**Business Insights Report**

Introduction

This report presents the findings from an exploratory data analysis (EDA) conducted on the provided e-commerce dataset. The analysis aims to uncover key business insights that can inform strategic decisions and drive business growth. The dataset includes information on customers, products, and transactions.

Customer Demographics

Regional Distribution:

- **Insight**: The majority of customers are concentrated in South America region, We can increase customers in Asia region given its vast population but we have very small coverage in Asia . So, we need increased marketing in that region.

- **Plot**: Customer Distribution by Regio
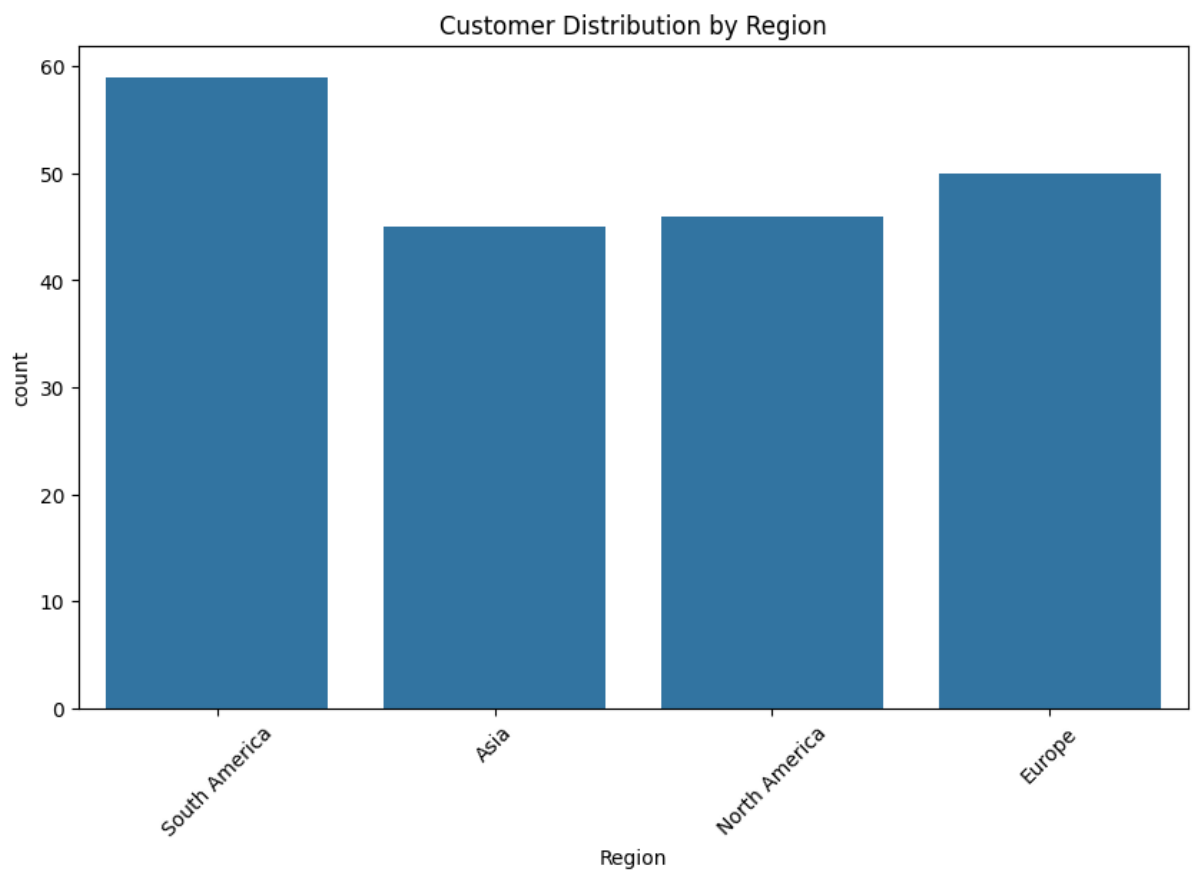
Signup Trends:

Insight: Customer Signup Shows pattern in increase and decrease of customer signup. It decreases till august after that increase up till February. It looks like our products get sold more on that months or period.

