Superstore Sales Analysis Report

David Ocholi

1. Executive Summary

This report presents a comprehensive analysis of Superstore's sales performance across the United States. The goal is to uncover actionable business insights and provide strategic recommendations that improve profitability, optimize operations, and enhance customer satisfaction.

Through data cleaning, exploratory data analysis (EDA), and interactive visualization in Excel, this report evaluates the impact of discount strategies, shipping methods, regional performance, and customer segmentation on the company's overall performance.

2. Project Background & Objectives

Background

The Superstore dataset contains transactional sales data, including order information, customer demographics, product categories, financial metrics, and geographical data. The data spans sales across different U.S. regions and shipping modes.

Objectives

- Analyze sales and profit performance
- Evaluate discount impact on profitability
- Assess shipping efficiency and cost-effectiveness
- Identify regional performance variations
- Segment customers by profitability and behavior
- Provide data-driven business recommendations

3. Methodology

Data Preparation

- Cleaned missing and inconsistent values
- Standardized date fields and derived new metrics such as Profit Margin, Month-Year, and Delivery Time
- Created calculated fields for comparative analysis

Exploratory Data Analysis (EDA)

- Generated pivot tables and charts to observe trends

- Conducted correlation analysis to explore relationships

- Segmented data by category, region, and customer profile

Visualization

- Designed a dashboard with bar charts, line graphs, scatter plots, heatmaps, pie charts, and map charts to communicate findings clearly and visually

4. Key Findings

A. Sales and Profit Trends

Sales and profits fluctuate monthly, with a noticeable increase during Q4 (particularly November and December), likely due to seasonal promotions. However, profit margins vary across months due to discounting and shipping strategies.

B. Discount Impact Analysis

- **Correlation between Discount and Profit**: -0.062
  Indicates a very weak, negative linear relationship.

- **R^2 = 0.0023**
  Only 0.23% of the variance in profit is explained by discount, confirming a negligible impact.

- **Average Profit by Discount Level**:

  - 0%: $177.54

  - 10%: $116.85

  - 15%: $27.64

  - 20–25%: Negative average profit

Conclusion:
Discounts exceeding 15% lead to unprofitable transactions. The optimal discount rate that balances volume and profitability is 10%.

C. Shipping & Logistics Analysis

- **Shipping Mode Profitability**:

  - Regular Air: 66.8% of total profit, 51.5% of sales

- o Delivery Truck: 26.2% of profit, 41% of sales

- o Express Air: 6.9% of profit, 7.5% of sales

- **Average Delivery Time**:

  - o Express Air: 1.80 days (fastest)

  - o Delivery Truck: 1.89 days

  - o Regular Air: 1.97 days

- **Shipping Cost and Profit Correlation**: 0.0022

  - o $R^2 = 0.0312 \rightarrow$ Only 3.12% of profit variation is explained by shipping cost

Conclusion:
Faster shipping modes do not significantly improve profitability. Regular Air and Delivery Truck offer the best balance of cost and efficiency. Express Air should be reserved for urgent or high-margin orders.

D. Geographical Performance

- **Top Performing States by Profit**:

  - o California ($288,310.61)

  - o New York ($223,930.48)

  - o Illinois, Texas also show strong performance

- **Low Sales States**:

  - o Delaware, South Dakota, Wyoming, North Dakota, New Mexico

- **Outlier**:

  - o Florida shows extremely high profit with minimal sales — likely a data error

- **Regional Profitability vs. Shipping Cost**:

  - o East: Highest average shipping cost, highest profitability

  - o South: Negative profitability despite moderate shipping costs

Conclusion:
Strategic focus should remain on states like California and New York. The South region requires further investigation. The Florida anomaly should be reviewed and corrected in the dataset.

E. Customer Segmentation

- **Revenue & Profit by Segment**:
    - Corporate: Highest revenue, moderate profit
    - Home Office: Balanced contribution to revenue and profit
    - Small Business: Highest overall profit, despite lowest sales
    - Consumer: Lowest profit, middle-range revenue
- **Average Order Value by Segment**:
    - Small Business: $1,031.69
    - Corporate: $961.67 (lowest despite being the largest revenue contributor)
- **Average   Discount   by   Segment**:
  All segments receive ~5% average discount

Conclusion:
Small Business customers are the most profitable and less price-sensitive. Corporate clients contribute volume but at lower margins. Targeted pricing and upselling strategies should be applied by segment.

F. High-Value Customer Analysis

- **Top 5 Customers by Sales**:
    - Together contribute ~10% of total revenue
    - Contribute only ~9% of total profit
- **Key Observations**:
    - Kristine Connolly: Highest spender but low profit margin (6.8%)
    - Nina Horne Kelly: Best profit return (~18%)

Conclusion:
Revenue alone does not determine customer value. Focus retention on high-margin customers rather than only high-spenders. Adjust discounting and pricing for large accounts with low profit margins.

5. Business Recommendations

1. Optimize Discount Strategy

- Cap discounts at 10% where possible

- Avoid excessive discounting above 15% unless strategically justified

- Review discount policies for corporate accounts

2. Shipping Efficiency

- Prioritize Regular Air and Delivery Truck for cost-effective fulfillment

- Use Express Air only when the added speed justifies the margin impact

- Standardize shipping for non-urgent, low-margin orders

3. Regional Strategy

- Invest further in high-performing states (California, New York, Texas)

- Explore growth in underperforming regions (e.g., Midwest, Mountain states)

- Investigate profitability challenges in the South

4. Customer Targeting and Segmentation

- Prioritize high-profit segments (Small Business and Home Office)

- Re-evaluate corporate pricing or service tiers to improve margins

- Implement tailored marketing and loyalty strategies by segment

5. Data Quality Improvements

- Investigate anomalies (e.g., Florida's profit vs. sales discrepancy)

- Strengthen data entry validation and monitoring processes

6. Conclusion

The Superstore Sales Analysis reveals valuable insights into what drives profitability in a retail business. While discounting and shipping costs are influential, customer segmentation, product strategy, and regional focus play a greater role in determining financial outcomes.

By aligning strategic decisions with the insights derived from this data—such as optimizing discounts, refining shipping policies, and targeting high-value customer groups—the company can enhance profitability and operational efficiency without compromising customer satisfaction.

7. Dashboard

Exploratory Data Analysis on Payless ShoeSource Superstore Sales (USA)

	Total Sales	Total Profit	Most Profitable State	Most Profitable Product
Dave the Analyst	$1,924,337.88	$224,077.61	California	Office Supplies

Least Profitable Product
Furniture

Least Profitable State
North Carolina

Dashboard Summary

This dashboard presents an in-depth analysis of the Superstore Sales dataset with the goal of uncovering actionable insights into sales performance, profitability, customer behavior, product trends, and shipping efficiency across various regions of the United States. The project follows a structured data analysis workflow, including data cleaning, exploratory data analysis (EDA), and visual storytelling using Microsoft Excel. Each chart and table has been designed to support strategic business decision-making.