

# Retail Business Performance & Profitability Analysis

## 1. Introduction

Retail businesses often deal with large amounts of transactional data. This project focuses on analyzing sales, profit, discounts, and shipping trends using the “Sample - Superstore.csv” dataset. The goal is to identify profit-draining areas, understand regional and category-based performance, and uncover patterns in discounting and delivery efficiency.

## 2. Abstract

The project was conducted using Microsoft Power BI to create an interactive multi-page dashboard. The dataset contains sales data across multiple regions and product categories. The analysis involved cleaning the dataset, creating calculated fields, and visualizing insights across 7 pages including Executive Summary, Category Analysis, Product Performance, Regional View, Discount Impact, Shipping Analysis, and Slicers for interactivity.

## 3. Tools Used

- Microsoft Power BI Desktop
- DAX (Data Analysis Expressions)
- Power Query Editor
- Visualizations: Bar Chart, Column Chart, Table, Scatter Plot, Line Chart, Map

## 4. Steps Involved

### Data Cleaning:

- Converted data types (Date, Decimal, Text)
- Removed duplicates and sorted records
- Created new columns: OrderYear, OrderMonth, ShippingTime, DiscountGroup

### Data Modeling and Calculations:

- Created calculated columns using DAX:
  - ProfitMargin =  $\text{DIVIDE}([\text{Profit}], [\text{Sales}], 0)$
  - ShippingTime =  $\text{DATEDIFF}([\text{Order Date}], [\text{Ship Date}], \text{DAY})$
  - DiscountGroup using SWITCH() function to categorize discount ranges

### Dashboard Pages:

1. Executive Overview: KPIs, Sales Trend, Profit by Region, Segment Pie Chart
2. Category/Sub-Category Analysis: Sales & Profit comparison, Profit Margin Table
3. Product-Level Insights: Top Products, Scatter of Sales vs Profit, Treemap
4. Regional Analysis: Sales by State (Map), Profit by Region & Segment
5. Discount Impact: Avg Profit by Discount Range, Discount vs Profit Scatter, High Discount Product Table
6. Shipping Analysis: Avg ShippingTime by Region/Category, Trend over time

### 5. Key Insights

- Tables and Bookcases had negative profit despite high sales
- Technology category had highest profit margins
- Profit declined sharply when discounts exceeded 20%
- Office Supplies often had high discounts but low profit
- West region had shortest average shipping time

### 6. Conclusion

This dashboard provides a strategic view of retail performance. It helps in identifying areas for optimization in pricing, product focus, and shipping logistics. The project demonstrates the power of visual analytics for data-driven decision making in a retail environment.

### Deliverables

- Power BI (.pbix) dashboard file
- Two-page project report
- GitHub Repository with both files (for submission)