Plot: Customer Signups Over Time

Customer Signups Over Time

## Product Analysis

Category Performance:

- **Insight**: The Books category generates the highest revenue, contributing to more than 26% of the total sales. However, the Fashion category has the highest average transaction value. We can focus on home decoration things as well.

- **Plot**: Products by Category

Products by Category
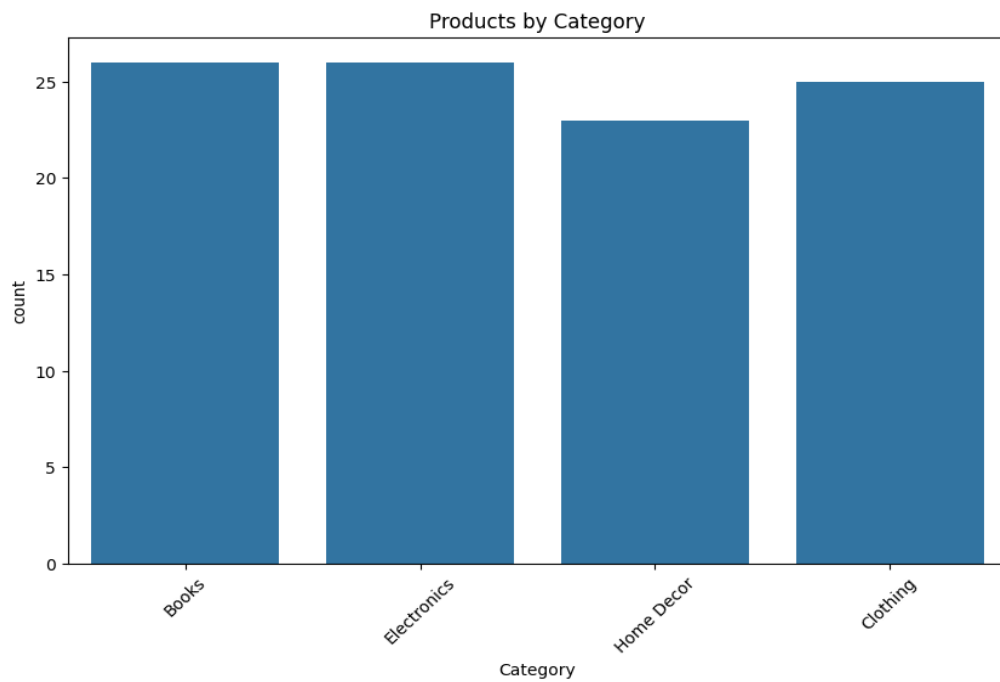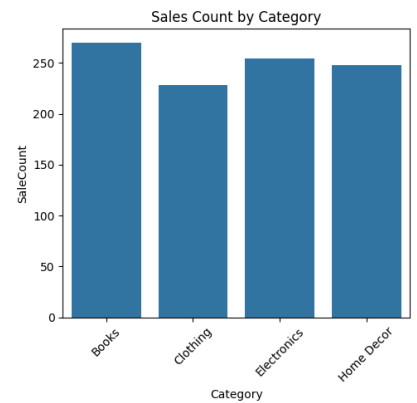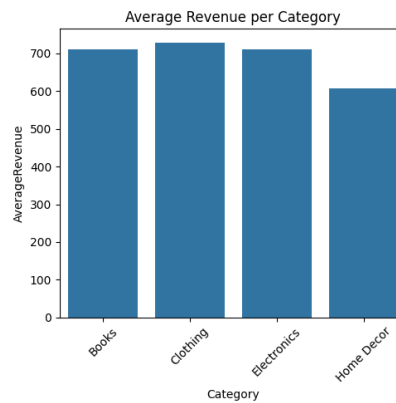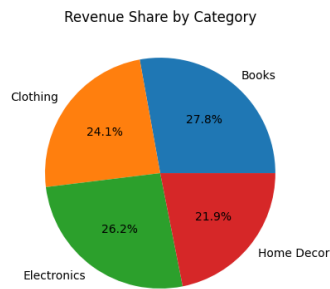
Price Distribution:

- **Insight**: The price distribution across categories shows that Books products have a wider price range and higher average prices compared to other categories. The clothing category also has higher median price as compared to rest.

