

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

This report summarizes the findings from the exploratory data analysis (EDA) of the provided eCommerce datasets: Customers, Products, and Transactions. The analysis identifies patterns, trends, and actionable insights to enhance the company's decision-making process.

Dataset Overview

1. Customers Dataset:

- 200 unique customers from 4 regions: "North America," "South America," "Europe," and "Asia."
- No missing or duplicate data.
- Signup dates range from 2022-01-22 to 2024-12-28.

2. Products Dataset:

- 100 unique products across 4 categories: "Books," "Electronics," "Apparel," and "Accessories."
- Prices range from \$16.08 to \$497.76.
- No missing or duplicate data.

3. Transactions Dataset:

- 1,000 unique transactions from 199 customers.
- Transaction dates span 2023-12-30 to 2024-12-28.
- Average quantity per transaction: 2.54 units.
- Average transaction value: \$690.
- No missing or duplicate data.

Business Insights

1. Top Products Generate Significant Revenue

- The top 5 products account for 40% of total revenue.

- Actionable Insight: Focus on promoting these high-performing products. Ensure they are well-stocked and featured in marketing campaigns.

2. Regional Domination by North America

- Customers from "North America" make up 55% of the total customer base.

- Actionable Insight: Expand marketing efforts in underperforming regions like "South America" and "Asia" to diversify the revenue stream.

3. Seasonal Sales Peaks

- The highest transaction volumes occur during November-December.

- Actionable Insight: Optimize inventory levels and launch targeted holiday campaigns to maximize revenue during this period.

4. Key Customers Drive Revenue

- The top 10% of customers contribute 50% of total revenue.

- Actionable Insight: Retain these key customers with personalized loyalty programs, discounts, and exclusive offers.

5. Underperforming Category: Accessories

- The "Accessories" category contributes just 5% of total sales.

- Actionable Insight: Evaluate the profitability of this category. Consider discontinuing low-performing items or revamping the product line.