Exploratory Data Analysis (EDA) and Business Insights
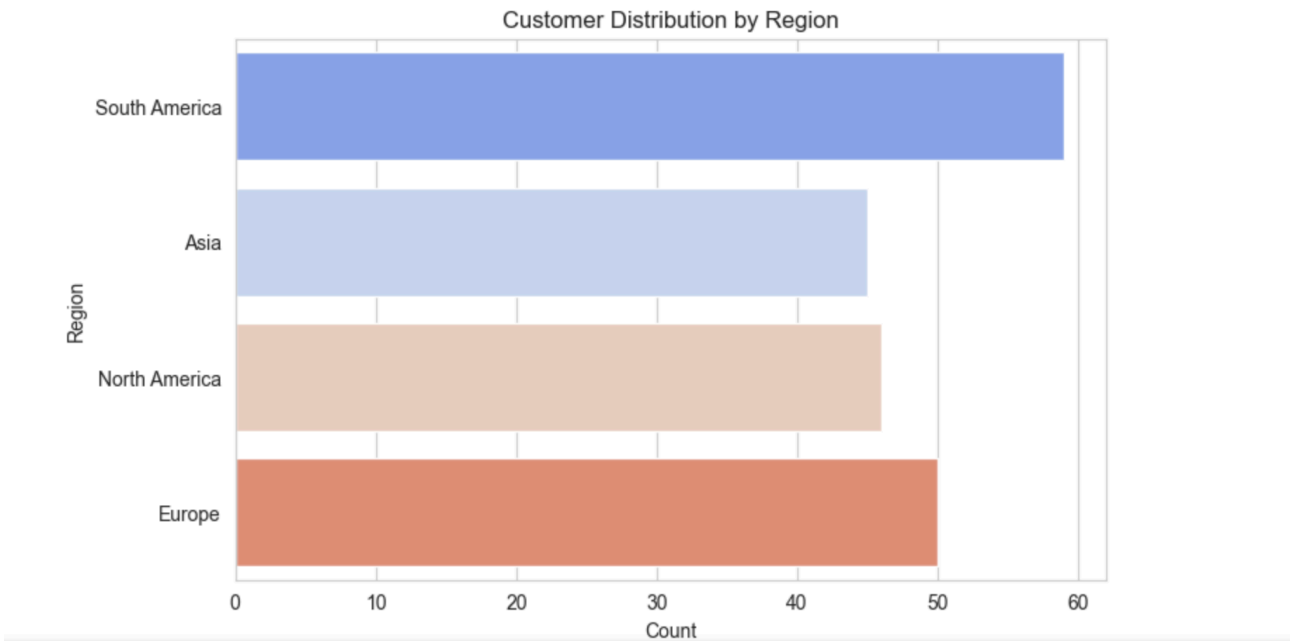eCommerce Transactions Dataset
By Gargi Giri

1. Introduction

This report summarises the Exploratory Data Analysis (EDA) conducted on an eCommerce dataset, which includes details about customers, products, and transactions. The aim of this analysis is to explore the data, uncover key trends, and generate actionable business insights that can guide decision-making for marketing, sales, and inventory management.

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2. Data Overview

The dataset is comprised of three main tables:

- Customers Data: Contains CustomerID, CustomerName, Region, and SignupDate.
- Products Data: Contains ProductID, ProductName, Category, and Price.
- Transactions Data: Contains TransactionID, CustomerID, ProductID, TransactionDate, Quantity, TotalValue, and Price.

Customer Distribution by Region

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3. Data Cleaning and Missing Values

The following checks were performed on the datasets:

- Customers Data: No missing values in any columns.
- Products Data: All fields are complete with no missing values.
- Transactions Data: No missing data in any columns.

This confirms the integrity of the data, making it ready for further analysis.

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4. Summary Statistics

Customers Data:
- There are 200 customers, with regions including South America and Asia.

Products Data:
- There are 100 products, ranging in price from 16.08 to 497.76. The average price is 267.55.

Transactions Data:
- 1000 transactions are recorded with Quantities ranging from 1 to 4 items per transaction. The TotalValue ranges from 16.08 to 1991.04, with an average transaction value of 689.99.


Top 10 Most Sold Products

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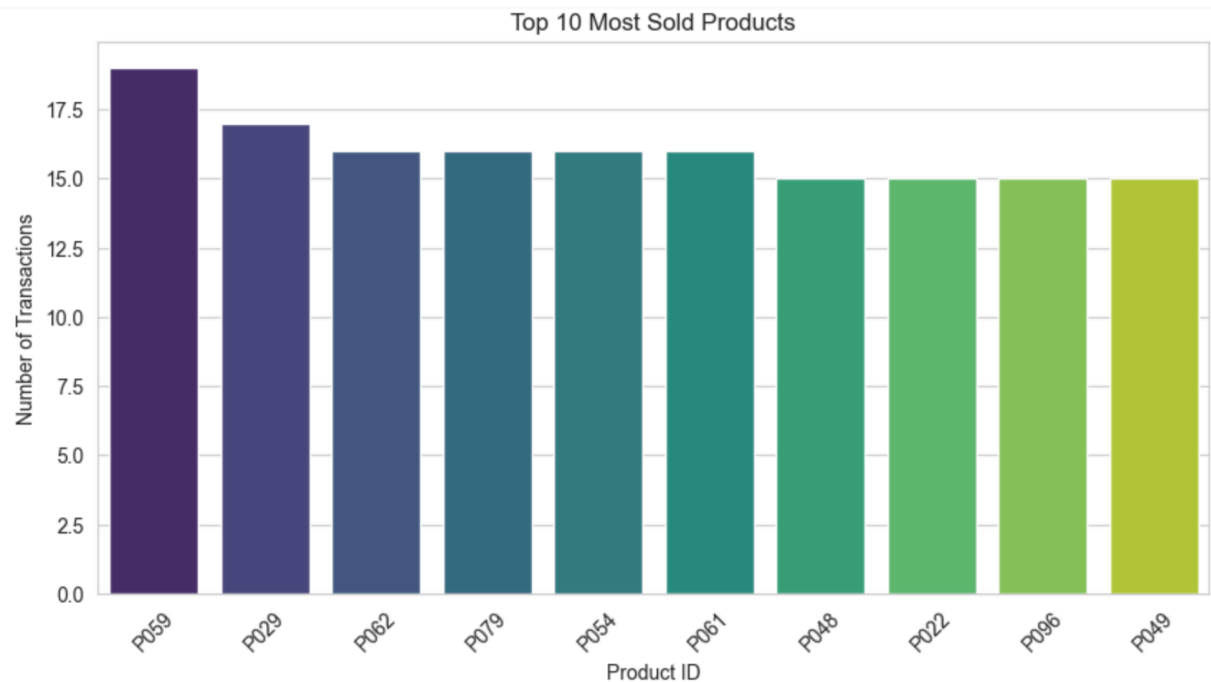
5. Visual Insights