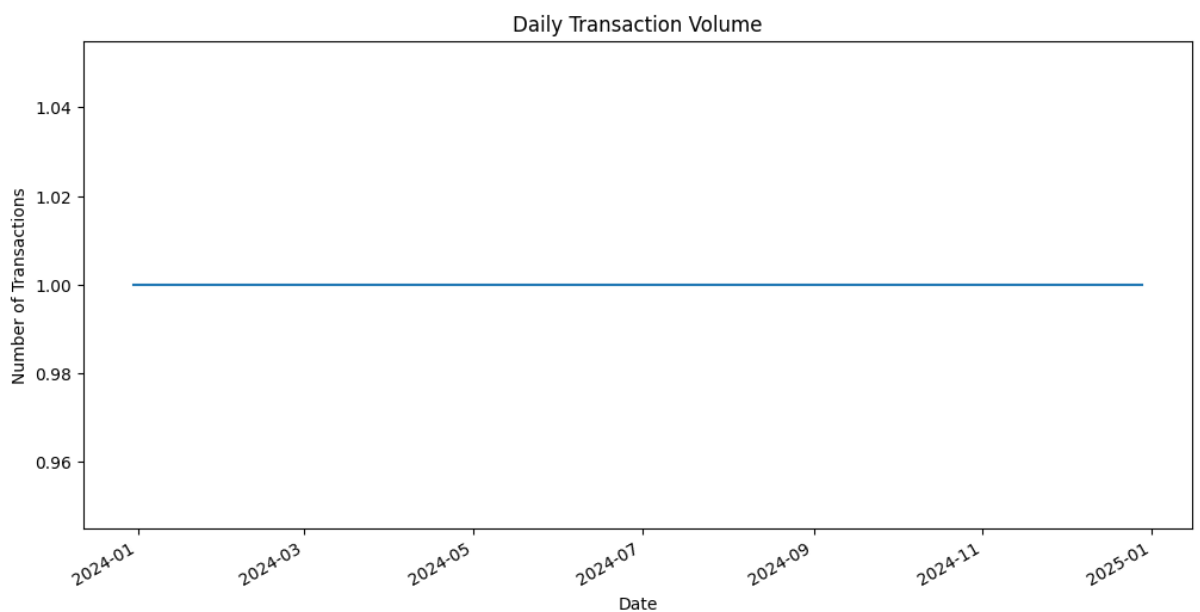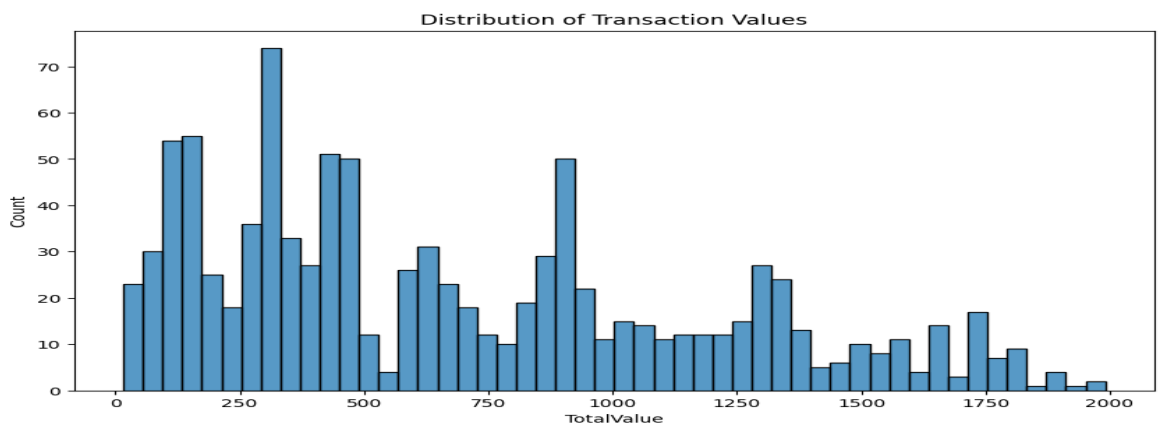- **Plot**: