Retail Business Performance & Profitability Analysis

Introduction

This project aims to analyze a retail business dataset to uncover key profitability drivers, identify slow-moving products, and understand seasonal trends. By leveraging SQL, Python, and Power BI, the analysis helps optimize category-wise performance and inventory turnover.

Abstract

Retail businesses generate massive transactional data daily. This project utilizes structured analysis to evaluate sales and profit metrics by category, sub-category, region, and month. Additionally, inventory dynamics were analyzed to detect inefficiencies. The goal is to provide actionable business insights using data analysis techniques.

Tools Used

- SQL - for data cleaning, aggregation, and profitability insights

- Python (Pandas, Seaborn) - for correlation analysis between inventory and profit

- Power BI - for building interactive dashboards and visual summaries

Steps Involved

1. Data Import & Cleaning (SQL)

   - Removed null, duplicate, and invalid values

   - Created tables and performed initial inspection

2. Profitability Analysis (SQL)

   - Calculated profit margin % by category, sub-category, and region

   - Performed month-wise and inventory-related queries

3. Inventory Analysis (Python)

   - Used correlation matrix and scatterplot to find relation between Inventory_Days and Profit

   - Identified that many high-inventory items yield low profit

4. Dashboard Development (Power BI)

   - Created visualizations for sales, profit, profit margin by category

- Added filters for region and sub-category

- Showcased key KPIs and slow-moving product insights

Conclusion & Key Insights

- Copiers, Phones, and Binders had high profit margins; while Supplies and Fasteners underperformed.

- Region-wise analysis showed profitability differences; some regions consistently outperformed others.

- Inventory-heavy items with low profit were flagged for action.

- Seasonal insights indicated fluctuations in profit across months, helpful for planning promotions.

Status: Project Completed Successfully

Ready for final GitHub upload + PDF submission.