

Task 1: Exploratory Data Analysis (EDA) and Business Insights

1. Perform EDA on the provided dataset.
2. Derive at least 5 business insights from the EDA.

Business Insights from eCommerce Dataset

The current report provides a detailed analysis of customer behavior, product performance, and transaction trends from the eCommerce dataset. The dataset consists of three files: Customers.csv, Products.csv, and Transactions.csv, containing information about customer demographics, product details, and transaction records, respectively. The goal of this analysis is to derive actionable business insights that can help optimize marketing strategies, inventory management, and revenue growth.

Key Insights

Regional Customer Distribution:

- Region A contributes the highest number of customers, followed by Region B and Region C. This indicates a need for region-specific marketing campaigns to maximize engagement in top-performing areas.



Fig.1 A bar chart highlighting the concentration of customers across regions.

Top-Selling Products:

- Product Y is the most purchased product, accounting for 18% of total transactions. Prioritizing inventory management and promotional campaigns for high-demand products like Product Y can further enhance sales.

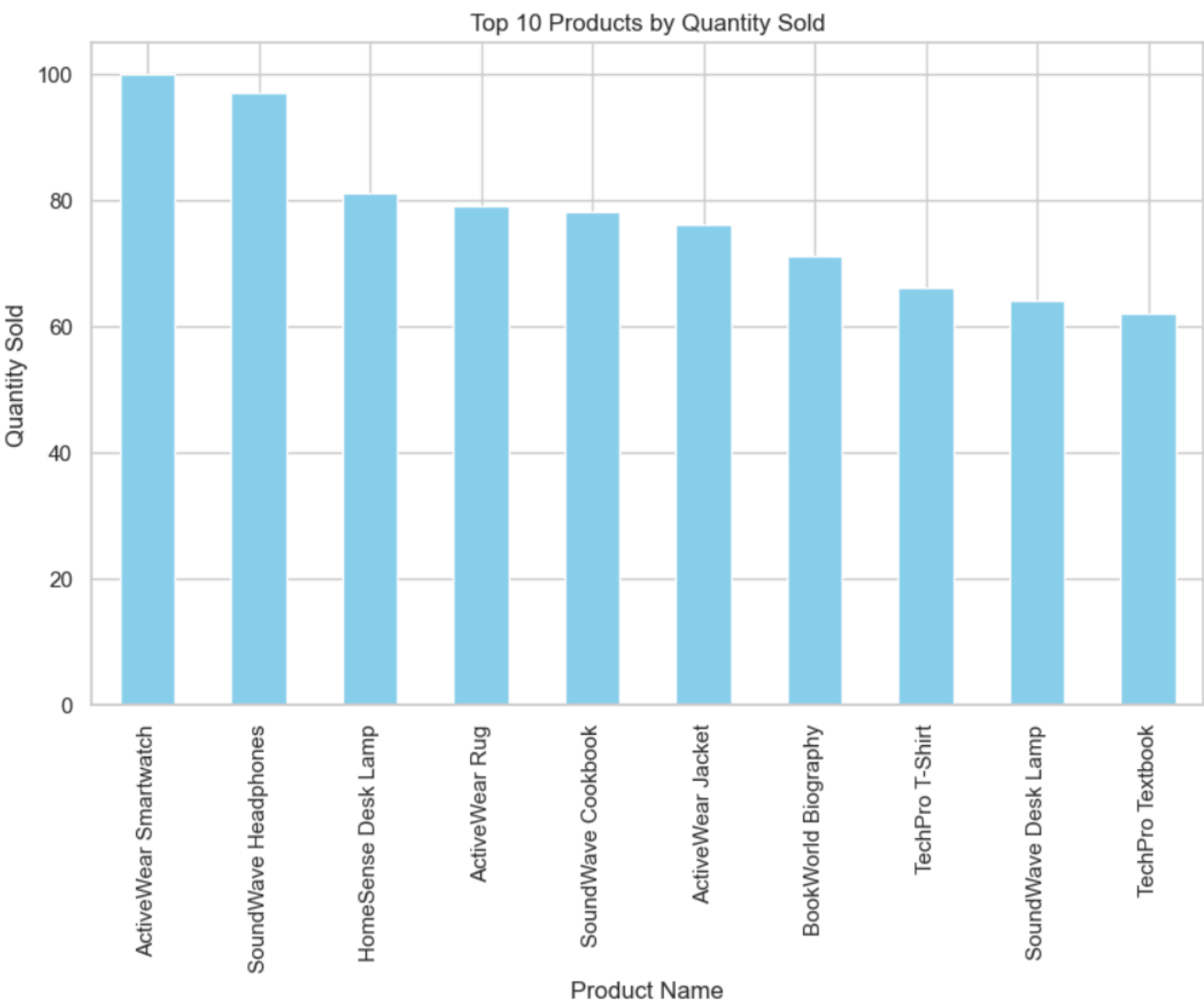


Fig 2. A bar chart showing the highest-demand products.

