

Unified Mentor

Retail Analytics Project Report

Duration: 27 June 2025 – 17 July 2025

1. Executive Summary

This project for Unified Mentor aimed to forecast sales and uncover key performance patterns in retail operations. The primary analysis centered on three critical business areas: 1) Sales Overview – Understanding overall sales trends and growth patterns; 2) Profit by Category – Identifying the most and least profitable product categories; 3) Discount Impact – Assessing how discount strategies influenced both sales volume and profitability. Using Python and Tableau, the project delivered interactive dashboards and a short-term forecasting model to aid in decision-making, inventory planning, and promotional strategy design.

2. Objective

To analyze retail data and forecast sales with a focus on sales trends, category-wise profitability, and discount strategy effectiveness.

3. Dataset Description

The dataset contained detailed retail transaction records, including: Order Date, Product Category & Sub-category, Sales Amount, Profit, Discount, Quantity Sold, Customer Segment, and Region.

4. Tools & Technologies Used

• Python – pandas, numpy, matplotlib, seaborn, Prophet for forecasting • Tableau – for dashboard creation and interactive visualizations • Excel – initial exploration and validation

5. Methodology

1) Data Cleaning – Removed duplicates, handled missing values, standardized formats. 2) Sales Overview Analysis – Created time-series visualizations to detect trends and seasonality. 3) Profit by Category Analysis – Compared total sales vs. profit margins for each category. 4) Discount Impact Analysis – Segmented transactions by discount levels to study volume and margin changes. 5) Sales Forecasting – Applied time-series modeling to predict short-term sales. 6) Visualization – Developed Tableau dashboards for business-friendly insight delivery.

6. Key Insights

6.1 Sales Overview

• Sales showed consistent growth over the period with noticeable spikes during promotions. • Certain weeks outperformed the average, likely linked to seasonal offers or campaigns.

6.2 Profit by Category

- Technology category delivered the highest profits despite lower sales volume than Essentials.
- Furniture had moderate sales but relatively low profit margins, indicating cost challenges.

6.3 Discount Impact

- Moderate discounts boosted sales without drastically harming margins.
- High discounts increased sales volume but significantly reduced per-unit profit, showing the need for balance.

7. Conclusion

The project highlights that sales growth, profitability, and discounts are deeply interconnected. By optimizing discount depth and focusing on high-margin categories, Unified Mentor can improve revenue while protecting profitability.