

# **Task 1: Exploratory Data Analysis (EDA) and Business Insights**

## **1. Introduction**

In this task, we conducted an exploratory data analysis (EDA) on the provided eCommerce dataset. The dataset comprises three files: Customers.csv, Products.csv, and Transactions.csv. We merged these datasets to explore the data, uncover trends, and derive actionable insights that could help optimize business strategies.

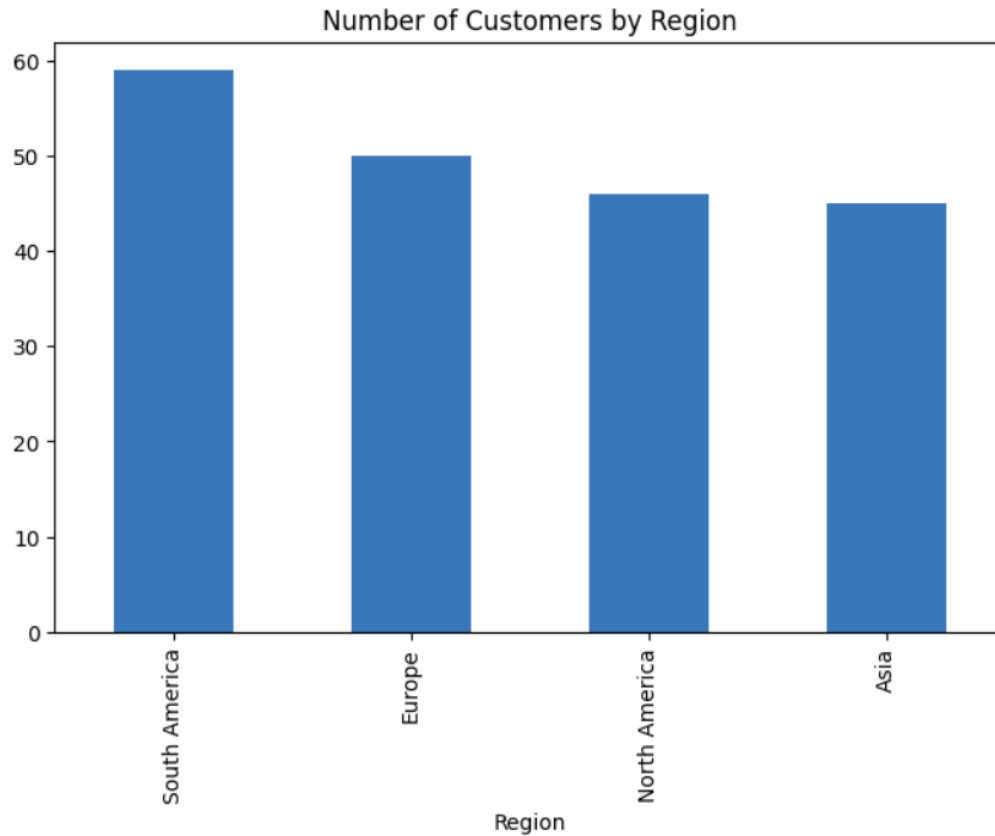
## **2. Data Preprocessing**

- Merged the datasets on common identifiers (CustomerID and ProductID).
- Cleaned data by handling missing values and duplicate entries.
- Transformed date columns into datetime format for easier analysis.
- Performed basic statistical analysis (mean, sum, etc.) to understand the distribution of data.

