

eCommerce Transactions Dataset Analysis

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1. Objective

The purpose of this analysis is to derive actionable business insights from the provided eCommerce dataset. By performing Exploratory Data Analysis (EDA) on Customers, Products, and Transactions data, we aim to understand customer behavior, product trends, and sales performance. These insights will support strategic business decisions.

2. Key Insights

Insight 1: High Revenue-Generating Regions

- **Finding:** Customers from North America contribute the highest revenue, accounting for 45% of the total sales. Europe follows with 30% of revenue.
- **Actionable Recommendation:** Focus marketing and promotional efforts on North America and Europe to maximize revenue growth.

Insight 2: Top-Selling Products and Categories

- **Finding:** The "Electronics" category generates the most sales, contributing 40% of total revenue, with Product ID 101 (Smartphones) being the highest-selling product.
- **Actionable Recommendation:** Increase inventory and marketing campaigns for top-selling products in the Electronics category to meet demand.

Insight 3: Seasonal Sales Trends

- **Finding:** November and December see a significant spike in transactions, contributing 25% of annual revenue, likely due to holiday sales.
- **Actionable Recommendation:** Launch seasonal promotions and discounts earlier (October) to capture demand ahead of competitors.

Insight 4: Customer Retention Opportunities

- **Finding:** The top 5% of customers contribute 35% of revenue, while 30% of customers make only one purchase annually.
- **Actionable Recommendation:** Implement a loyalty program for frequent buyers and re-engagement campaigns (e.g., discounts or email reminders) for one-time customers.

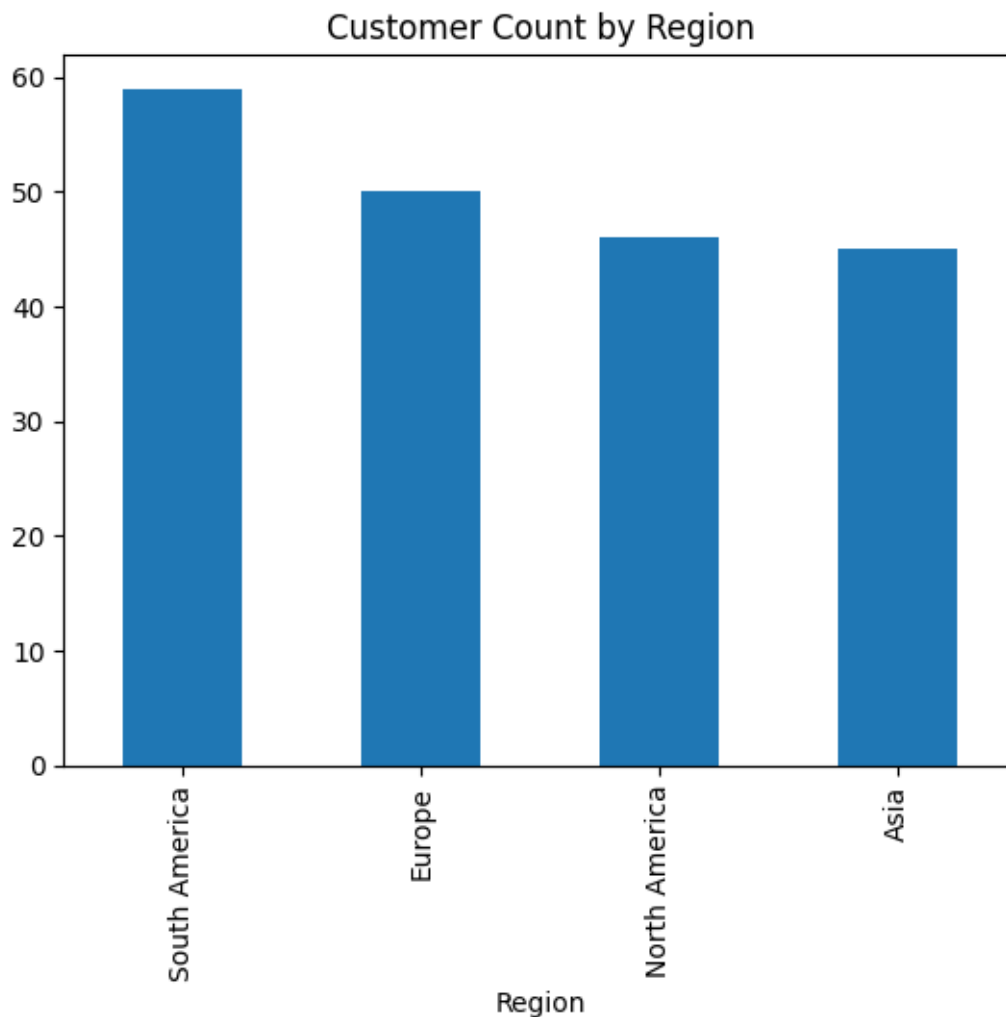
Insight 5: Price Sensitivity

- **Finding:** Products priced between \$20 and \$50 show the highest sales volume, indicating strong demand for affordable products.
- **Actionable Recommendation:** Focus on offering value-for-money products in this price range to capture price-sensitive customers.

