

Exploratory Data Analysis Report

Summary of the Assignment

This report provides an in-depth exploratory data analysis (EDA) of an eCommerce transactions dataset. The dataset includes information about customers, products, and transactions. The analysis highlights key customer behaviors, product trends, and transactional patterns to derive actionable business insights. The findings aim to help the company improve its customer engagement strategies, optimize product offerings, and enhance overall revenue growth.

Customer Distribution Insights

Key Insights

1. South America stands out as the leading market, contributing significantly to both engagement and revenue.
2. There are promising growth opportunities in Asia, North America, and Europe that can help achieve a more balanced global presence.

Actionable Steps

1. Focus on enhancing customer retention and engagement strategies in South America.
 2. Develop tailored strategies for customer acquisition in Asia, North America, and Europe.
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Top-Selling Products Analysis

Key Insights

1. TechPro Headphones lead in revenue generation, reflecting strong demand and profitability.
2. ActiveWear Rug and TechPro Cookbook also play a significant role in overall sales figures.

Actionable Steps

1. Concentrate inventory and marketing resources on TechPro Headphones to optimize revenue.
2. Investigate cross-selling opportunities that include ActiveWear Rug and TechPro Cookbook.

3. Analyze the key factors behind the success of these products to apply similar strategies in other categories.
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Customer Signup Trends and Action Plan

Key Insights

- Signups reached their highest point in late 2023, followed by notable fluctuations throughout 2024.
- December consistently shows sharp declines, likely influenced by seasonal trends.
- Mid-year signups (2022-2023) were lower and exhibited instability.

Actionable Steps

1. Investigate and replicate the factors that contributed to the growth in late 2023.
 2. Initiate targeted campaigns during mid-year downturns to stabilize signups.
 3. Introduce promotions or retention strategies to counteract the declines seen in December.
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Customer Spending Analysis and Action Plan

Key Insights

- There is a positive relationship between purchase frequency and total spending, suggesting that loyal customers tend to spend more.
- Some customers with fewer purchases still exhibit high spending, indicating the presence of high-value, low-frequency buyers.

Actionable Steps

1. Create loyalty programs to encourage frequent buyers and keep them engaged.
 2. Identify and reach out to high-value, low-frequency customers with personalized offers to boost their purchase frequency.
 3. Segment customers based on their spending behavior to develop tailored marketing strategies.
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Customer Lifetime Distribution Analysis and Action Plan

Key Insights

- The transaction distribution peaks around 0-200 days after signup, showing high engagement early in the customer lifecycle.
- A secondary peak around 600 days indicates re-engagement or a group of long-term loyal customers.
- Transaction frequency drops significantly after 800+ days.

Actionable Steps

1. Prioritize onboarding strategies to maintain high engagement during the first 200 days.
2. Create re-engagement campaigns aimed at customers around the 600-day mark to keep them active.
3. Develop retention initiatives for customers beyond 800 days to reduce churn.