Retail Business Performance & Profitability Analysis

Introduction

The project aims to analyse retail business transactional data to identify underperforming product segments, improve inventory turnover, and discover seasonal patterns in sales and profit. By leveraging data visualization and analysis tools, actionable insights were derived to enhance business performance.

Abstract

This analysis explores sales, profit, discounts, shipping modes, and inventory behaviours across different product categories, regions, and timeframes. Using Tableau, SQL, and Python (Pandas and Seaborn), the study pinpoints slow-moving and overstocked items, highlights high-performing products, and identifies patterns by segment and season.

Tools Used

- **SQL**: For querying and preprocessing raw retail data
- **Python**: (Pandas, Seaborn) for data analysis and visualization
- **Tableau**: For dashboard creation and interactive data exploration

Steps Involved in Building the Project

1. **Data Import & Cleaning**
    - Imported retail dataset into MySQL
    - Removed null and duplicate values
2. **SQL Analysis**
    - Calculated profit margins by Category and Sub-Category
    - Identified top and bottom performers
    - Derived quantity and discount-based profitability
3. **Python Analysis**
    - Used Pandas to analyse correlation between inventory days and profit
    - Seaborn visualizations supported trends in slow/fast-moving products
4. **Tableau Dashboard**
    - Built KPIs for Profit, Sales, Discount, Quantity

- Created filters for **Region**, **Category**, and **Season**
- Visualized: Top/Bottom Products, Profitability by Segment & Region, Shipping Mode vs Profit
- Added heatmaps, scatter plots, and geospatial maps

Conclusion

Strategic recommendations include:

- **Discontinue or promote** products with low profit and high inventory age
- **Optimize shipping modes** that are cost-effective but less profitable
- **Focus on Technology category**, which showed the highest profitability
- **Seasonal targeting**: Allocate inventory and marketing for Spring and Summer where sales peak

This project enabled data-driven decision making to optimize profitability across product categories and regions.