

Supermarket Sales Analysis Report

Introduction

This report presents an analysis of supermarket sales data to uncover insights into sales patterns, customer behavior, and product performance. The goal is to provide actionable insights for business decision-making, such as identifying top-performing cities, product categories, and sales trends over time. The analysis was conducted using Python with libraries like Pandas, Seaborn, and Matplotlib.

Methodology

The analysis followed a structured approach:

1. **Data Cleaning:** Removed unnecessary columns (e.g., Invoice ID), converted the Date column to datetime format, and checked for missing values or outliers.
2. **Exploratory Data Analysis (EDA):** Calculated total and average sales by city, gender, customer type, and product line; analyzed monthly and daily sales trends.
3. **Data Visualization:** Created visual representations, including bar, line, scatter, and pie charts, to highlight key findings.

Key Findings

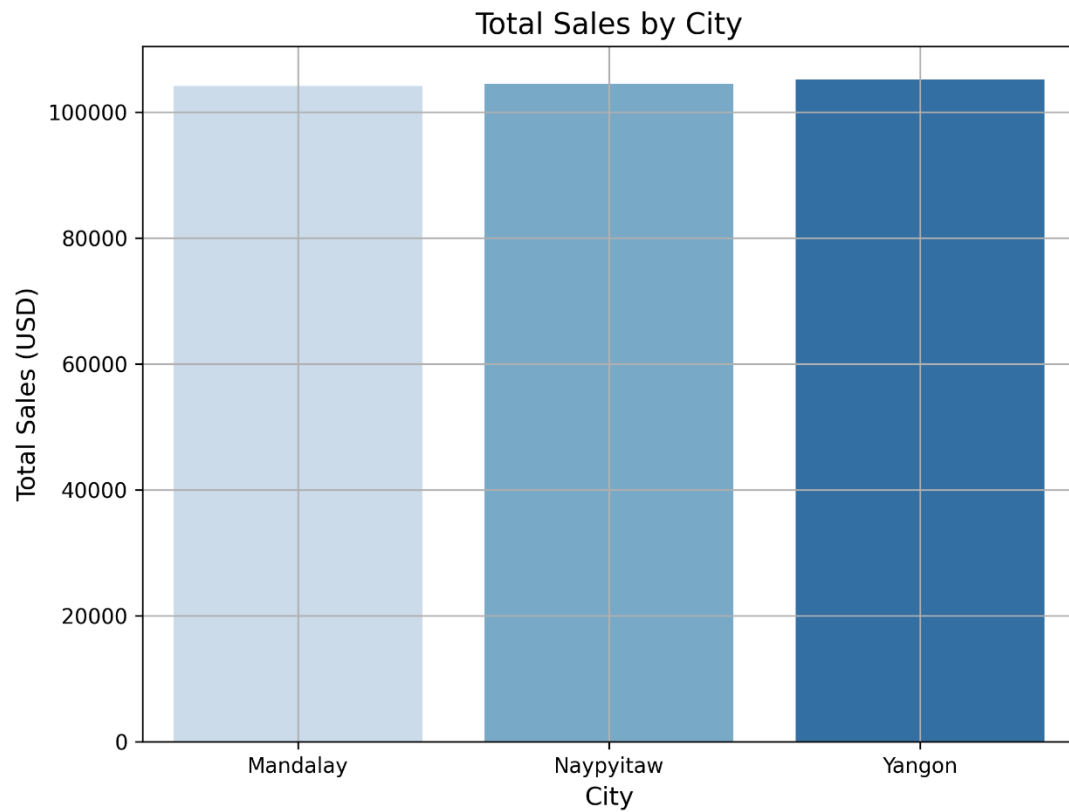
The analysis revealed several insights:

- **Sales by City:** Yangon recorded the highest total sales, followed by Naypyitaw and Mandalay (see Figure 1).
- **Sales by Gender:** Total sales are higher for female customers (see Figure 2).
- **Monthly Sales Trend:** Sales peaked in March, indicating a potential seasonal trend (see Figure 3).
- **Quantity vs. Total Sales:** Higher quantities purchased correlate with higher total sales, with Member customers often contributing to larger transactions (see Figure 4).
- **Product Line Performance:** The "Food and beverages" category accounts for the largest share of sales, followed by "Electronic accessories" and "Sports and travel" (see Figure 5).

