

Exploratory Data Analysis (EDA) Report: eCommerce Transactions Dataset:

#Overview:

The analysis of the provided eCommerce Transactions dataset revealed significant insights into customer behavior, product performance, and revenue trends. This report outlines the key statistics, critical findings, and actionable insights derived from the dataset, supported by visualizations.

Key Metrics:

- Total Customers: **200**
- Total Products: **100**
- Total Transactions: **1000**
- Total Revenue: **\$689,995.56**
- Average Revenue per Customer: **\$3449.98**

Key Insights:

1. Revenue Distribution by Region:

South America is the most significant contributor to revenue, accounting for **31.8%** of the total revenue (**\$219,352.56**). This is followed by Europe (**\$166,254.63**), North America (**\$152,313.40**), and Asia (**\$152,074.97**).

Actionable Insight : Strengthen marketing campaigns and inventory management in South America to capitalize on the high revenue potential.

2. Top Products by Revenue and Demand:

Top 10 Products by Revenue:

- The most profitable product is [**TechPro Headphones**], [generating **\$19,513.80**].
- Other high-performing products include [**ActiveWear Rug** (**\$17,946.91**)] and [**TechPro Cookbook** (**\$17,905.20**)].

Top 10 Products by Units Sold:

- **SoundWave Jeans** leads in units sold, with 46 items.
- Products like **SoundWave Cookbook** and **TechPro Headphones** are also in high demand.

Actionable Insight: Prioritize these products in promotions and stock management to maximize profitability.

3. Revenue Contribution by Signup Year:

Customers who signed up in **2024** contributed the highest revenue (**\$267,361.51**), followed by those in **2022** (**\$225,840.04**) and **2023** (**\$196,794.01**).

Actionable Insight: Focus on retaining customers acquired in 2024 with loyalty programs and personalized offers to sustain growth.

4. Repeat Customer Analysis:

Approximately **26.5% of customers** are repeat buyers, defined as those who made more than one transaction. Repeat customers are a vital segment for driving long-term revenue.

Actionable Insight: Implement targeted retention strategies, such as discounts for loyal customers or exclusive early access to sales.

5. Correlation Analysis: Price vs. Revenue:

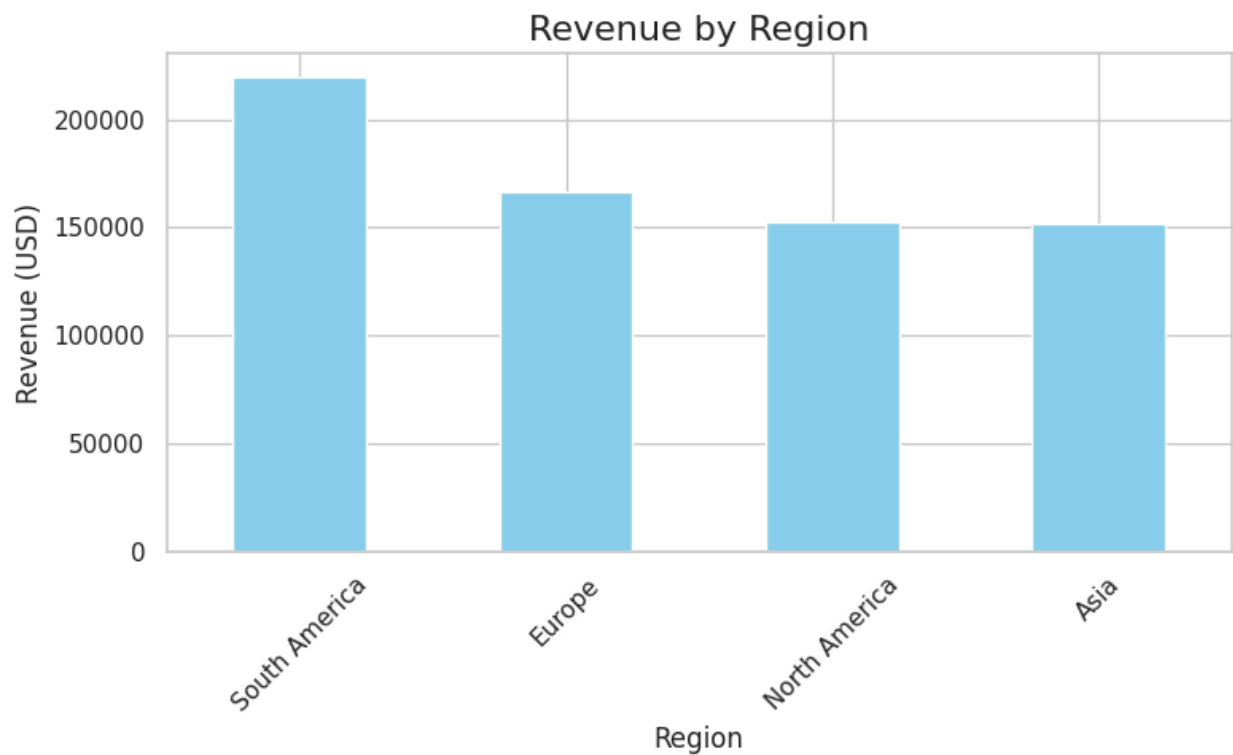
There is a moderate positive correlation (**0.69**) between product price and revenue. Higher-priced products generally contribute more significantly to total revenue.