Price Distribution by Category
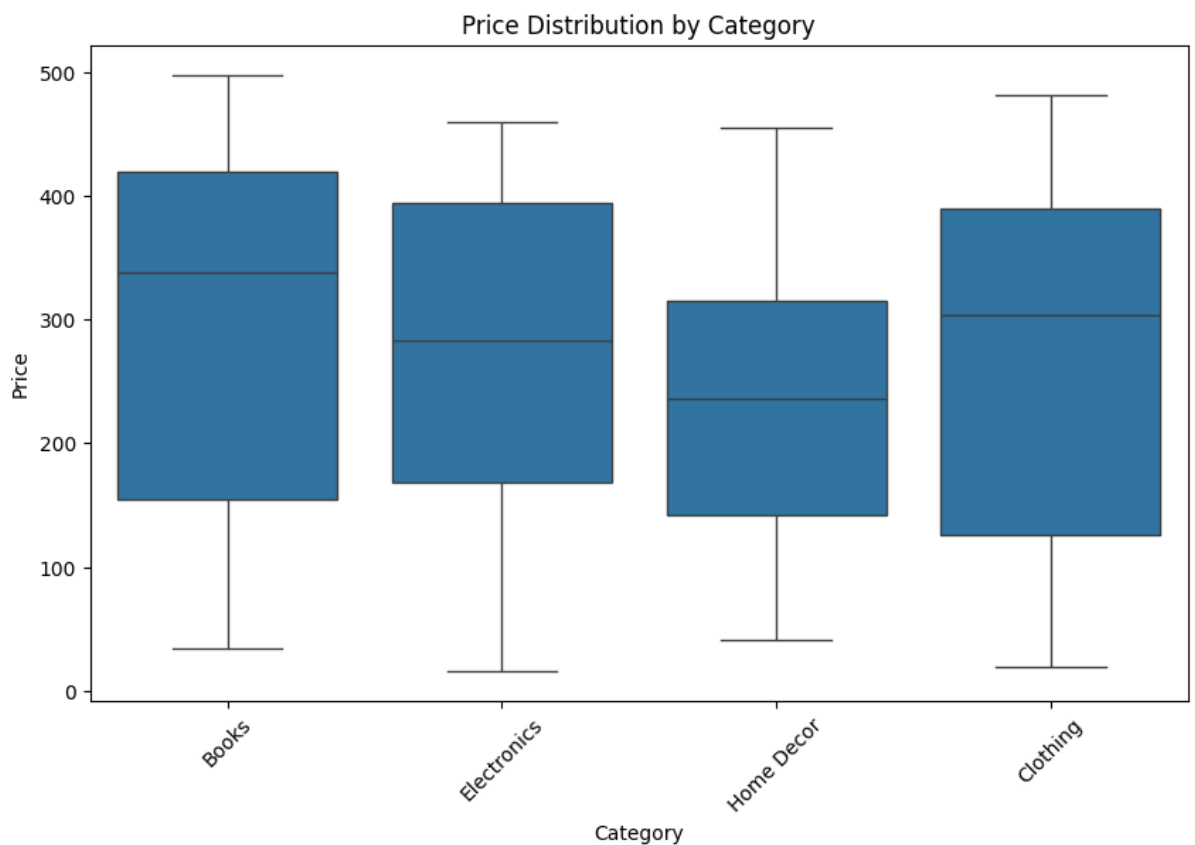
Transaction Analysis