## **3. Business Insights**

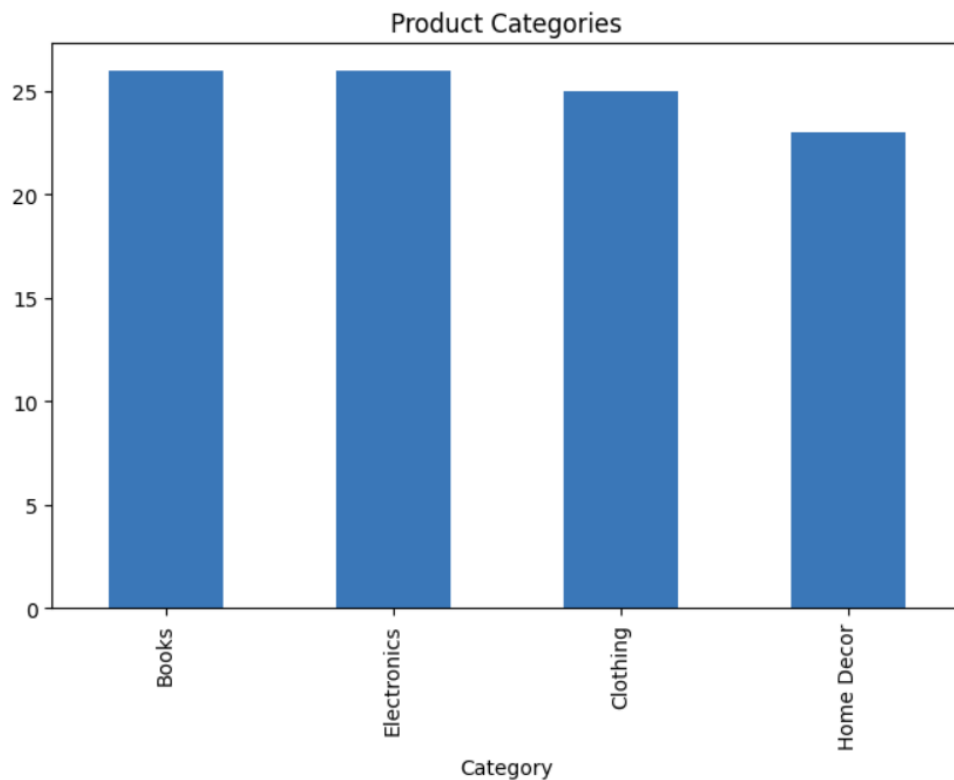
From the exploratory data analysis, the following business insights were derived:

- **Insight 1: Customer Region Distribution**  
The majority of the customers are from North America and Europe, with a smaller proportion from Asia and other regions. This suggests a potential focus on expanding marketing and promotional efforts in underrepresented regions.



- **Insight 2: Product Category Popularity**

The most popular product categories are Electronics and Fashion, with a significant number of transactions occurring in these categories. These insights can guide inventory management and targeted marketing campaigns for these categories.

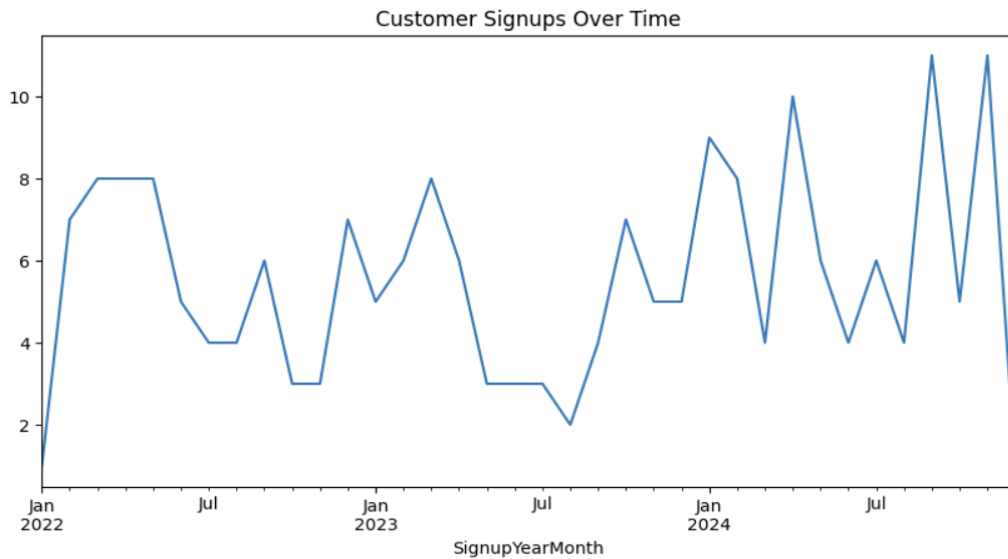


- **Insight 3: High-Value Customers**

A small subset of customers account for a large proportion of the total spend. These high-value customers (VIPs) should be identified and offered loyalty rewards or exclusive deals to encourage repeat business.