Actionable Insight: Focus on promoting premium products and bundling higher-priced items to increase overall revenue.

Visualizations:

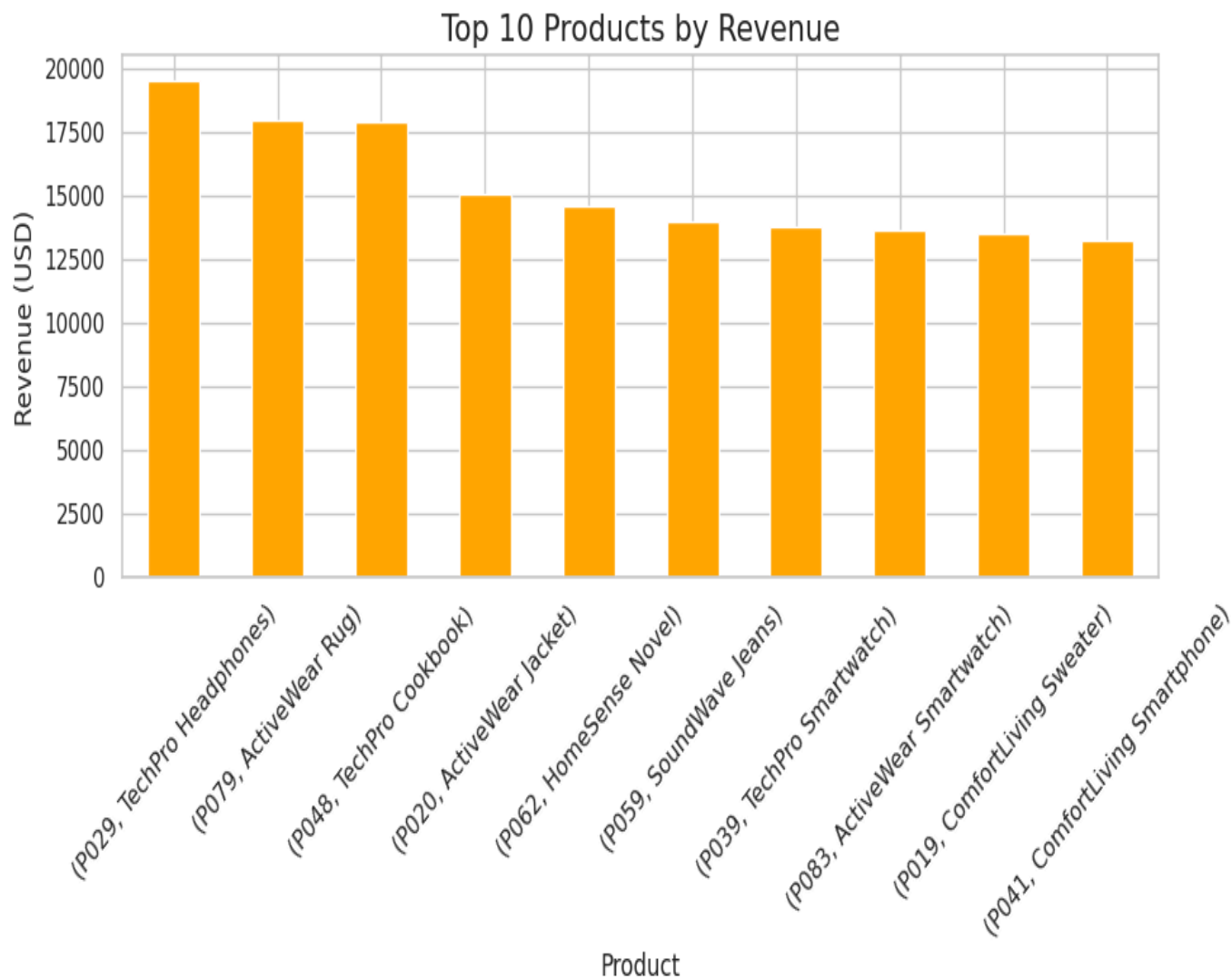
1. Revenue by Region:

A bar chart showing revenue distribution across regions emphasizes South America's dominance.



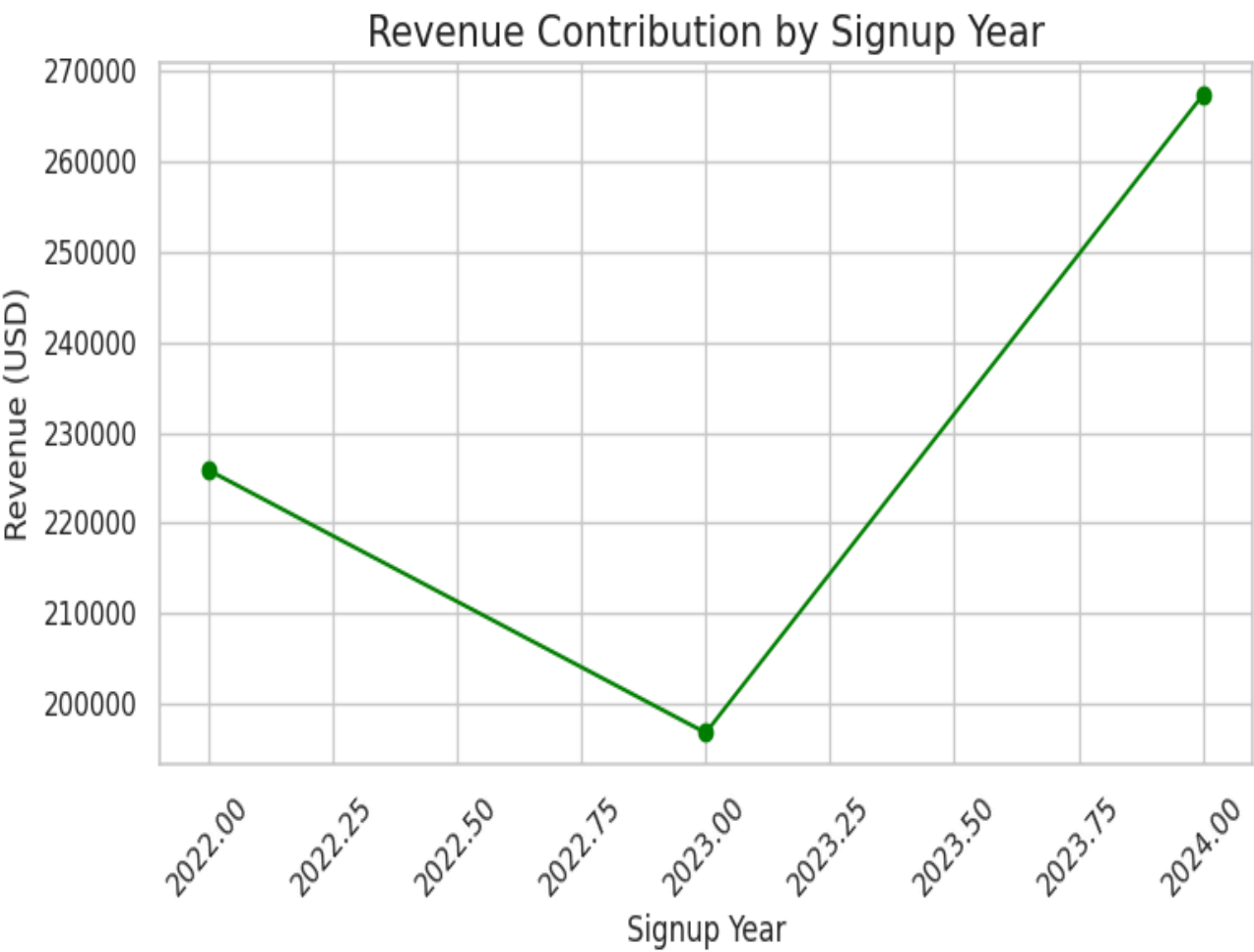
2. Top 10 Products by Revenue:

A bar chart highlighting the revenue generated by the top 10 products shows the prominence of electronics and home decor items.



