# Retail Business Performance & Profitability Analysis

## Introduction

This project focuses on uncovering key profitability drivers in a retail business by analyzing transactional data. The objective was to identify slow-moving products, profit-draining categories, and seasonal sales trends.

## Abstract

Using a combination of SQL, Python, and Tableau, we analyzed a Superstore dataset to draw insights into product performance, regional profitability, and sales seasonality. The project culminated in a Tableau dashboard providing a visual summary of key metrics including sales, profit, profit margin, and category-level trends.

## Tools Used

- SQL: Data aggregation, filtering, and margin calculations  
- Python (Pandas, Seaborn): Correlation between inventory days and profit  
- Tableau: Interactive dashboard development and visual storytelling

## Steps Involved in Building the Project

1. **Data Import and Cleaning**:

* Loaded the Superstore.csv dataset into SQL and removed records with missing or null values.
* Standardized column names and checked for outliers and inconsistencies.

2. **SQL-Based Analysis**:

* Generated summary statistics: total sales, total profit, and profit margins by Category, Sub-Category, and State.
* Ranked sub-categories by profitability and flagged low-margin or loss-generating items.

3. **Python Analysis**:

* Used Pandas to compute inventory turnover proxies and performed correlation analysis.
* Generated Seaborn plots to visualize inventory days vs. profit margins.

4. **Dashboard Creation in Tableau**:

* Created KPI cards for total sales, profit, and profit margin.
* Built:
  + A map chart of profit by state.
  + Bar charts for sales by category/segment.
  + Line plots showing monthly trends.
  + Sales vs. profit by sub-category.

## Conclusion

The analysis revealed critical insights such as overstocked low-profit items, high-performing product categories, and seasonality in consumer demand. The resulting dashboard empowers stakeholders to take proactive steps toward optimizing inventory and improving overall profitability.