-medium lead type generated the most leads with 332, which was almost 3 times more than the next type (online- big at 126 leads).
- For top-performance sales in Montana, the top performance seller generated \$7,785 in terms of sales. The next highest was generating \$4,880
- Customer Satisfaction by seller ranged from an average of 4.94 to 4.00, out of 5.

Tableau Business Case

- How can management quickly identify issues related to lead conversion, sales trends, and seller performance?

In looking at the lead conversion, we see a big difference between the leading seller and the rest of the team. To remedy the solution, it would best for Management to reach out to that seller to share with team his strategy to getting more leads(using customer referrals, tap referral, partnered sources, etc). This could lead to more sales, which could potentially lead to more sales.

Sales trends vary per state, but in Montana, we noticed that one seller was outselling the others by a wide margin. Management can analyze deeper how that seller is generating the sales and have him/her share with the team.

What I would suggest is that the team schedule a weekly meeting so that they can share ideas so that all sellers succeed.

Final Business Report

Insights

Customer Satisfaction

- Train staff for responsive, personalized support.
- Collect and act on feedback regularly.
- Improve post-sale support and returns process.
- Offer multiple support channels (chat, email, phone).

Lead Conversion

- Qualify leads using ideal customer profiles (ICPs).
- Speed up response time—contact leads within 5–10 minutes.
- Personalize outreach using behavioral and demographic data.
- Align sales and marketing messaging for consistency.
- Launch campaigns
- Use field blitz and call blitz projects

Probability

- Optimize payment methods to reduce transaction fees.
- Adjust pricing strategies using data and A/B tests.
- Offer tiered or free shipping thresholds to boost order value.
- Use reliable logistics partners to avoid delays and reduce churn.