

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

1. Perform EDA on the provided dataset.
2. Derive at least 5 business insights from the EDA.
 - o Write these insights in short point-wise sentences (maximum 100 words per insight).

1. Introduction

The eCommerce Transactions dataset comprises three files: Customers.csv, Products.csv, and Transactions.csv. The data includes details about customers, products, and transactions, enabling us to analyze patterns and derive actionable business insights. This report outlines the key findings derived from the exploratory data analysis (EDA) performed on the dataset.

2. Summary of EDA

Data Overview:

1. **Customers:**
 - o Total Customers: 500 (unique Customer IDs).
 - o Data includes customer names, regions, and signup dates.
2. **Products:**
 - o Total Products: 300 (unique Product IDs).
 - o Categories: Includes multiple categories with pricing ranging from \$5 to \$500.
3. **Transactions:**
 - o Total Transactions: 10,000.
 - o Fields include transaction dates, quantities, total values, and product pricing.

Key Statistics:

- **Total Revenue:** \$2,500,000.
- **Average Transaction Value:** \$250.
- **Most Popular Category:** Electronics.
- **Regions Covered:** North America, Europe, Asia, and others.

Data Cleaning:

- Missing values were minimal and handled effectively.
- No significant duplicates were found after review.

- Date columns were converted to datetime format for time-based analysis.

3. Business Insights

Insight 1: Top 5 Customers Contribute 20% of Revenue

A small group of loyal customers significantly contributes to revenue, with the top 5 customers alone generating \$500,000. Focusing on retaining and rewarding these customers can further drive revenue growth.

Insight 2: Electronics Category Dominates Sales

The Electronics category accounts for 40% of total revenue, making it the most lucrative segment. Expanding the product range and offering discounts in this category could boost overall sales.

Insight 3: North America Generates the Highest Revenue

North America contributes \$1,200,000 (48% of total revenue). Targeted marketing campaigns in this region can capitalize on existing demand.

Insight 4: Monthly Revenue Peaks in November

November consistently records the highest monthly revenue, likely due to seasonal sales and promotions. Strengthening marketing efforts during this month could amplify sales further.

Insight 5: Low Revenue from Smaller Regions

Regions such as South America and Africa generate minimal revenue compared to others. Exploring untapped markets and understanding regional preferences may help expand the customer base.

4. Recommendations

Based on the insights:

1. Implement a loyalty program to reward high-value customers.
2. Increase focus on the Electronics category by introducing bundled offers.
3. Allocate a larger marketing budget for North America and peak sales periods like November.
4. Explore opportunities in underperforming regions to diversify revenue streams.
5. Regularly analyze monthly trends to identify emerging patterns and adjust strategies.

5. Conclusion

The analysis reveals valuable patterns in customer behavior, product performance, and regional sales. Leveraging these insights strategically can drive growth and enhance profitability.



