E-Commerce Sales Analysis Report

Introduction

This report presents an exploratory data analysis (EDA) of e-commerce sales data to derive insights into key business trends. The objective is to examine sales and profit patterns across different dimensions, such as time, product categories, subcategories, and customer segments. The findings aim to assist businesses in optimizing sales strategies and improving profitability.

Data Overview

The dataset used in this analysis contains transaction details, including order date, sales amount ($), profit ($), product category, subcategory, and customer segment. The data is cleaned and preprocessed to ensure accuracy in the analysis.

Key Analyses and Findings

1. Monthly Sales Analysis

- Sales trends are examined on a month-to-month basis to identify seasonal patterns and fluctuations.

- Certain months exhibit higher sales ($↑), possibly due to promotions, holidays, or seasonal demand.

2. Sales by Category and Subcategory

- Sales distribution across different product categories is analyzed to determine which categories generate the highest revenue ($ → highest category).

- Subcategories within each category are further examined to identify top-performing products ($↑ → most profitable subcategory).

3. Profit Analysis

- Monthly profit trends are analyzed to assess the overall financial health of the business ($

- Profitability is examined at both category and subcategory levels to identify areas with higher profit margins ($/sales → profit margin %).

4. Sales and Profit by Customer Segment

- Customer segmentation analysis is performed to understand purchasing behaviors across different customer groups.

- Certain segments contribute more significantly to total sales ($Σ sales) and profit ($Σ profit), highlighting potential target audiences for marketing efforts.

5. Sales-to-Profit Ratio

- The relationship between sales and profit is analyzed to assess the efficiency of revenue generation (profit/sales = efficiency ratio).

- Categories and subcategories with high sales but low profit margins ($↑, profit ↓) are identified, providing insights for pricing and discounting strategies.

Conclusion

The analysis provides valuable insights into sales performance and profitability trends. Businesses can leverage these findings to make informed decisions, such as focusing on high-performing categories, adjusting pricing

strategies, and targeting specific customer segments for marketing campaigns. Further analysis, such as customer lifetime value and regional sales trends, can enhance the decision-making process.

Recommendations

- Focus marketing efforts on high-profit customer segments ($\$\uparrow \rightarrow$ target group).

- Optimize inventory management based on sales trends (Σ inventory/sales $\rightarrow$ efficiency).

- Adjust pricing strategies for low-profit but high-sales categories ($\$\uparrow$, profit $\downarrow \rightarrow$ pricing adjustment).

- Conduct further analysis on regional sales variations to customize marketing campaigns ($\$$/region $\rightarrow$ trend analysis).

This exploratory analysis offers a data-driven approach to understanding e-commerce performance and improving business strategies.