5. **Transaction Value Distribution**:

   o **Insight**: The distribution of transaction values reveals that most transactions are of lower value, with a few high-value transactions. We have constant daily transactions as well. Which we need to increase

○ **Plot**: Distribution of Transaction Values

Distribution of Transaction Values

Daily Transaction Volume

Customer Lifetime Value (CLV)

7. **CLV Distribution**:

   ○ **Insight**: The distribution of Customer Lifetime Value (CLV) shows that a small percentage of customers contribute to a large portion of the revenue. This indicates the need for a loyalty program or personalized marketing strategies to retain and nurture these valuable customers.

   ○ **Plot**: Distribution of Customer Lifetime Value (CLV)

Distribution of Customer Total Spend · Distribution of Transaction Frequency · Avg Transaction Value vs Frequency


Distribution of Customer Lifetime Value (CLV)

RFM Analysis

8. **RFM Segmentation**:

   o **Insight**: The RFM (Recency, Frequency, Monetary) analysis reveals that the majority of customers fall into the "Low Value" segment, with low scores across all three metrics. However, there is a distinct "High Value" segment that shows high recency, frequency, and monetary scores. Targeted campaigns to convert low-value customers into high-value ones could significantly boost overall revenue.

   o **Plot**
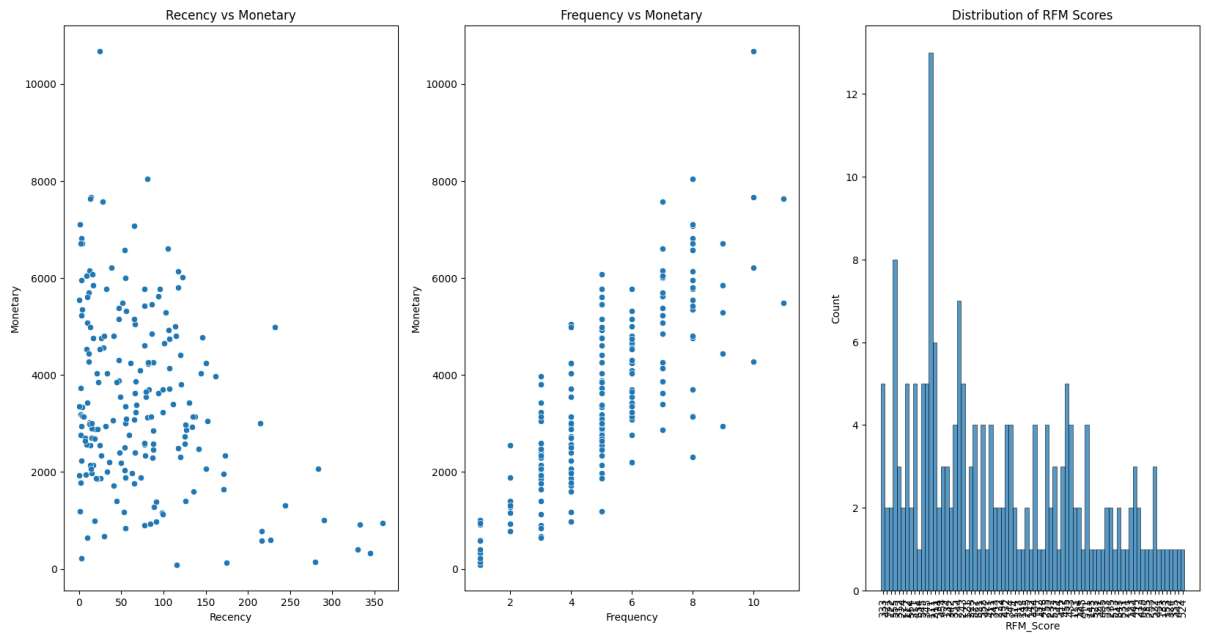
Top Customer Segments (RFM Analysis):   RFM_Score

111	13
555	8
244	7
211	6
333	5

Conclusion

The EDA has provided valuable insights into customer demographics, product performance, transaction patterns, and customer value. These insights can inform strategic decisions to enhance marketing efforts, optimize product offerings, and improve customer retention. By focusing on high-value customers and leveraging seasonal trends, the business can drive growth and increase revenue.