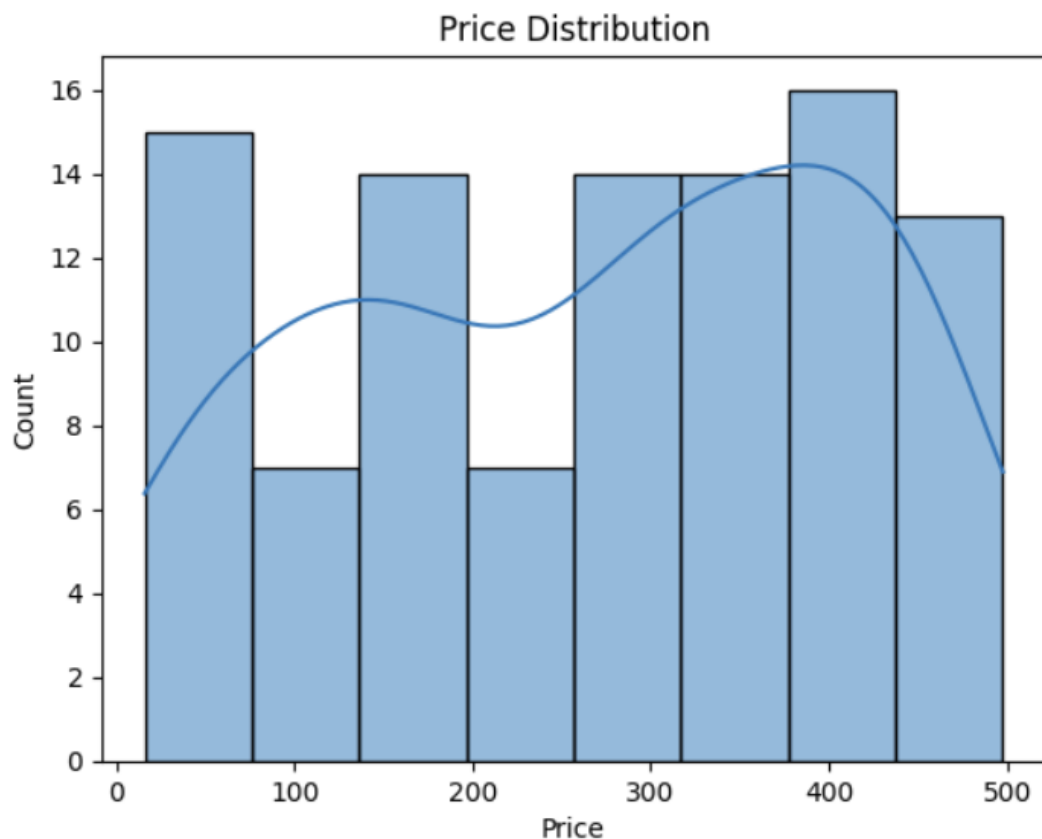
- **Insight 4: Transaction Patterns Over Time**

Transaction volume and total spending show a noticeable increase around holidays and sale periods. This trend suggests a clear opportunity for the business to further capitalize on these periods with targeted promotions.



- **Insight 5: Price Sensitivity and Purchase Frequency**

Customers who purchase lower-priced products tend to purchase more frequently, while those buying high-value items do so less often. Offering discounts on high-priced products could potentially increase purchase frequency for this segment.



## **4. Conclusion**

The insights derived from the EDA offer several actionable points to improve the business's targeting, marketing strategies, and inventory management.