

Exploratory Data Analysis

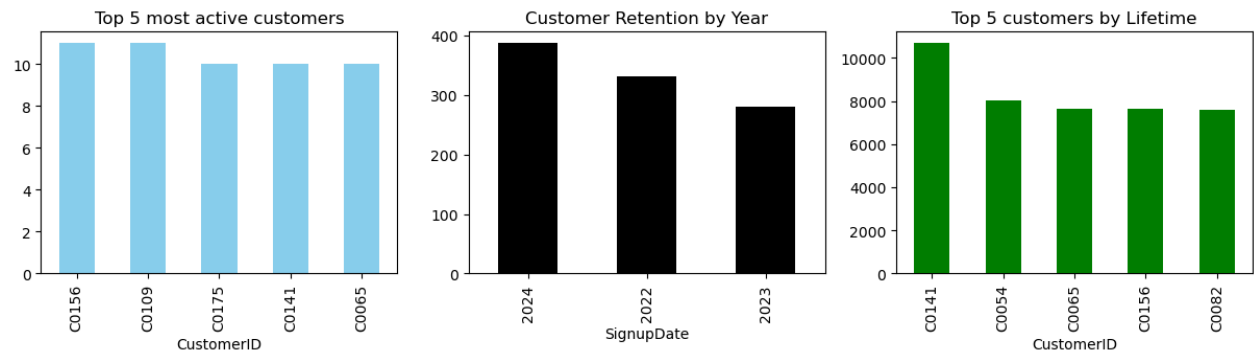
Overview

This report presents an exploratory data analysis (EDA) of the eCommerce Transactions dataset, focusing on key metrics, trends, and actionable insights derived from customer, product, and transaction data. Below are the summarized findings and visualizations, along with spaces to add corresponding charts and plots.

Key Metrics and Insights

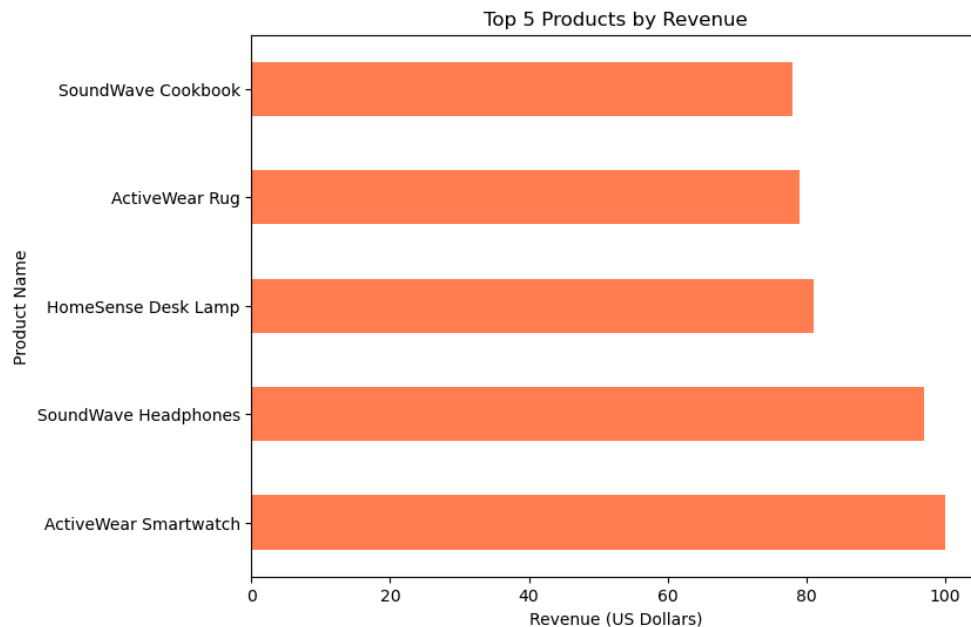
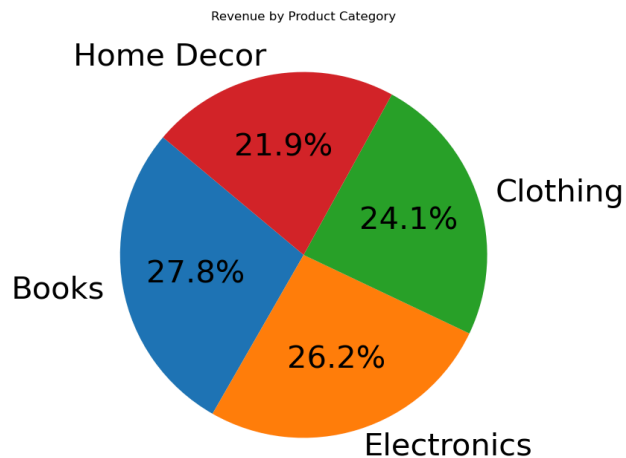
1. Customer Metrics -

- Top 5 Customers by Lifetime Value: Customers contributing the highest revenue are identified. Their collective lifetime value indicates key contributors to the business.
- Most Active Customers: The top 5 customers with the highest number of transactions show strong repeat purchase behavior, essential for customer retention strategies.
- Customer Retention by year: An analysis that shows year 2024 saw the most exponential growth as compared to 2022 and 2023.



