Exploratory Data Analysis (EDA) Report

Overview

This report summarizes key findings from the exploratory data analysis conducted on the eCommerce dataset, which includes customers, products, and transactions. The analysis provides insights into customer demographics, product pricing, transaction patterns, and overall sales trends.

Key Insights

1. Customer Distribution

- **Regions**: The dataset contains customers from four regions, with **South America** having the highest number of customers (59 out of 200).

- **Signup Trends**: Customer signups are distributed over 179 unique dates, indicating a consistent acquisition rate.

2. Product Pricing

- **Average Price**: Products have an average price of **$267.55**, with most items priced between **$147 and $404**.

- **Categories**: Products are categorized into books, electronics, home decor, and clothing, providing diverse offerings.

3. Sales Performance

- **Sales Over Time**: Sales data shows seasonal spikes, highlighting opportunities for targeted promotions during high-demand periods.

- **Transaction Size**: The majority of transactions involve **2-3 products per purchase**, indicating typical customer behavior.

4. Data Completeness

- The dataset contains **no missing values**, ensuring a robust foundation for analysis and modeling.

5. High-Value Transactions

- **Top Buyers**: Some customers contribute significantly to total revenue, with transactions exceeding **$1000**.

Visualizations

Sales Over Time

A line chart depicting total sales by transaction date was created, revealing seasonal trends and identifying potential periods for increased marketing efforts.

Regional Distribution

A bar chart was used to visualize the number of customers per region, highlighting South America as a key market.

Recommendations

1. **Targeted Promotions**: Focus marketing efforts in South America, particularly during identified high-sales periods.

2. **Product Pricing**: Offer discounts on mid-range products to appeal to the majority of customers.

3. **High-Value Customers**: Develop loyalty programs for top buyers to increase retention and lifetime value.

4. **Category Expansion**: Consider adding complementary categories based on transaction patterns.

5. **Consistent Data Analysis**: Continue leveraging the clean dataset for further insights and predictive modeling.