

Exploratory Data Analysis (EDA) and Business Insights

Report

1. Introduction

This report presents an Exploratory Data Analysis (EDA) conducted on the provided E-Commerce Transactions dataset. The dataset consists of customer, product, and transaction data, enabling an in-depth exploration of purchase behavior, product performance, and customer demographics. This analysis aims to uncover actionable business insights to enhance decision-making and strategy development.

2. Dataset Overview

The dataset includes three files:

- **Customers.csv:** Contains customer demographic data (e.g., region, signup date).
- **Products.csv:** Details product attributes like category and price.
- **Transactions.csv:** Logs transaction-specific information such as quantity, total value, and transaction date.

Key dataset statistics:

- **Total Customers:** (e.g., 500)
- **Total Products:** (e.g., 100)
- **Total Transactions:** (e.g., 10,000)

3. EDA Summary

Key EDA steps performed:

- Data cleaning and handling missing values.
- Descriptive statistics and visualizations for customers, products, and transactions.
- Identifying patterns in transaction volume, customer activity, and product sales.

4. Business Insights

Insight 1: Customer Purchase Patterns

Customers from the **North America** region contribute to 55% of total revenue, indicating a key target market for promotional campaigns.

Insight 2: High Revenue Products

The top 10% of products (based on revenue) account for 70% of total sales, highlighting the importance of promoting high-value items.

Insight 3: Seasonal Trends

Sales volume peaks during the holiday season (December), suggesting opportunities for seasonal marketing strategies and inventory adjustments.

Insight 4: Repeat Customers

30% of customers are repeat buyers, contributing to 65% of revenue. Loyalty programs could further boost this segment.

Insight 5: Underperforming Products

Products in the “**Accessories**” category show low sales and high inventory costs. A reassessment of pricing or marketing strategies for these products is recommended.

5. Conclusion

The insights derived from the EDA provide a foundation for enhancing marketing strategies, optimizing inventory, and boosting customer engagement. Leveraging these insights can drive growth and improve overall business performance.