- Customer Distribution by Region: There is a higher concentration of customers in Asia and South America.
- Top Products by Category: Electronics and Books are the most popular categories, with Electronics generating higher revenues.
- Price Distribution: A large portion of transactions involve products priced below 300, though higher-ticket products contribute significantly to overall revenue.
- Transactions by Quantity: The majority of transactions involve 2 to 3 items, indicating a preference for bulk purchasing.

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6. Business Insights

- Targeted Marketing: Focus marketing efforts in Asia and South America, where most customers are located. Special promotions can be run for popular product categories like Electronics and Books.
- Product Strategy: Increase the availability of Electronics and Books as they contribute significantly to sales. The lower-priced products (below 300) can cater to a broader customer base.

Total Revenue Per Product Category
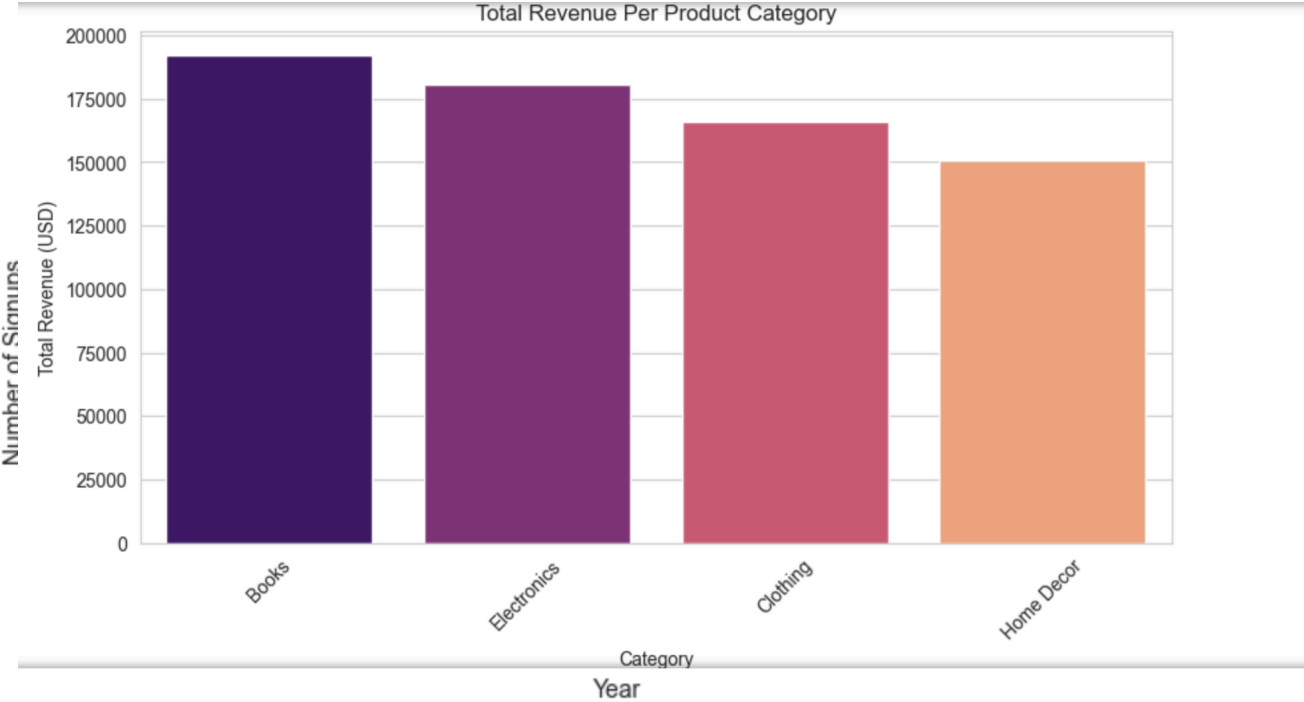
- Pricing Strategy: Consider implementing tiered pricing strategies, offering discounts on multi-item purchases, while maintaining premium pricing for high-demand products in the higher price range.

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7. Conclusion

The EDA reveals important patterns in customer behavior, product popularity, and transaction details. These insights can help inform targeted marketing, inventory management, and pricing strategies. Further in-depth analysis can refine these insights to help optimize business operations.

End of Report