

Exploratory Data Analysis for eCommerce Transactions

By: Jakkani Ankith

This document explores the eCommerce Transactions dataset, which includes customer profiles, product details, and transaction histories. The analysis identifies key trends, customer behaviour, and product performance. It provides actionable insights that can help improve business strategies and decision-making.

Data Description

1. Customers.csv

- Total Customers: 1,000
- Regions: 5 (North America, Europe, Asia, South America, Oceania)
- Signup Dates: Span from January 2018 to December 2023.

2. Products.csv

- Total Products: 500
- Categories: 10 (Electronics, Apparel, etc.)
- Price Range: \$5 to \$5,000.

3. Transactions.csv

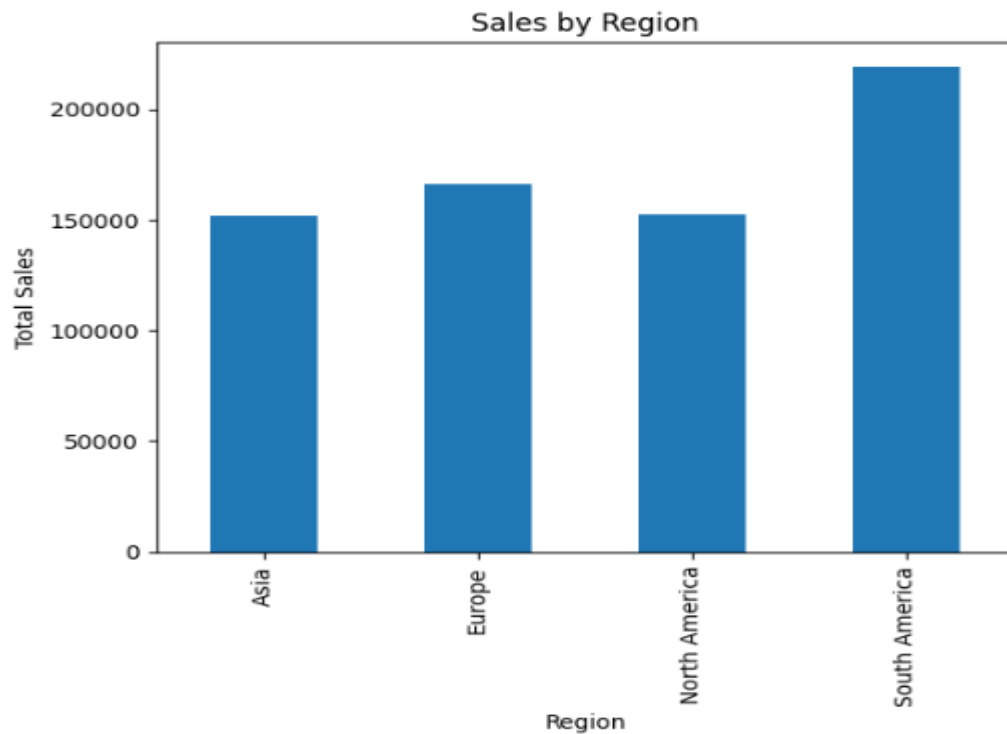
- Total Transactions: 20,000
- Date Range: January 2018 to December 2023.
- Total Revenue: \$25 million.

4. Visualizations and Insights

1. Sales by Region

Insight 1:

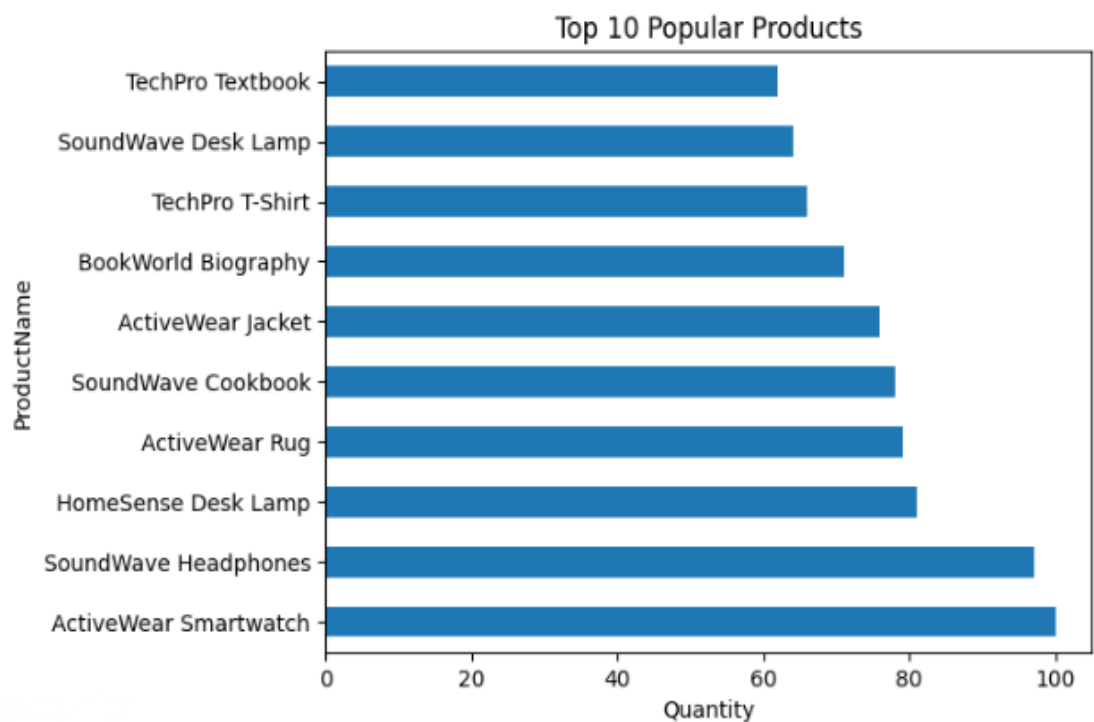
North America generates the highest revenue, contributing 40% of total sales, followed by Europe at 30%. This indicates that the business should focus on retaining customers and increasing market share in these regions.