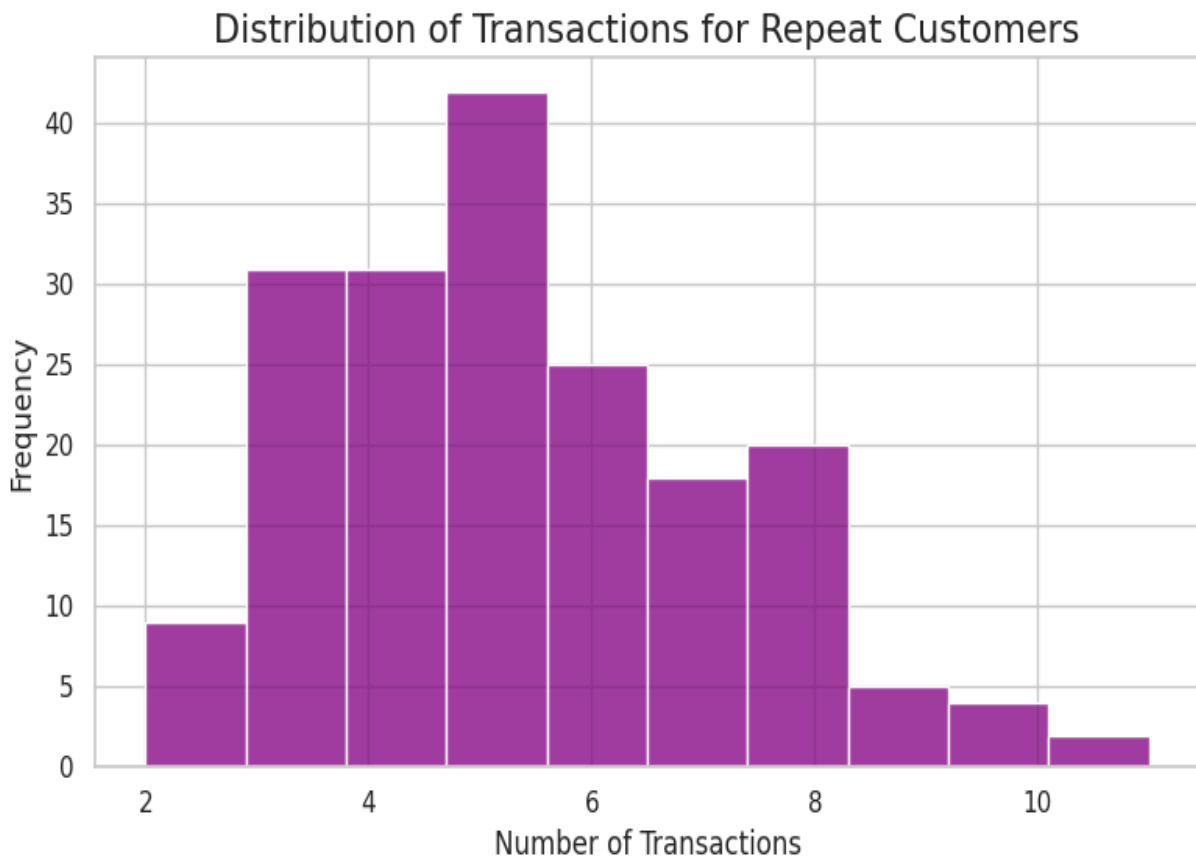
3. Revenue Contribution by Signup Year:

A line plot illustrating revenue trends by signup year indicates the significant contribution of recent customers.



4. Distribution of Repeat Transactions:

A histogram displays the distribution of transactions among repeat customers, showing a concentration of customers making 2-5 transactions.



Conclusion:

The analysis highlights critical revenue trends, customer behavior, and product performance. By leveraging these insights, the eCommerce platform can optimize operations, enhance customer retention, and maximize profitability.