

Retail Business Performance & Profitability Analysis - Final Comprehensive Report

This comprehensive report analyzes store sales performance, category profitability, and operational efficiency using SQL, Python, and Tableau. The objective was to uncover profit-draining categories, evaluate employee efficiency, and analyze how marketing and regional factors affect revenue.

SQL-Based Data Cleaning and Aggregation

Initial SQL queries were used to validate data quality, clean nulls, and aggregate results by store category, region, and efficiency.

Data Cleaning Verification (NULL Check)

| | null_product_id | null_marketing_spend | null_footfall | null_store_size | null_efficiency | null_revenue |
|---|-----------------|----------------------|---------------|-----------------|-----------------|--------------|
| ▶ | 0 | 0 | 0 | 0 | 0 | 0 |

No null values were detected in any major column, confirming data integrity for subsequent analysis.

Total Revenue by Store Category

| Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Result Grid |
|---------------|---------------|---------|--------------------|-------------|
| StoreCategory | total_revenue | | | Form Editor |
| Grocery | 176878.11 | | | Field Types |
| Clothing | 158855.73 | | | Query Stats |
| Electronics | 158034.08 | | | |

Result 8 x Read Only

Grocery stores generated the highest total revenue, followed by Clothing and Electronics. This indicates higher turnover in daily essentials.

Average Revenue by Region

| Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Result Grid |
|---------------|--------------|---------|--------------------|-------------|
| region | avg_revenue | | | Form Editor |
| Los Angeles | 301.19 | | | Field Types |
| San Francisco | 299.41 | | | Query Stats |
| Palo Alto | 298.37 | | | |
| Sacramento | 298.01 | | | |

Result 9 x Read Only

Los Angeles achieved the highest average revenue (301.19), closely followed by San Francisco and Palo Alto, showing regional performance consistency.

Average Employee Efficiency & Revenue

| Result Grid | | Filter Rows: | Export: | Wrap Cell Content: |
|----------------|-------------|--------------|---------|--------------------|
| avg_efficiency | avg_revenue | | | |
| 72.20 | 299.25 | | | |

Result 10 x

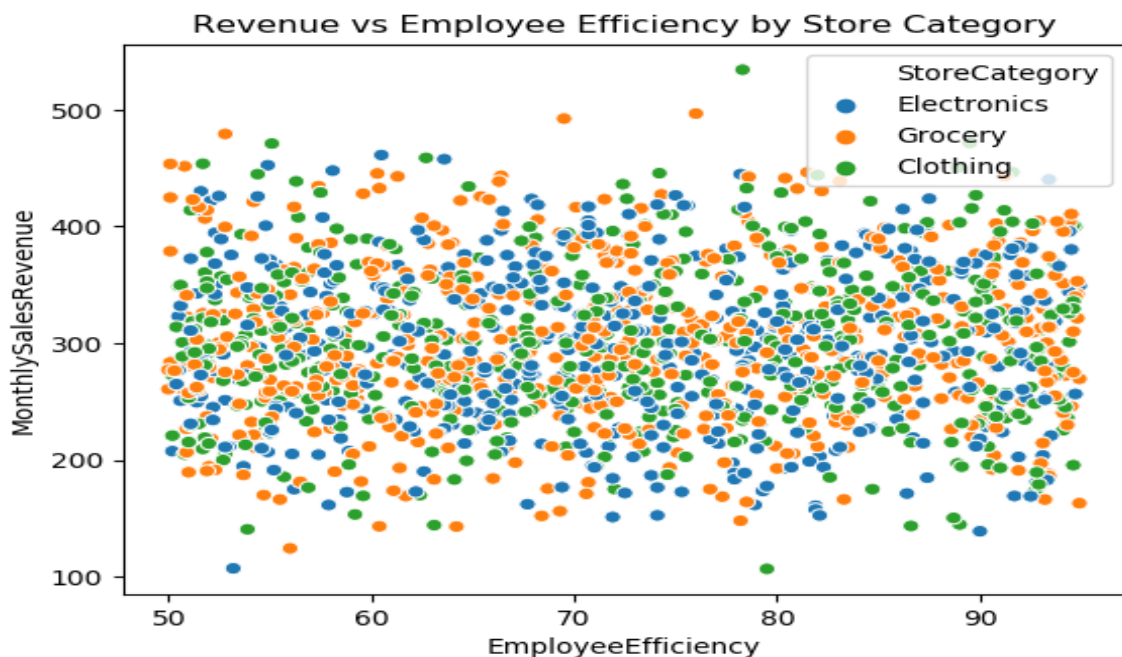
Read Only

The average employee efficiency stands at 72.20%, correlating with an average revenue of 299.25 — indicating a balanced workforce efficiency level.

