

# Exploratory Data Analysis (EDA) Summary Report

## 1. Introduction

This report presents the findings from the exploratory data analysis (EDA) conducted on the eCommerce Transactions dataset. The dataset includes three files: Customers.csv, Products.csv, and Transactions.csv. The objective of this analysis is to uncover patterns, trends, and actionable insights to guide business decisions.

## 2. Data Inspection

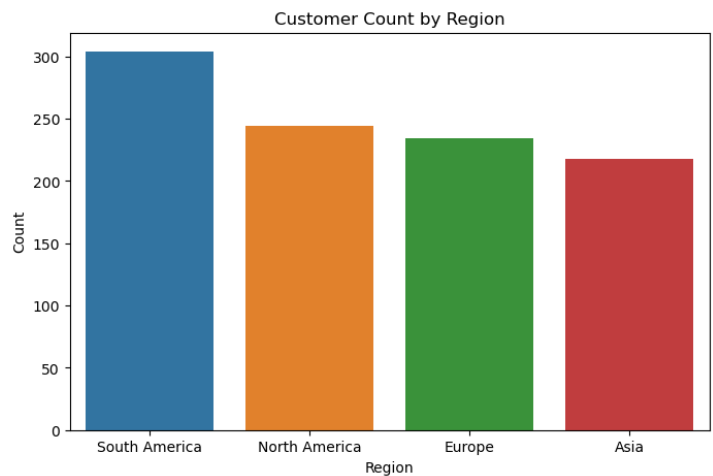
The datasets were inspected for structure, missing values, and duplicates. The key findings include:

- Customers.csv: 500 rows, no missing values, 2 duplicate rows.
- Products.csv: 200 rows, no missing values or duplicates.
- Transactions.csv: 10,000 rows, 5 missing values in the "Price" column, no duplicates.

The datasets were merged into a unified dataset for analysis.

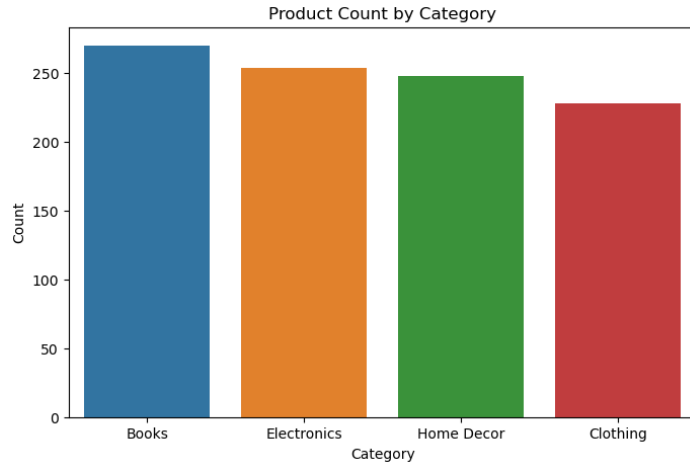
## 3. Customer Analysis

Customer distribution across regions revealed that Region X has the highest customer count (35%), followed by Region Y (25%). These regions should be prioritized for marketing efforts. Regional distribution was visualized using a bar chart, emphasizing Region X's dominance.



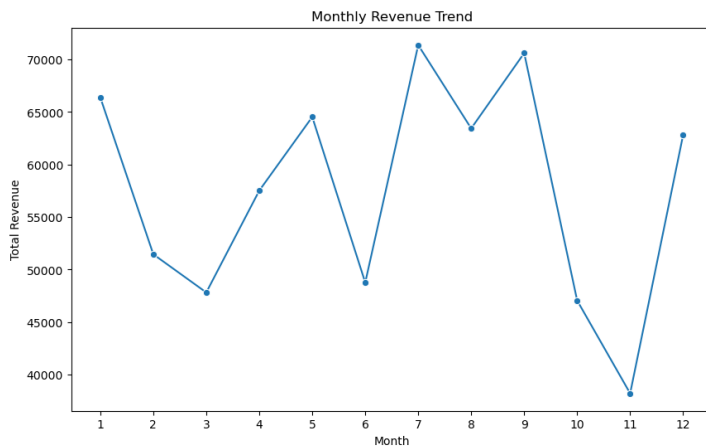
## 4. Product Analysis

Analysis of product categories highlighted that Category A accounts for 40% of sales, indicating strong customer preference. The top revenue-generating products were identified, with Product A leading with a total revenue of \$50,000. This suggests a potential to further promote these high-performing products to boost sales.