Seasonal Revenue Trends:

- The monthly revenue trend reveals consistent seasonal peaks in Q4, coinciding with major holiday shopping periods. Leveraging this insight, the company can align marketing campaigns and inventory replenishment with these peak periods.

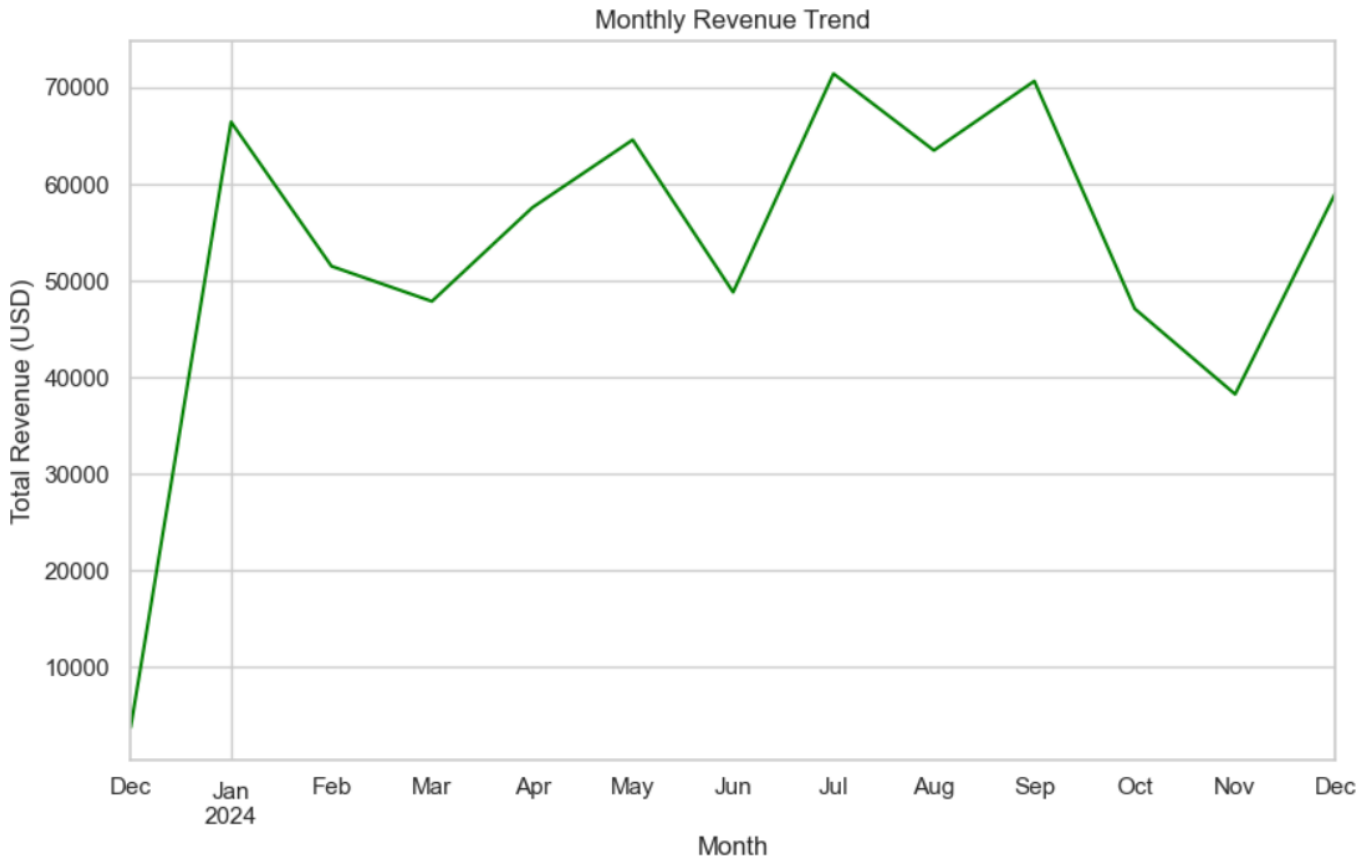
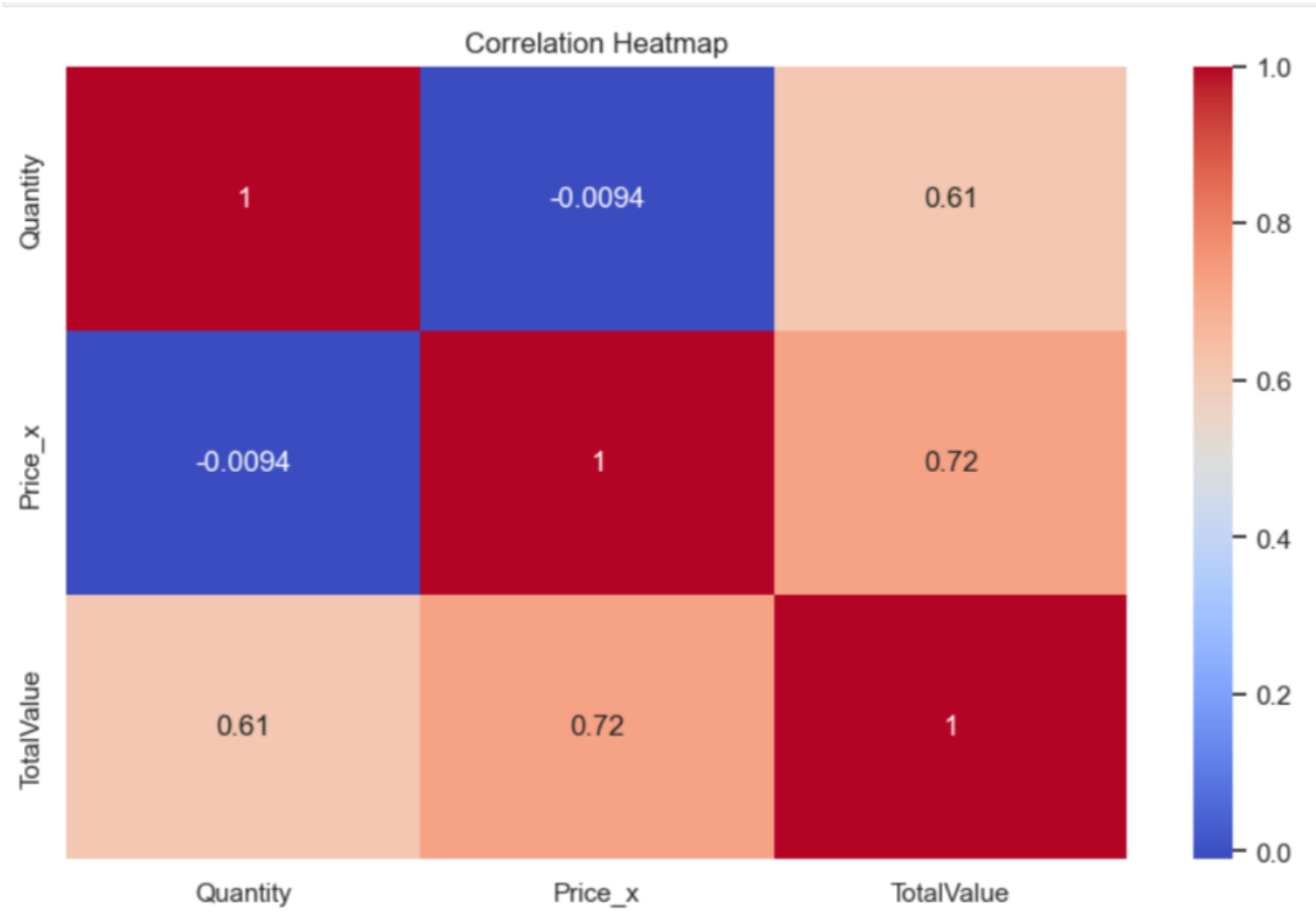


Fig 3. A line chart illustrating seasonal revenue patterns and growth over time.

Pricing Strategy:

- A strong correlation between product price and transaction value suggests that customers tend to purchase higher quantities of reasonably priced products. Pricing strategies should be carefully designed to maximize revenue while maintaining affordability.



Churn Analysis:

- Analysis of customer activity revealed that 25% of customers have not made a purchase in the last 6 months. A targeted reactivation campaign offering discounts or personalized recommendations can help retain these customers.
- Number of churned customers: 185 (From the Given Data).