Visualizations

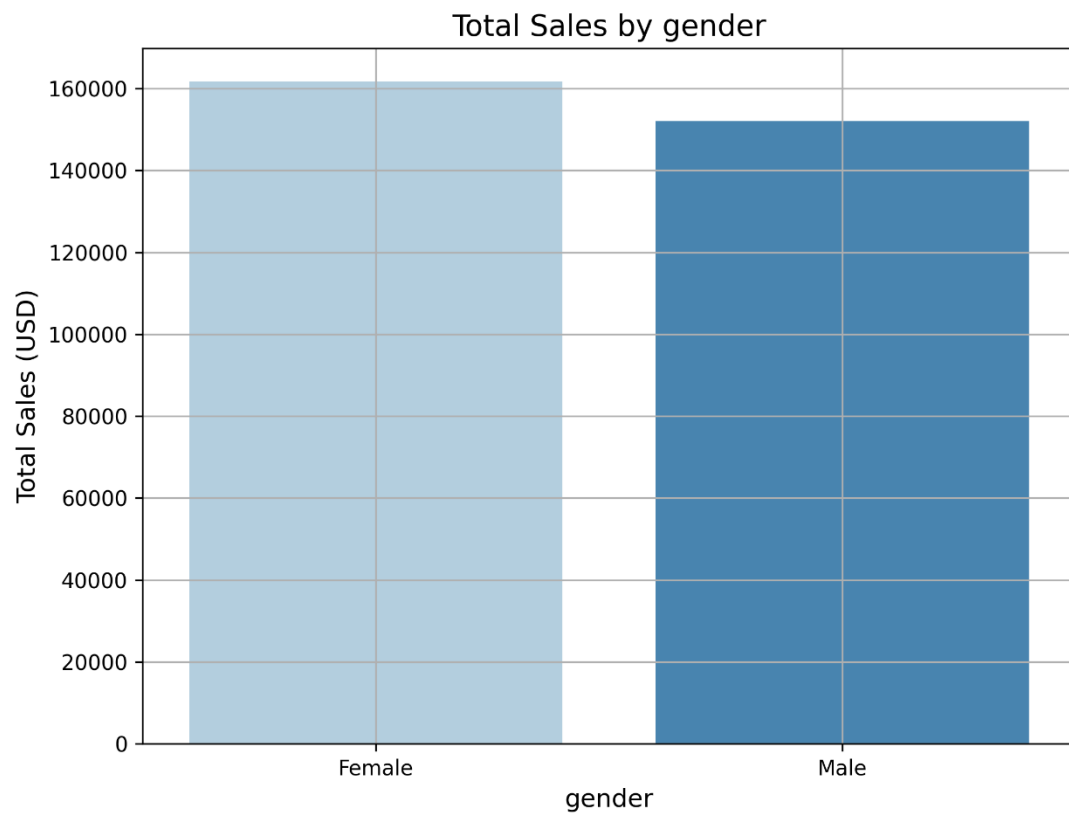
Below are the key visualizations generated from the analysis:

Figure 1: Total Sales by City



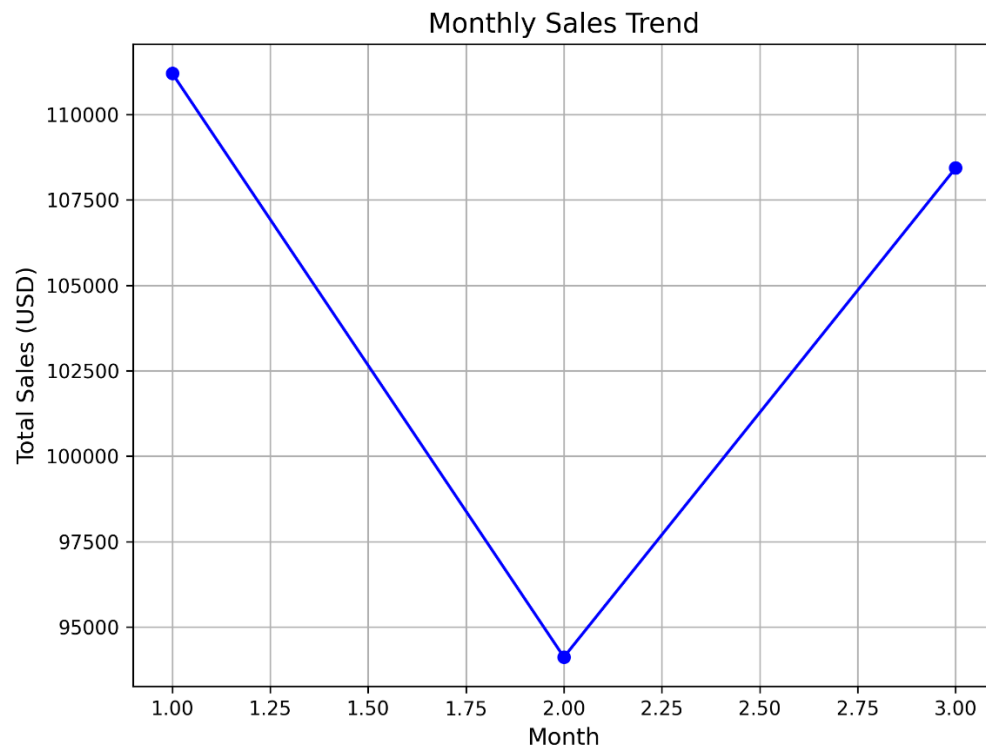
This bar chart shows that Yangon leads in total sales, contributing approximately 35% of the total revenue.

