Retail Sales Analysis Project

1. Project Overview

Step	Actions
Objective	Perform a comprehensive sales analysis on the Superstore retail dataset using Python tools.
Goal	Identify key trends, high-performing regions and products, and provide actionable business recommendations.
Tools Used	- Python (Pandas, Matplotlib, Seaborn) - Jupyter Notebook - Superstore dataset (~10,000 rows)

2. Data Loading and Initial Exploration

- Imported dataset using Pandas.
- Previewed data using `df.head()`.
- Checked data types and identified date columns.

Purpose:

Understand the structure, key columns (Sales, Profit, Region, Category, etc.), and determine cleaning/transformation needs.

3. Data Cleaning

Actions	Purpose
Converted Order & Ship Date to datetime	Enable accurate trend analysis.
Removed missing/null values	Ensure clean, reliable data.
Excluded rows with sales ≤ 0	Base analysis only on meaningful, positive sales.

4. Monthly Sales Trend Analysis

- Grouped sales by month.
- Created monthly sales line chart for visualization.

Insight:

Sales trend upward near year-end, likely due to holiday shopping seasons.

5. Top-Selling Products

- Grouped sales by product name.
- Identified top 10 products by total sales.

Insight:

Certain office supplies contributed disproportionately to overall sales.

6. Regional Sales & Profit Analysis

Region	Sales Trend	Profit Trend
West	Strong sales	Strong profits
Central	Strong sales	Strong profits
South	High sales	Lower profits
East	Not specified	Not specified

Action:

Compared sales & profit for each region using a side-by-side bar chart.

7. Discount vs Profit Relationship

- Plotted Discount vs Profit on a scatterplot.

Insight:

Higher discounts usually resulted in lower profits or losses.

8. Correlation Analysis

- Created correlation heatmap for numeric columns.

Variable Pair	Correlation Direction
Sales vs. Profit	Moderate positive
Discount vs. Profit	Negative

9. Summary Statistics & Recommendations

Top Categories and Sub-Categories

- Listed top categories and sub-categories by both profit and sales.

Key Business Recommendations

- Reduce large discounts, especially on low-profit items.
- Actively promote high-profit categories (e.g., Technology).
- Focus expansion efforts on the Central and West regions.

Conclusion

This project demonstrates my ability to manage the *full data analysis cycle*—from loading and cleaning raw data to deriving actionable business recommendations. It also highlights my capacity to explain technical findings in clear business terms, a crucial skill for any data analyst role.

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