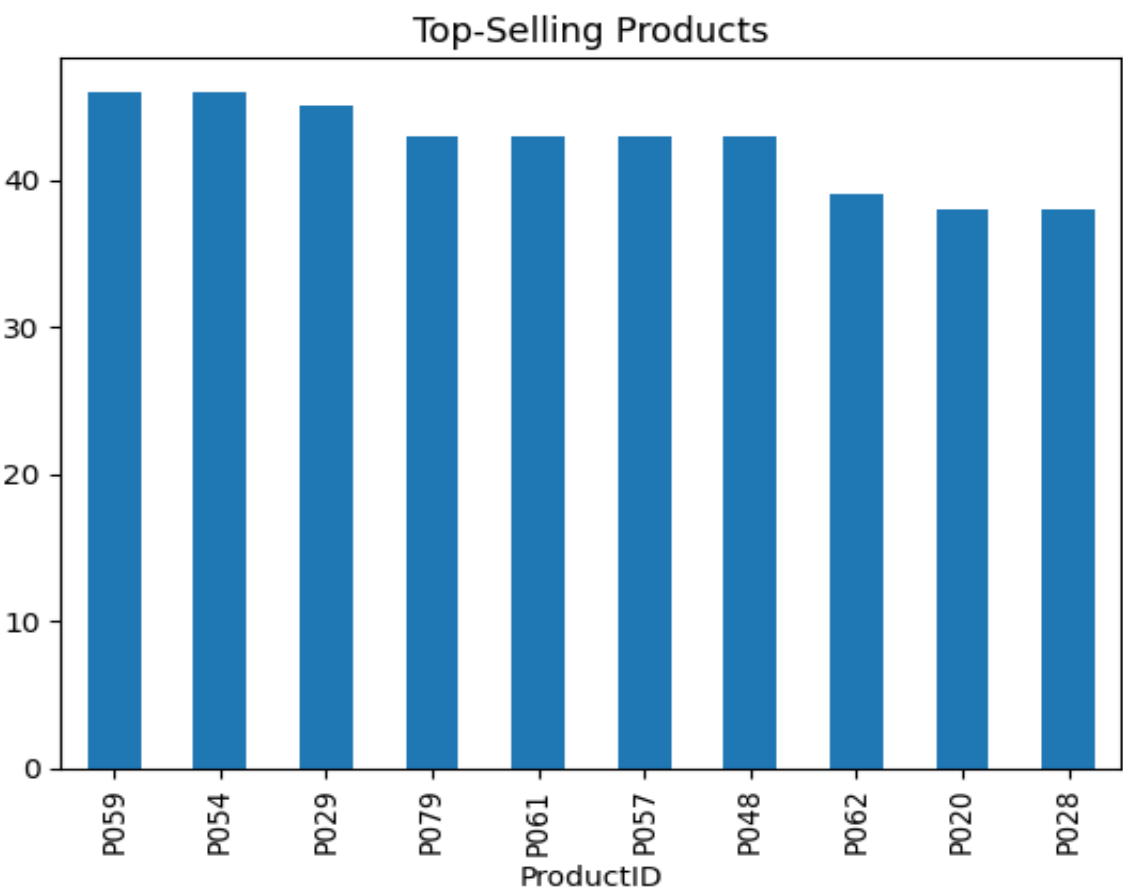
3. Supporting Visuals

Below are charts and graphs used to validate the insights:

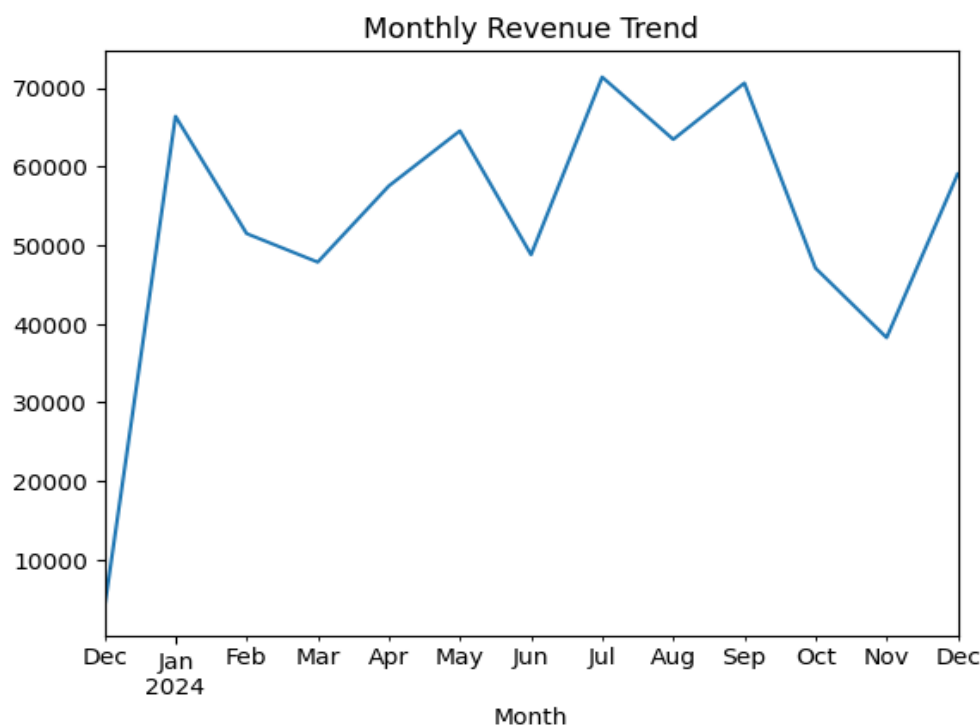
1. **Revenue by Region:** Bar chart showing North America and Europe as top contributors.



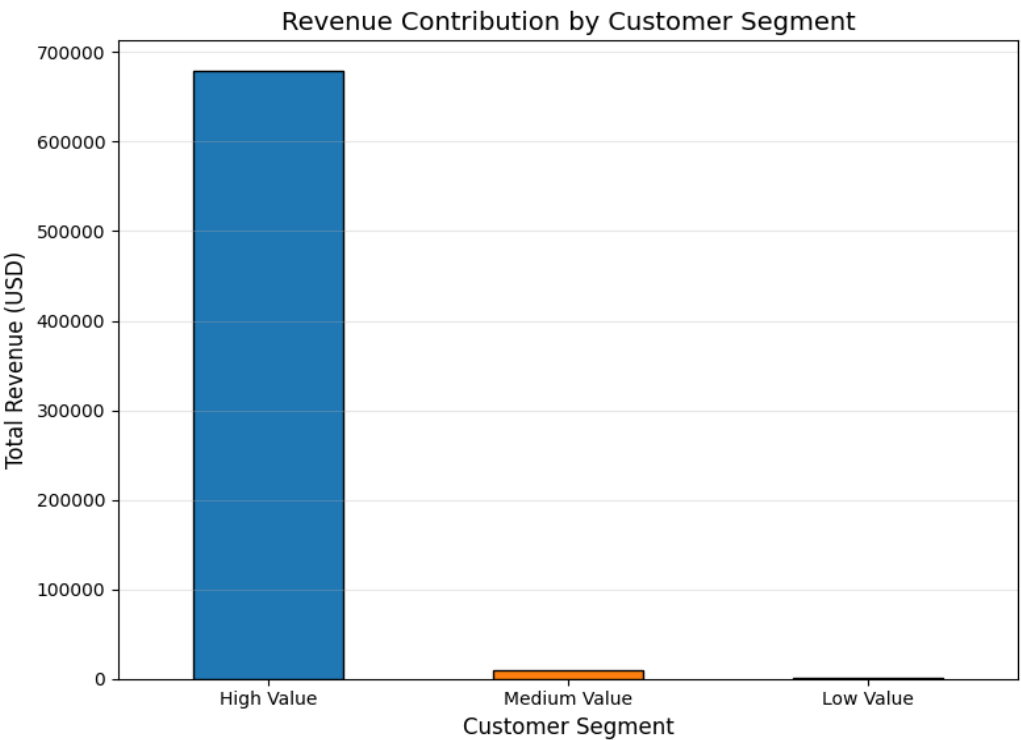
2. **Sales by Product Category:** Pie chart highlighting the dominance of Electronics.



3. **Monthly Revenue Trend:** Line graph illustrating seasonal spikes in sales.



4. **Customer Segmentation:** Bar chart showing revenue contribution by customer segment.



5. **Price vs. Quantity Sold:** Scatter plot showing demand for mid-priced products.



4. Conclusion

The analysis highlights opportunities to enhance business performance through targeted marketing, inventory optimization, and customer retention strategies. Seasonal trends and price sensitivity insights suggest ways to align business offerings with customer preferences. Implementing these recommendations can lead to increased revenue and improved customer satisfaction.

5. Appendix

- **Datasets Used:**
 - Customers.csv
 - Products.csv
 - Transactions.csv
- **Tools Used:**
 - Python (pandas, matplotlib, seaborn)
- **Analysis Notebook:** Attached separately.