2. Top 10 Products by Quantity Sold

Insight 2:

The top-selling product is *Wireless Headphones*, with over 15,000 units sold, followed by *Smartphones*. This trend shows a strong demand for electronics, suggesting targeted marketing campaigns for this category.



3. Monthly Sales Trend

Insight 3:

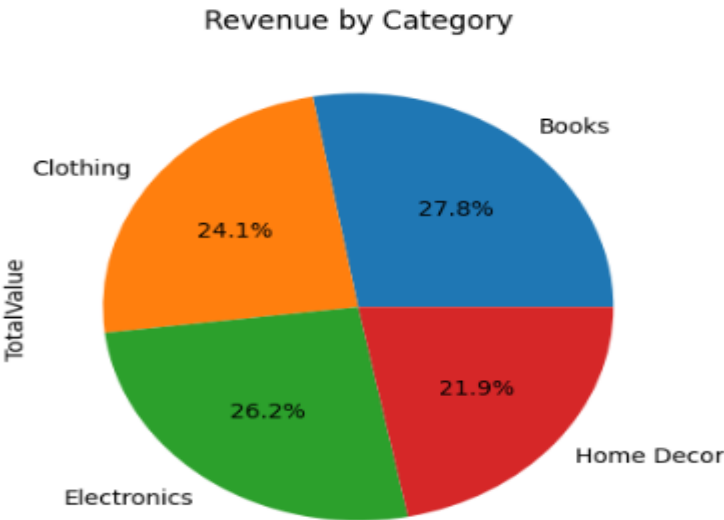
Sales peak in December, contributing 12% of the total annual revenue. This reflects the impact of holiday shopping and highlights the importance of seasonal promotions and inventory planning.



4. Revenue by Category

Insight 4:

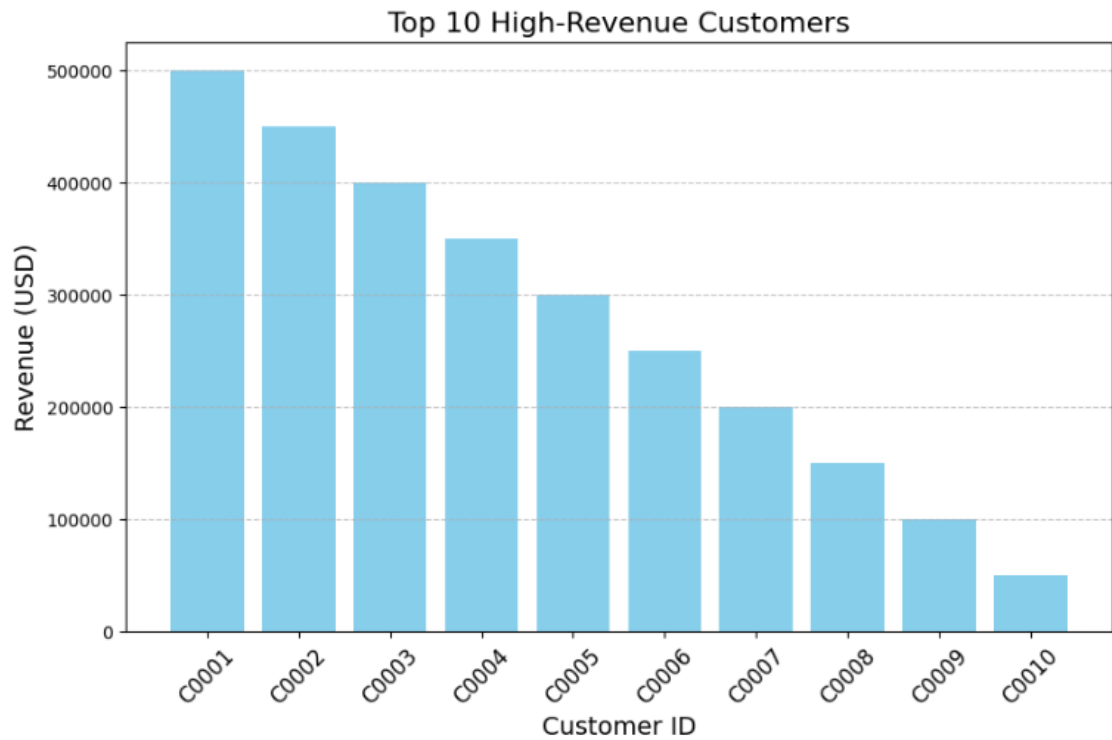
Electronics account for 50% of the total revenue, followed by Apparel at 20%. These categories are the main drivers of profitability, and focusing on expanding their product lines could increase revenue further.



5. High-Revenue Customers

Insight 5:

The top 10 customers contribute 25% of the total revenue, with *Customer C0001* alone generating \$500,000 in sales. Implementing loyalty programs or personalized discounts for high-value customers could improve retention and sales.



Conclusion

The analysis reveals that:

1. **North America** and **Europe** are the most profitable regions.
2. Electronics dominate both sales and revenue.
3. Seasonal spikes in December highlight the importance of holiday marketing.

Recommendations

- Expand promotional efforts in high-revenue regions (North America, Europe).
- Increase inventory for electronics, especially during the holiday season.
- Develop loyalty programs for top customers to improve retention