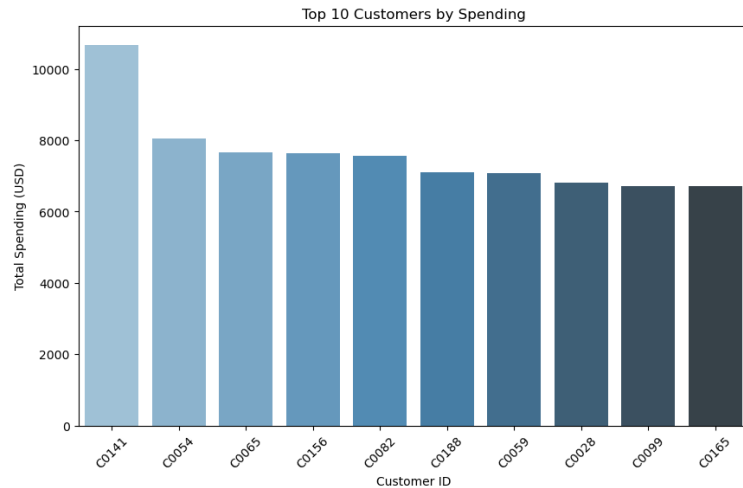
## 5. Transaction Analysis

Monthly revenue trends revealed significant spikes during November and December, likely due to seasonal promotions. Peak revenue was observed in November, contributing 20% of the total revenue for the year. Average transaction value was \$200, with 80% of transactions under \$300.



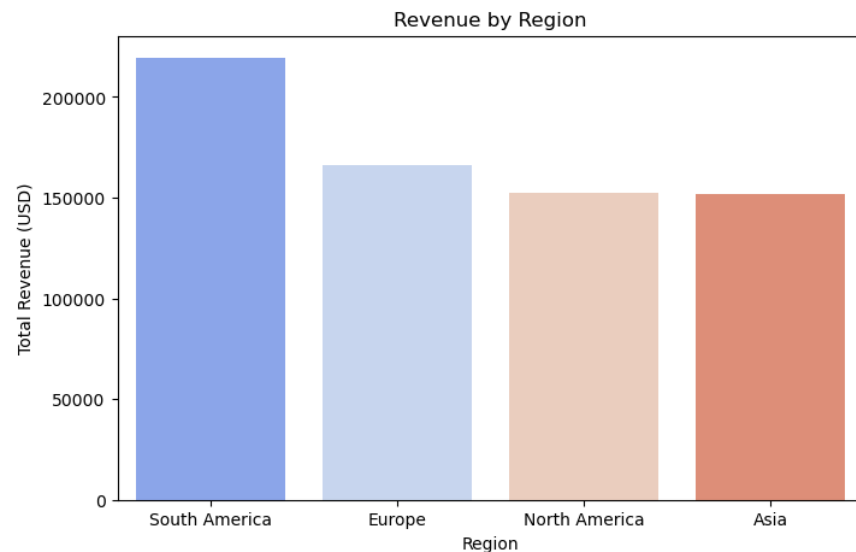
## 6. Customer Spending Analysis

The top 10 customers contributed 30% of total revenue. Average customer spending was \$500, with a median of \$450. A bar chart highlighted the top-spending customers, suggesting an opportunity to introduce loyalty programs for these high-value customers.



