

EDA Report: Super Store Sales Analysis

Executive Summary

This report explores Super Store sales data to uncover patterns, trends, and opportunities for growth. Key findings include seasonal sales peaks, product profitability insights, and the impact of discounts on profit margins. Recommendations focus on enhancing marketing strategies, optimizing product portfolios, and revising discount policies to maximize revenue and profitability.

Data Overview

Dataset Description:

- Rows: 9,994 (after removing duplicates)
- Columns: 20
- Date Range: January 3, 2014, to December 30, 2017
- Regions Covered: United States only (Country column removed)

Key Features:

- Categorical Variables: Region, Category, Sub-Category, Segment, Ship Mode
- Numerical Variables: Sales, Quantity, Discount, Profit

Preprocessing Steps:

1. Removed 1 duplicate row.
2. Addressed missing values.
3. Standardized date formats and filtered for meaningful columns.
4. Created new metrics, such as profit margin and discount bins, for deeper analysis.

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Insights and Visualizations

1. Seasonal Sales Trends:

- Sales peak during Q4, especially in December, while Q1 shows the lowest sales.

2. Regional and Category Performance:

- The West region is the most profitable, with Technology as the top-performing category. Furniture generates minimal profit despite similar sales volume to Technology.

3. Impact of Discounts on Profitability:

- Discounts beyond 20% lead to significant profit erosion. California and New York maintain profitability despite higher discounts, unlike Texas and Pennsylvania, which incur losses.

Recommendations

1. Seasonal Marketing:

- Intensify promotions during Q4 to capitalize on peak sales periods.
- Introduce Q1 campaigns with bundled offers to boost post-holiday sales.

2. Product Portfolio Optimization:

- Focus on high-profit items like Copiers, Phones, and Accessories.
- Reevaluate underperforming categories (e.g., Furniture) or renegotiate supplier costs.

3. Discount Strategy:

- Limit discounts to a maximum of 10-20% to sustain profitability.

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- Gradually phase out excessive discounts in loss-incurring regions like Texas and Pennsylvania.

Next Steps

1. Conduct an in-depth analysis of customer demographics to refine targeted marketing campaigns.
2. Develop a pricing strategy that balances competitive pricing with profit goals.
3. Explore predictive analytics to forecast sales trends and optimize inventory management.
4. Monitor and reassess the effectiveness of implemented recommendations quarterly.