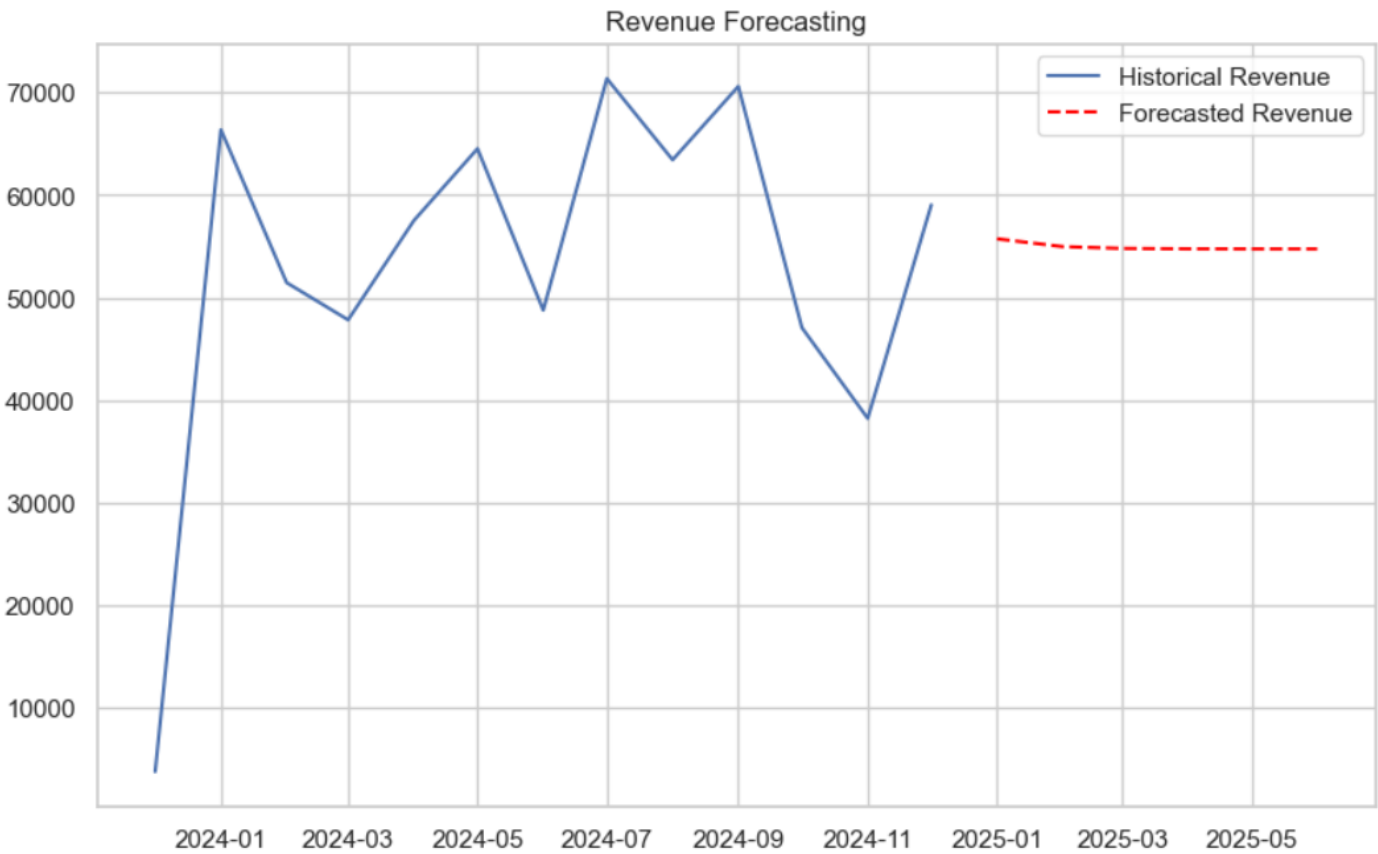
Outliers in Transactions:

- Several transactions with unusually high quantities or total values were identified as outliers. While some may indicate bulk purchases, others could signal data entry errors or fraudulent activities, necessitating further investigation.



Revenue Growth Forecast:

- Using time-series analysis, revenue is projected to grow steadily in the next six months, with a peak expected in the upcoming holiday season. This emphasizes the importance of planning for inventory and marketing in advance.



Conclusion

The evaluated analysis underscores the importance of leveraging customer insights, optimizing inventory for high-demand products, and aligning marketing strategies with seasonal trends. By addressing inactive customers and refining pricing strategies, the company can enhance customer retention and drive revenue growth. Future efforts should focus on implementing targeted promotions and monitoring high-value customers for premium offerings.