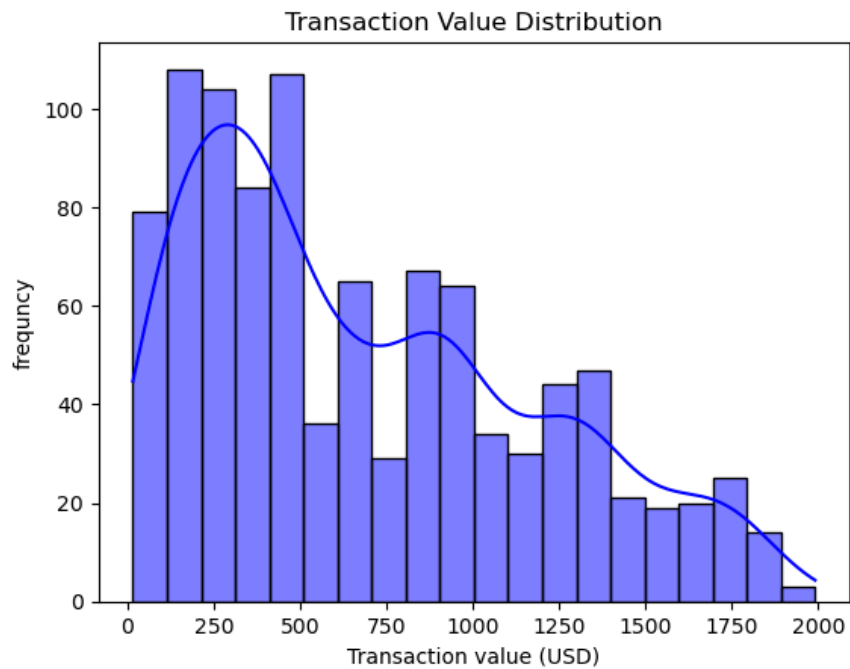
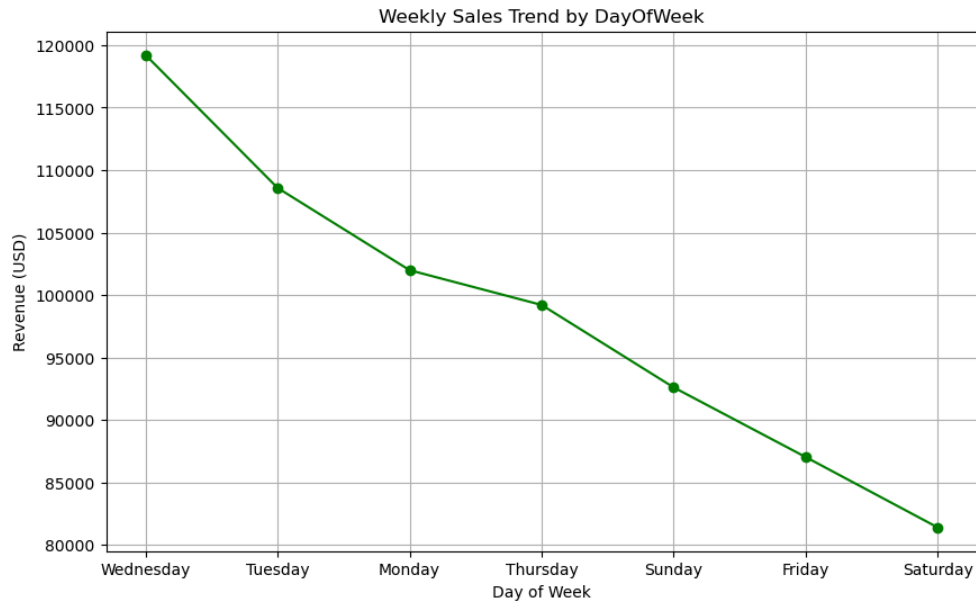
2. Product Metrics:

- Revenue by Product Category: This analysis shows that the sales are almost uniformly distributed in all categories, but the maximum revenue was given by Books and least was given by Home Decor.
- Top 5 Products by Revenue: The plot below shows the top 5 products by revenue including ActiveWear Smartwatch and SoundWave Headphones having most of the sales.



