

Retail Business Performance & Profitability Analysis

Abstract

This project aims to analyze transactional retail data to uncover profit-draining categories, optimize inventory turnover, and identify seasonal product behavior. Through SQL, Python, and Tableau, we developed a comprehensive pipeline to transform raw sales data into meaningful insights that aid business decisions.

Introduction

Retail businesses often struggle with understanding which categories contribute the most to profitability and how sales trends shift across time and regions. This project addresses these challenges by integrating SQL for querying, Python for exploratory data analysis, and Tableau for visualization. The combined approach ensures clear insights into sales, profits, and customer behavior.

Tools Used

Tool	Purpose
SQL (MySQL Workbench)	Data extraction, transformation, and query-based insights
Python (Pandas, Matplotlib, Seaborn)	Exploratory analysis, trend identification, and margin calculation
Tableau	Interactive dashboards for visual insights and decision-making

Steps Involved in Building the Project

Step 1: Data Collection & Cleaning – Extracted sales data using SQL queries and exported results as CSV.

Step 2: Data Analysis – Used Python to calculate quarterly sales trends, profit margins, and category-level insights.

Step 3: Visualization – Built Tableau dashboards with bar charts, line graphs, and profit margin heatmaps.

Step 4: Interpretation – Derived insights on seasonal trends, regional demand, and profitability patterns.

Key Insights

- **Furniture** showed high sales volume but lower profit margins compared to Technology.
- **Technology** consistently generated higher profit margins, making it the most profitable category.
- Quarterly analysis revealed spikes in Q1 and Q3, suggesting seasonal purchase behavior.
- Certain regions, such as the East and West, performed significantly better in terms of revenue.

Conclusion

This project successfully demonstrated how integrating SQL, Python, and Tableau can provide a holistic view of retail performance. By identifying profit-draining categories, visualizing seasonal sales patterns, and highlighting key growth areas, the analysis empowers businesses to make data-driven decisions. The interactive Tableau dashboard complements this report by providing a real-time, user-friendly exploration of data trends.