Figure 2: Total Sales by Gender



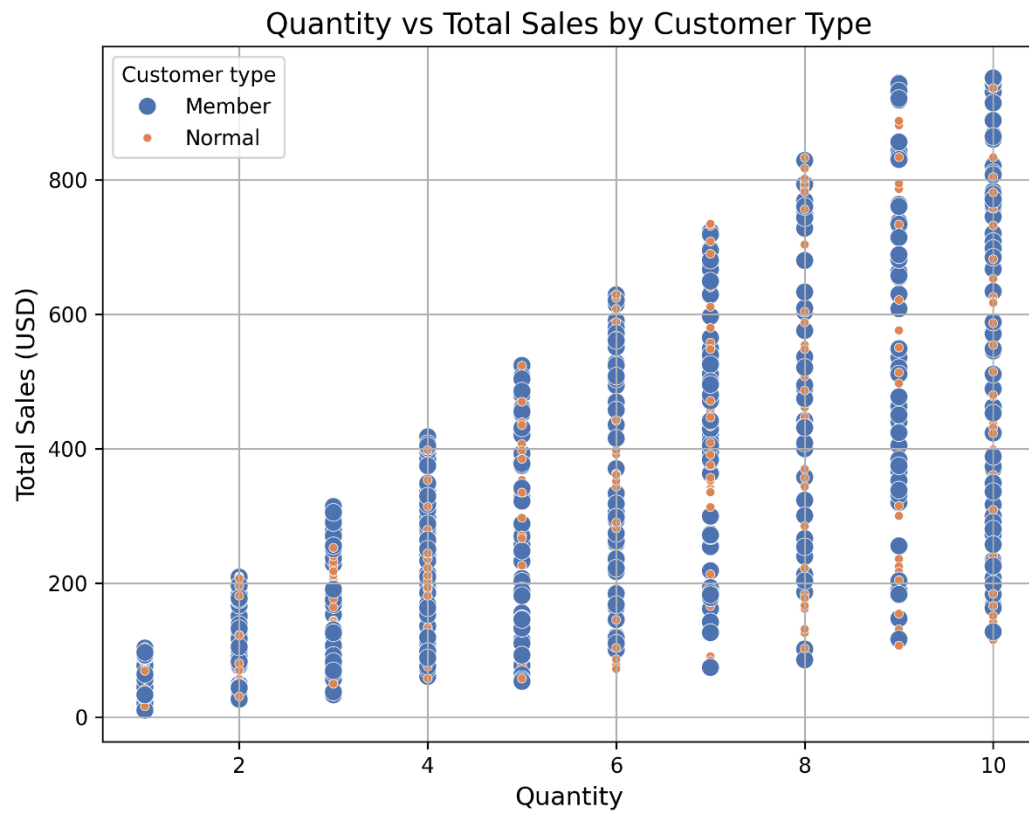
This chart shows that total sales are higher for female customers.

