## 🛒 Retail Business Performance & Profitability Analysis

## Prepared by: *Satya Anand* Tools Used: Power BI · SQL · Python (Pandas) · Tableau

**1. Executive Summary**

This project analyzes retail transaction data from a Superstore to uncover key performance trends, identify profit-draining categories, and provide strategic recommendations to improve business profitability. Using Power BI and Tableau dashboards, visual insights were generated around category-wise profit, inventory behavior, and seasonal trends. SQL and Python were used to support analysis and automate profit margin calculations.

**2. Project Objective**

The objective of this analysis is to:

* Detect low-profit or loss-making product categories and sub-categories
* Identify slow-moving or overstocked inventory
* Visualize seasonal product behavior and profit variations
* Provide data-driven recommendations for business optimization

**3. Tools & Technologies**

* **Power BI** – For cleaning, transforming, and visualizing the data
* **SQL** – For querying profit margins and generating metrics
* **Python (Pandas)** – For preprocessing, date conversion, and season tagging

**4. Data Cleaning & Transformation**

The raw dataset (Sample - Superstore.csv) was cleaned using Power BI and Python:

* Removed null values and corrected data types
* Converted Order Date and Ship Date to datetime format
* Added a new Season column based on the order month
* Calculated new columns: Profit Margin, Gross Margin
* Filtered data by region, category, and season for visual analysis

**5. Key Metrics & Analysis**

Calculated metrics included:

* **Profit Margin** = Profit ÷ Sales
* **Slow-Moving Flag** = Products with low quantity sold and low profit
* **Overstocked Flag** = High quantity, low sales performance

**6. Insights & Visual Findings**

* 📉 *Office Supplies – Binders* had negative or near-zero profit margins in multiple regions
* 📦 Sub-categories like **Tables** and **Bookcases** showed signs of being overstocked
* 📈 **Q4 (Winter)** saw consistent sales spikes, suggesting marketing opportunities
* 📊 Dashboard filters helped isolate Region-wise and Season-wise profit performance

**7. Strategic Recommendations**

* 💰 **Phase out or discount** low-margin products (e.g., Binders, Tables)
* 🔁 **Optimize inventory** by reallocating stock from low-profit to high-selling categories
* 🎯 **Target winter season** for promotional campaigns and stock planning
* 📊 Continue using dashboards monthly to track real-time profitability and turnover

**8. Conclusion**

This analysis revealed multiple ways to optimize profitability and inventory. The interactive dashboards and SQL-based metrics provide clear visibility into business performance. The insights gained can support better pricing, marketing, and stocking decisions across the organization.