

RETAIL PROFITABILITY ANALYSIS

1. Introduction :

The retail sector produces massive amounts of data every day through sales, pricing, and inventory operations. To stay competitive, businesses must convert this raw data into actionable insights that drive profitability and efficiency.

This project, Retail Business Performance and Profitability Analysis, applies data-driven techniques to evaluate sales and inventory performance. Using SQL, key metrics such as revenue, cost, profit, and margin are extracted and analyzed at the category and sub-category level. Python supports exploratory analysis, trend detection, and correlation studies between profitability and inventory holding periods. Tableau dashboards further transform these insights into interactive, visual reports for easier interpretation by decision-makers.

The study aims to identify top-performing products, highlight low-margin categories, and detect slow-moving or overstocked items. Ultimately, the project provides a framework for optimizing pricing strategies, improving inventory turnover, and supporting smarter business decisions in the retail domain.

2. Abstract :

- **Dataset :** Kaggle Superstore (orders, sales, profit, region, category).
- **Tools:** SQLite (SQL), Python (Pandas, Matplotlib), Tableau.
- **Goal:** Identify profit-draining categories, seasonal patterns, and inventory-profit correlation.

3. Tools Used :

- SQLite (for SQL queries)
- Python (for EDA, correlation, plots)
- Tableau (for dashboard)

4. **Steps Involved :**

- Import data → SQL queries (profit margins, seasonality, loss-making products).
- Export CSV → Python for correlation analysis + plots.
- Built Tableau dashboard (interactive).

5. **Conclusion (Finding & Recommendations) :**

The analysis indicates that Furniture/Bookcases are generating negative margins. This suggests a need to either reduce stock levels or renegotiate supplier terms in order to protect profitability.

Sales trends also reveal strong seasonal peaks in November and December. Businesses can take advantage of this pattern by planning targeted marketing campaigns and promotional offers to maximize revenue during these months.

A clear link was found between longer inventory holding days and lower profit margins. To address this, inventory turnover should be optimized, ensuring products move faster and reduce the costs tied up in stock.

The Western region is underperforming in terms of margins. This calls for improved logistics management and a review of discount strategies to strengthen overall performance in that market.

Finally, the top 10 consistently loss-making products must be reassessed. Adjusting their pricing or discontinuing them altogether can prevent further losses and support long-term business growth.