Figure 3: Monthly Sales Trend



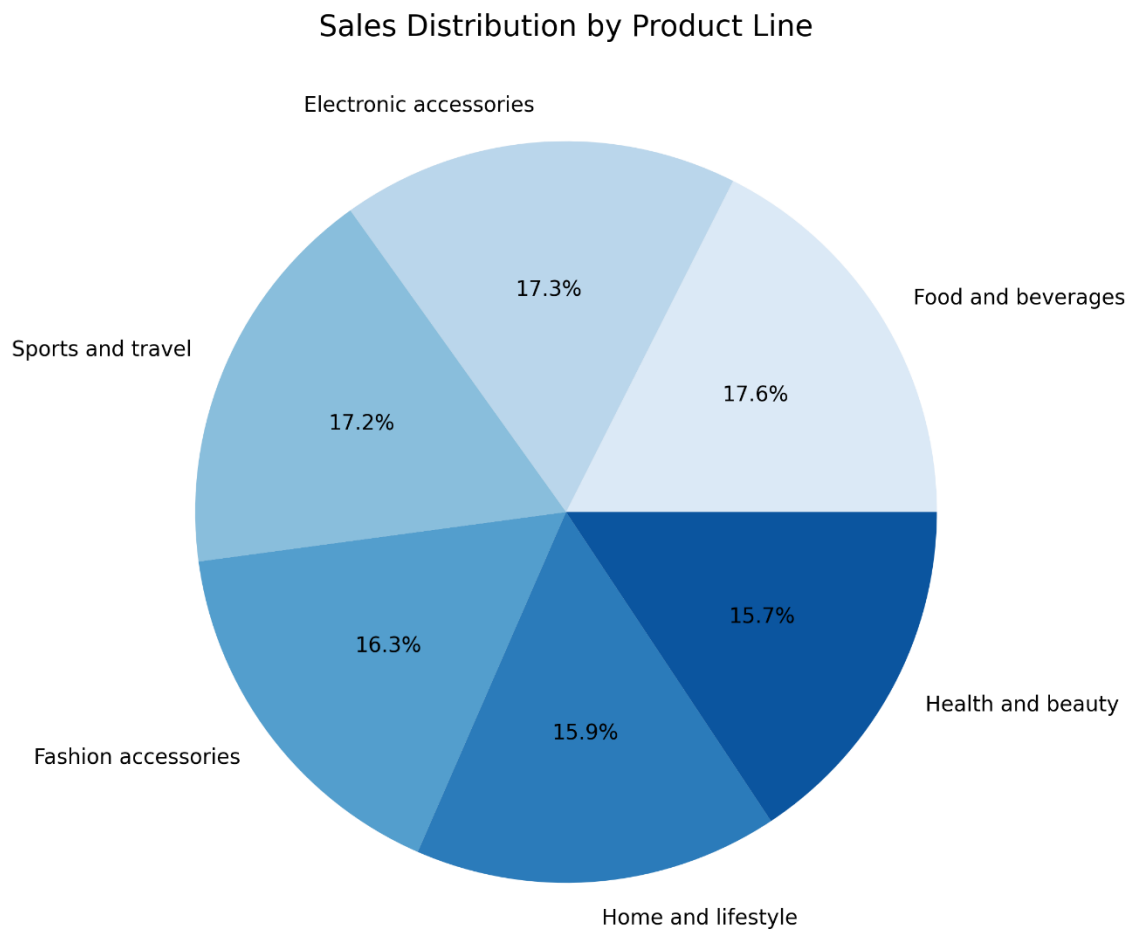
The line chart illustrates sales fluctuations, with a noticeable peak in March.

Figure 4: Quantity vs. Total Sales by Customer Type



This scatter plot highlights the relationship between quantity purchased and total sales, with Member customers showing higher-value transactions.

Figure 5: Sales Distribution by Product Line



The pie chart shows that "Food and beverages" contributes the largest share (17.6%) to total sales.

Conclusion

This analysis provides valuable insights for optimizing business strategies. Key recommendations include:

- Focusing marketing efforts in Yangon to capitalize on its high sales performance.
- Promoting high-performing product categories like "Food and beverages" to boost revenue.
- Targeting Member customers with loyalty programs to encourage larger purchases.
- Planning and preparing for key times throughout the year.

The code, dataset, and visualizations are available in the GitHub repository: [\[https://github.com/Saeed-oG/DATA-ANALYSIS\]](https://github.com/Saeed-oG/DATA-ANALYSIS).

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