Python Analysis and Visualization

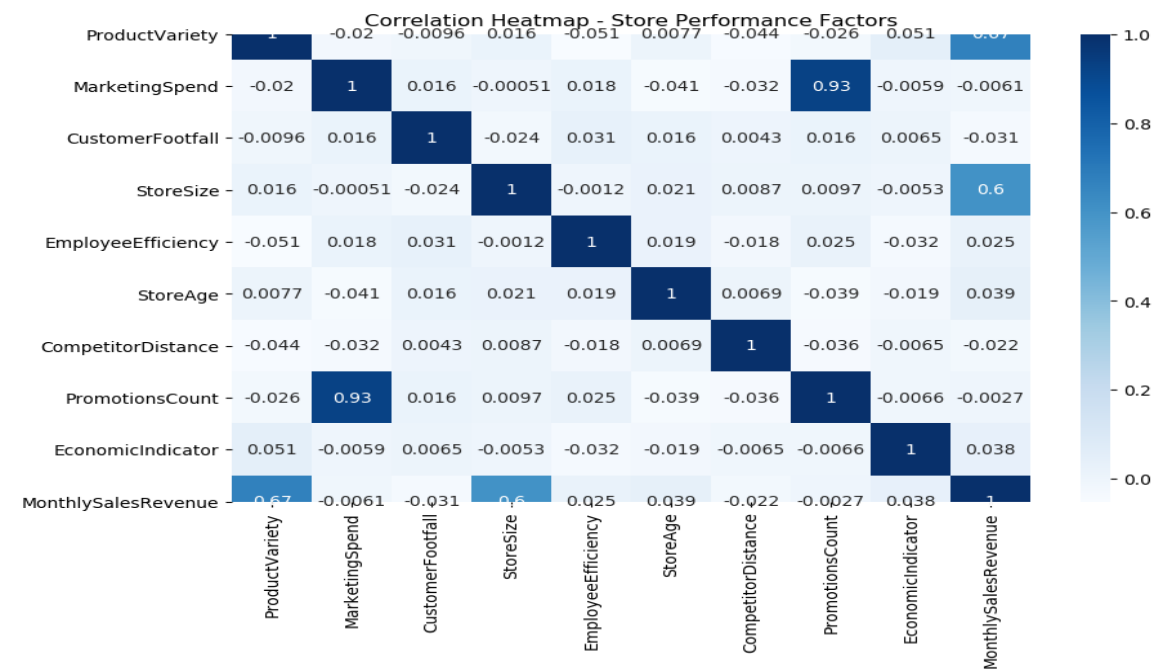
Python was used to perform correlation analysis, build scatter plots, and visualize the relationships between sales revenue, marketing spend, and employee efficiency.

Revenue vs Employee Efficiency by Store Category



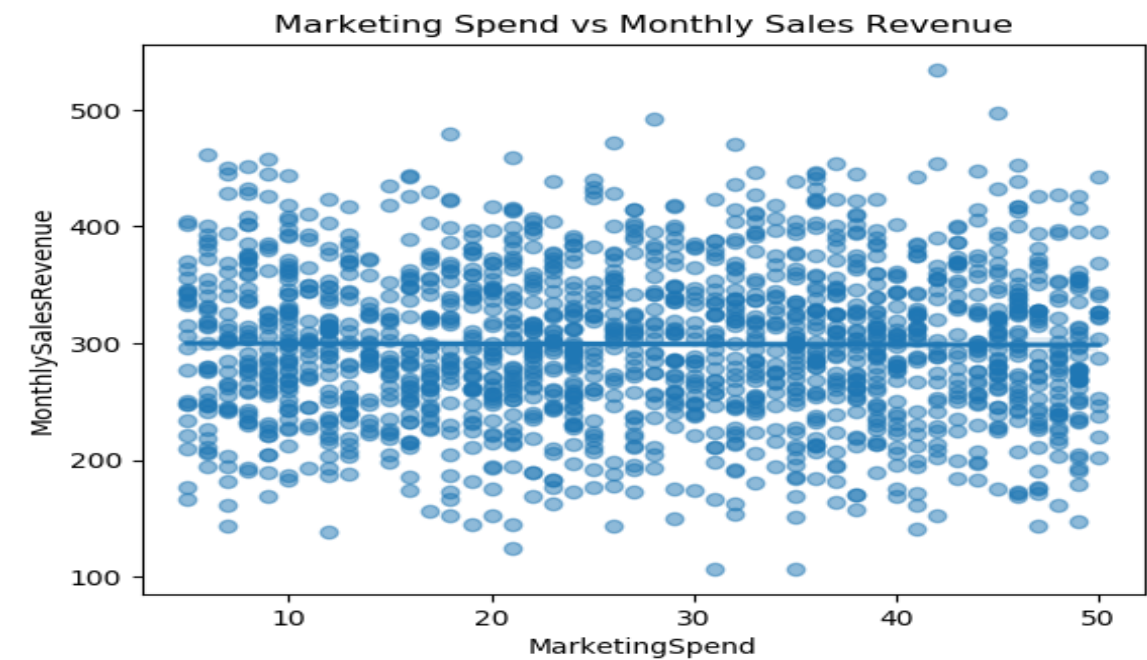
This scatter plot shows the relationship between employee efficiency and monthly revenue. Higher efficiency loosely aligns with higher revenue potential.