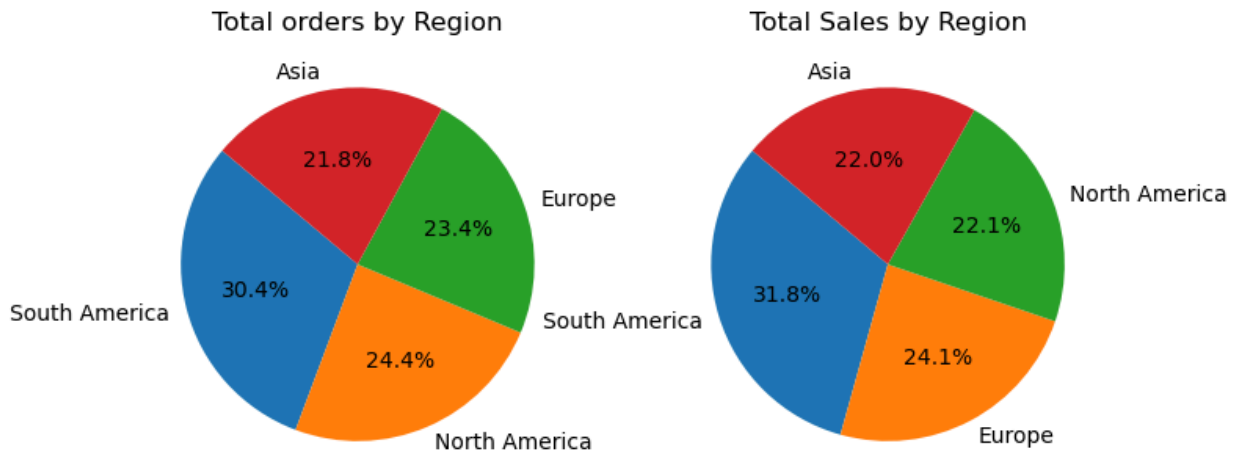
3. Transaction Metrics:

- Day of week Revenue Trends: This analysis concludes that Wednesday and Tuesday have most sales and Sunday having least sales.
- Transaction Value Distribution: This distribution shows Products under 500 USD are supposed to have higher sales.



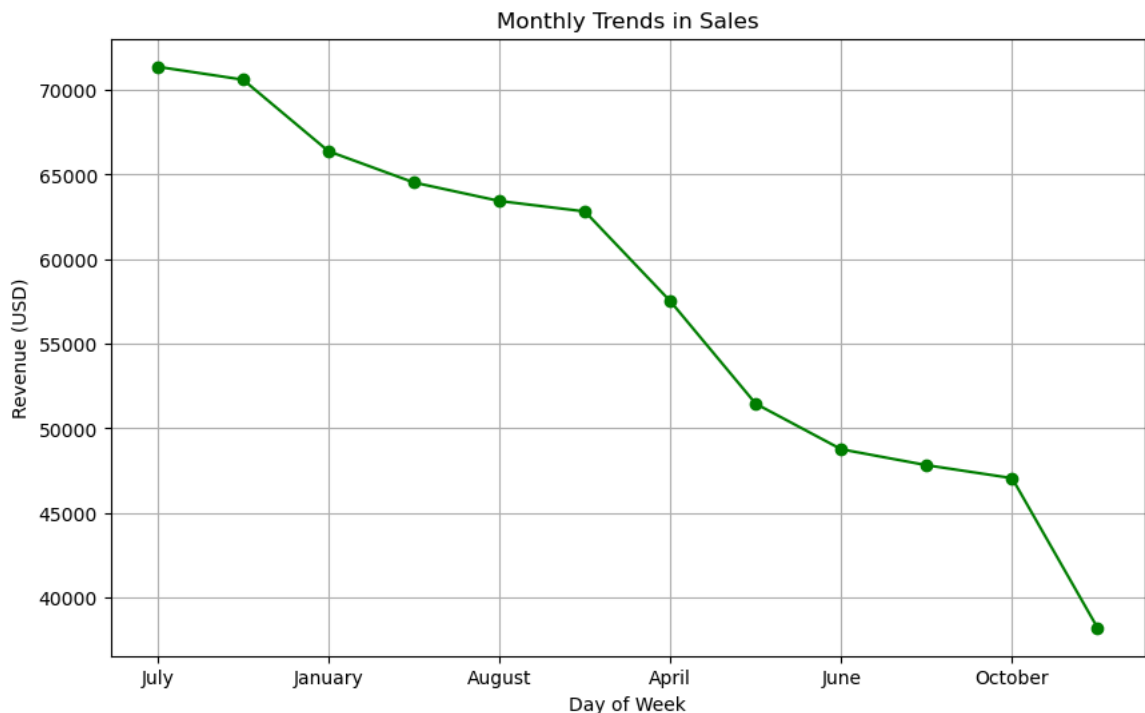
4. Regional Metrics:

- Revenue by Region: shows South America provides maximum revenue of 31.8% as compared to other regions.
- Customer Distribution by Region: shows most orders are from South America acquiring 30.4% of total order placed.



5. Time-Based Metrics:

- Monthly Trends in sales: This analysis concludes that July, January, August, April acquire the maximum sales giving a peak in the revenue.



Conclusion:

The exploratory data analysis uncovers important insights into customer behavior, product performance, and transaction trends. Identifying top customers and products reveals opportunities for retention and optimization, while transaction trends indicate the best days and price ranges for sales. Regional data highlights the importance of South America in terms of revenue and orders, and time-based trends reveal the months with peak sales. These insights offer actionable strategies for targeted marketing, product enhancement, and resource allocation, with the potential for further growth through predictive modeling and clustering.