

Brazilian E-Commerce Analysis – Technical Report

1) Purpose and Scope

This project aims to analyze the **sales performance, customer behavior, product categories, and delivery processes** of the Olist marketplace in Brazil using the **Brazilian E-Commerce Public Dataset**.

Raw data was processed and analyzed using **SQL queries** to derive meaningful insights, and the findings were visualized in **Tableau** through an **interactive dashboard**.

This approach enables presenting the results both **numerically** and **visually** for better understanding.

2) Dataset and Tools Used

2.1 Dataset

- **Source:** Brazilian E-Commerce Public Dataset (Kaggle)
- **Scope:**
 - Covers order data between **2016 and 2018**
 - Includes product categories, customer information, order items, delivery times, review scores, and payment details
- **Four Main Tables Used:**
 - olist_orders_dataset
 - olist_order_items_dataset
 - olist_products_dataset
 - olist_customers_dataset

2.2 Tools Used

- **PostgreSQL** → For data loading, cleaning, querying, and analysis
- **Tableau** → For interactive visualization and dashboard creation

3) SQL Queries and Analysis Results

3.1. Top 10 Core Queries

1. **Monthly Total Revenue**
 - Calculated monthly total revenue from order data.
 - A **significant upward trend** in revenue was observed starting from the second half of **2017**.

2. Top 10 Best-Selling Product Categories

- **beleza_saude** and **cama_mesa_banho** dominate the majority of sales.

3. Customer Segmentation

Customers were segmented into three groups based on spending:

- **Premium:** > 1000
- **Regular:** 500 – 1000
- **Low:** < 500

4. Average Order Value (AOV) by Category

- Categories like **pcs** and **portateis_casa_forno_e_cafe** have the **highest AOVs**.

5. Returning Customers

- Out of **93,358 customers**, only **2,801** placed more than one order (~3% of the customer base).

6. Top 10 States by Revenue

- **São Paulo (SP)**, **Rio de Janeiro (RJ)**, and **Minas Gerais (MG)** lead in total revenue.

7. Average Delivery Time by Category

- In some categories, the **average delivery time** exceeds **7 days**, while **artes_e_artesanato** has the fastest delivery at **5.29 days**.

8. Categories with Highest Return Rates

- **pc_gamer** has the **highest return rate** (~11.11%).
- **portateis_cozinha_e_preparadores** follows with **6.67%**, and **dvds_blu_ray** at **3.13%**.
- Generally, **high-volume categories** have **lower return rates**, whereas **niche categories** tend to have **higher returns**.

9. Top Sellers by Revenue

- The **top 10 sellers** generated approximately **BRL 3.5M** in total.
- Sellers in **moveis_escritorio**, **relogios_presentes**, and **cama_mesa_banho** categories dominate this list.

10. Weekday vs Weekend Orders

- **77%** of orders occur on weekdays (**74,288 orders; BRL 23.8M**).
- **23%** occur on weekends (**22,190 orders; BRL 7.0M**).

3.2. Additional 5 In-Depth Analyses

11. Late Deliveries by State

- Highest late delivery rates: **Alagoas (24%), Maranhão (20%), Piauí (16%)**.
- Lowest rates: **Amazonas and Amapá (~4–5%)**.

12. Categories with Highest Cancellation Rates

- **dvds_blu_ray (3.13%), construcao_ferramentas_seguranca (2.58%), and fraldas_higiene (2.56%)** stand out.

13. Sellers with Longest Delivery Times

- Some sellers have **average delivery times** extending up to **189 days**, which significantly affects **customer satisfaction**.

14. Average Review Scores by Category

- Top-rated categories:
 - **livros_interesse_geral → 4.47**
 - **moveis_quarto → 4.41**
 - **livros_tecnicos → 4.38**

15. Relationship Between Delivery Time and Customer Satisfaction

- **Fast deliveries (0–2 days):** Avg. review score **4.48**
- **Late deliveries:** Avg. review score drops to **4.09**

4) Tableau Dashboard – Visualizations

The Tableau dashboard visualizes Olist's **e-commerce performance** across **four main sections**:

4.1. Overview

- Total revenue and order counts by year
- Monthly revenue trends
- Summary of total customers and orders

4.2. Sales Analysis

- Top-selling product categories
- Average order values by category
- Return and cancellation rates
- Seller-based revenue contributions

4.3. Customer Segmentation

- Distribution of **Premium, Regular, and Low** customer segments
- Revenue contributions of each segment
- Average order values across segments

4.4. Regional Analysis

- Total revenue and customer counts by state
- Regional revenue distribution
- Identification of **potential growth opportunities**

5) Conclusions and Recommendations

This project provides a **comprehensive analysis** of Olist's performance in Brazil's e-commerce market.

Key Findings

- **São Paulo, Rio de Janeiro, and Minas Gerais** dominate total revenue.
- Categories like **beleza_saude, cama_mesa_banho, and esporte_lazer** lead sales performance.
- Categories with **high return rates** require **quality control improvements**.
- Delivery performance **directly affects customer satisfaction**; **process optimization** is needed for slower sellers.
- The **Premium customer segment** accounts for **~50% of total revenue**; personalized marketing campaigns targeting this group are recommended.