Correlation Heatmap - Store Performance Factors



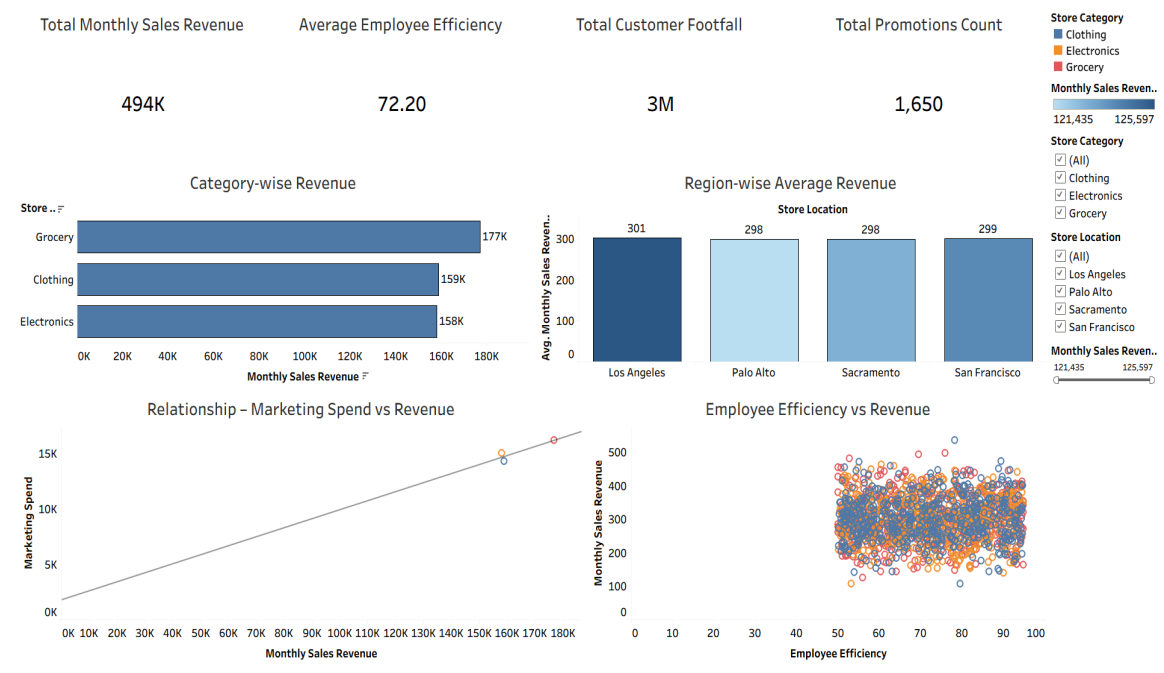
The heatmap reveals positive correlations between Product Variety, Store Size, and Monthly Sales Revenue, confirming their impact on business performance.

Marketing Spend vs Monthly Sales Revenue



Regression analysis shows that marketing spend has a weak but positive correlation with revenue, suggesting that targeted marketing could improve profitability.

Final Tableau Dashboard Overview



This dashboard integrates total revenue, efficiency, footfall, and promotional data. It helps in understanding business trends interactively across regions and categories.

Conclusion:

The combined SQL, Python, and Tableau analysis highlights key operational and profitability insights: Grocery leads in total revenue due to high turnover and consistent customer footfall. Los Angeles is the top-performing region, suggesting strong consumer engagement and marketing impact. Employee efficiency is stable but shows room for optimization to boost revenue per headcount. Marketing spend effectiveness can be improved with better targeting and promotional strategy alignment. This integrated analysis equips decision-makers with actionable insights for optimizing sales, workforce efficiency, and inventory management.