

FINAL PHASE PROJECT – RETAIL BUSINESS PERFORMANCE & PROFITABILITY ANALYSIS

INTRODUCTION:

Retail businesses have large amount of transaction data, which can provide insights into sales, profit, customer demands. This project focuses on analyzing retail data to identify profit-draining categories, optimize turnover and detect seasonal buying patterns. By leveraging SQL, Python and Tableau, the goal is to transform raw data into actionable insights that support decision-making. The analysis not only supports data-driven decision-making but also helps in forecasting future sales, setting achievable targets, and formulating strategies that align with market demands.

ABSTRACT:

The project “Retail Business performance & Profitability analysis” combines data engineering and analytics techniques to examine profitability across different product. By using SQL, we can calculate profit margins and clean null values. Python is the secondary process, it is cleaned and used some libraries for visualizations. Finally, Tableau is the major act in this project by creating interactive dashboard with different fields.

Ultimately, the project aims to support strategic decision-making, highlight profit drivers and weak areas, and enable business stakeholders to identify growth opportunities through interactive, data-driven visualizations.

TOOLS USED:

Each tools have connective for dataset and different functions.

- SQL: Structured Query Language used for identifying null values and profit margin for predicting analysis.
- Python (pandas, seaborn): used for cleaning and correlation between dates and profit. Finally, visualization is created.
- Tableau: for creating interactive dashboard and finding patterns, trends.

STEPS INVOLVED IN BUILDING THE PROJECT:

1. Data collection & cleaning:

Collected data from Kaggle dataset website. Unzipped the file and opened the Excel for verifying the fields. For example, data format should be in (YYYY-MM-DD). Suppose it has error, it can be cleaned in pandas libraries.

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2. SQL Analysis:

Import data in SQL. It allows only CSV file. Check the data, if there is any null values and missing values. Calculate total profit and uses some aggregate function for total amount and round off. May use order by and group by function for good analysis. Used some queries for analysis:

- Null values,
- Calculating profit.

3. Python Analysis:

Loaded data in jupyter notebook and clean the dataset (as in the step-1). Identify correlation between inventory date and profit. Use visualization called seaborn and additional matplotlib for mapping in charts.

- Cleaning data,
- Seaborn, matplotlib for visualization.

4. Tableau:

Import dataset in tableau. Built KPI (key performance indicator) for total cost and finding profit. Some charts for highlighting the growth of the business.

- KPI cards- total price, volume, score
- Bar chart- score for product,
- Line chart- profit(price) by month
- Pie chart- high sale
- Table- profit

5. Summary report:

This final report gives for reference in anytime. Snapshot of the visual is attached in the form of PDF summary report.

CONCLUSION:

The Tableau dashboard serves as an interactive decision-support tool for managers, helping them reduce losses, improve inventory turnover, and maximize profitability. By applying these findings, retailers can refine pricing strategies, manage inventory more efficiently, and improve overall business performance. By combining Python's data transformation capabilities and SQL's powerful querying functions, businesses can make more informed, data-driven decisions for inventory, marketing, and expansion.