Project Title: Supermart Grocery Sales - Retail Analytics Report
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Abstract

This project analyzes the Supermart Grocery Sales dataset to uncover sales and profit trends. Data cleaning and visualization techniques were used to explore customer behavior and regional performance. Insights reveal that some high-selling items have low profitability due to excessive discounts. Regional and category-wise analysis highlights areas of strength and improvement. The study provides actionable strategies to boost efficiency and profitability.

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1. Introduction

This project focuses on analyzing sales data from Supermart, a retail store, to uncover patterns and derive insights that could help optimize operations, increase profitability, and enhance customer experience. The dataset contains information about various products, sales, and store locations.

2. Dataset Overview

The dataset includes the following fields:

- **Product ID**
- **Product Name**
- **Category**
- **Sub-Category**
- **Sales**
- **Profit**
- **Quantity**
- **Discount**
- **Region**
- **Customer Segment**

This data enables exploration across different dimensions such as sales performance, profitability, and customer buying behavior.

3. Data Cleaning

- Checked for missing values and handled them appropriately.
- Standardized column names for better readability.
- Converted data types where necessary (e.g., dates, numeric types).
- Removed duplicates and irrelevant columns for cleaner analysis.

4. Exploratory Data Analysis (EDA)

Several visualizations and statistical techniques were used to analyze the data:

- **Sales Distribution**: A histogram was plotted to understand how sales are distributed across various product categories.
- **Profit vs. Sales**: Scatter plots revealed which products or categories have high sales but low profits (or vice versa).
- **Top Performing Categories**: Bar plots highlighted the top-selling and most profitable categories and sub-categories.
- **Regional Sales Trends**: Pie charts and heatmaps were used to display how sales vary across different regions.
- **Discount Impact**: Analyzed how offering discounts affects profitability.

5. Key Insights

- Certain product categories like [e.g., "Beverages", "Snacks"] had high sales but low profit margins.
- The **[South/West/etc.]** region showed consistently higher profits.
- Excessive discounts often led to a loss despite high sales volume.
- Focusing on certain customer segments (like [e.g., "Corporate" or "Regular"]) could be more profitable.

6. Conclusion

This retail sales analysis provided crucial business intelligence for Supermart. By identifying underperforming areas and customer preferences, the company can take targeted actions to enhance profitability and efficiency. The findings can also guide inventory planning, promotional strategies, and regional targeting.

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9. Project Link

https://github.com/vignesh-a-09/Unified-Mentor-Internship-2025/blob/main/Supermart%20grocery%20sales/Supermart.ipynb