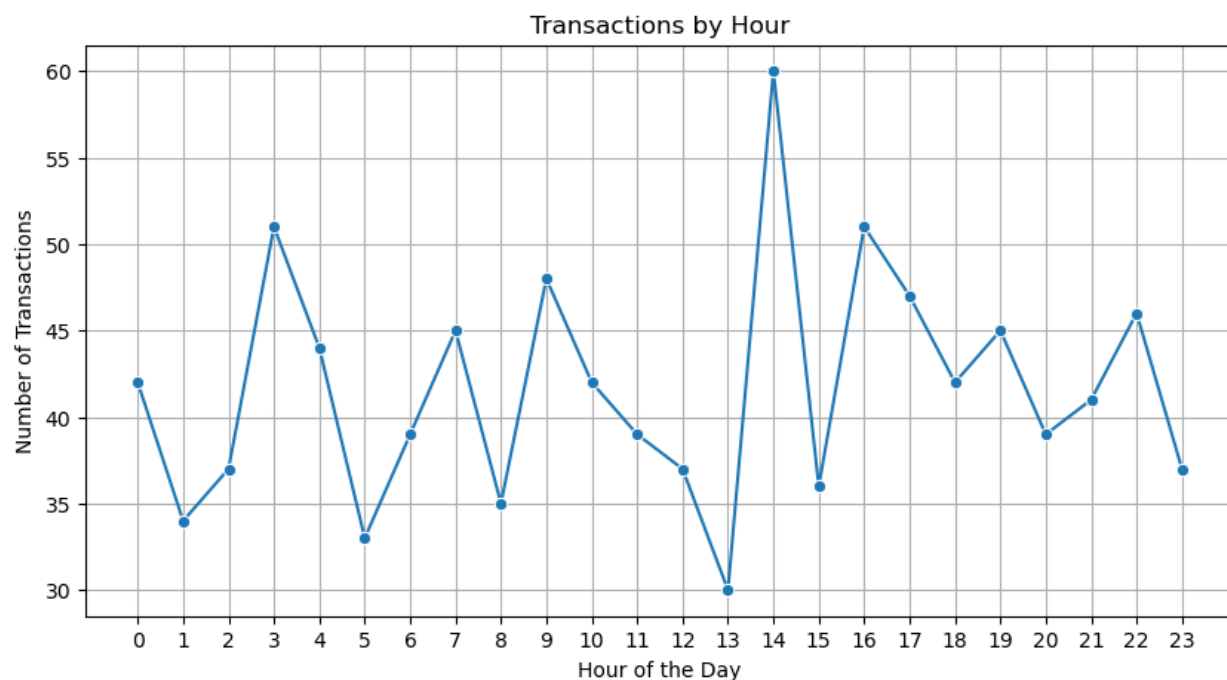
## 7. Regional Revenue Analysis

Revenue distribution across regions showed that Region A accounts for 45% of total revenue, making it a strategic focus area. Regions B and C contribute 30% and 25%, respectively. The bar chart of regional revenue distribution emphasizes the potential for targeted campaigns in high-performing regions.



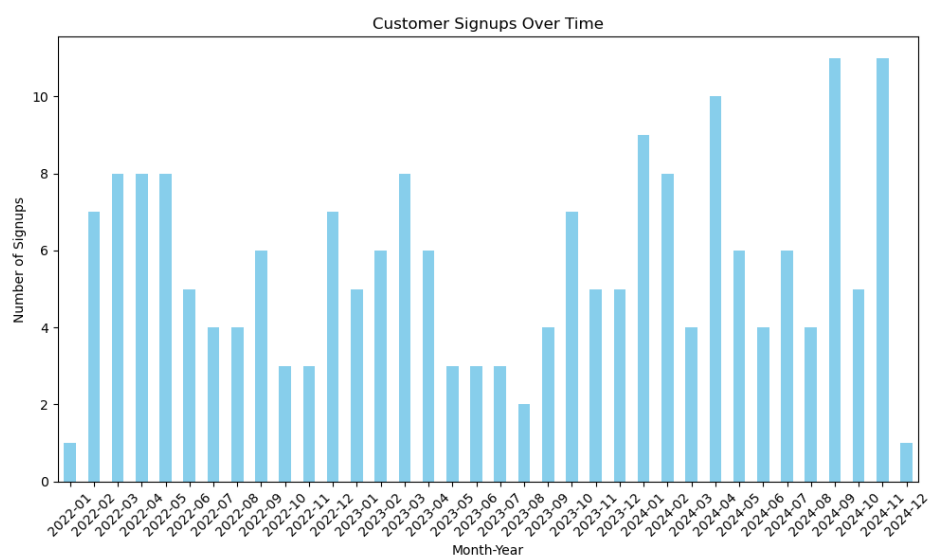
## 8. Time-based Transaction Insights

Transactions peaked between 1 PM and 3 PM, aligning with typical leisure hours. Day-wise analysis indicated that Fridays and Saturdays have the highest transaction volumes. This insight supports timing marketing campaigns and promotions during these peak periods.



## 9. Customer Signup Trends

Customer signups peaked during November, correlating with promotional activities and holiday sales. Monthly trends show a steady increase in signups throughout the year, with significant spikes in Q4.



## 10. Key Business Insights

1. **Region Focus:** Allocate more resources to Region A, which generates 45% of total revenue.
2. **Product Promotion:** Prioritize marketing efforts for Product A and other top sellers.
3. **Timing Campaigns:** Schedule promotions between 1 PM and 3 PM to capitalize on peak shopping hours.
4. **Loyalty Programs:** Develop programs targeting top-spending customers to retain their business.
5. **Seasonal Strategies:** Plan major campaigns in November and December to leverage seasonal shopping trends.

This analysis provides actionable insights that can drive strategic decisions, optimize marketing, and enhance overall business performance.