

DMart Store Sales analysis



Introduction

This project analyzes grocery sales data from DMart, sourced from Kaggle, with the objective of uncovering sales trends, customer behavior, and product-level insights.

The analysis aims to help in making informed business decisions related to inventory management, customer targeting, and regional marketing strategies.

The dataset was processed and explored using Python libraries including Pandas, Seaborn, Matplotlib, and Plotly. Key patterns were visualized and interpreted to identify high-performing areas and improvement opportunities.





Project Overview



- Analyzed DMart Grocery sales dataset
 - Performed data cleaning and date-time transformation
 - Used Pandas, Seaborn, Matplotlib, and Plotly for visualizations
 - Explored sales trends, customer insights, and product performance
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Sales by Product Category

Grouped sales by each product category and Visualized with a bar chart to identify high-revenue categories. It is useful for strategic stock planning and promotions

Cities & Region by Sales

Aggregated total sales by city & Regions. We Used Plotly bar chart and pie chart with gradient colors

Cities like Kanyakumari, Vellore, and Bodi generated the highest total sales and profit. While Nagarcoli and Trichy make less sale, so in these cities we can offer some promotions, and product discounts.

Sales grouped and plotted by region and Used labeled pie chart with % and total amount Shows geographical market strength. These regions can be prioritized for premium product promotions and loyalty programs.



Top Customer make highest Purchase



Grouped and ranked customers based on total purchase and used bar charts to visualize high-value customers. We can also Target marketing or exclusive offers may help retain these high-value customers and can Send personalized offers Celebrate birthdays with coupons Offer exclusive previews

Top Sub-categories by Profit

Summed profit by sub-category and Visualized top 10 using a pie chart. It show and Help us to understand most profitable product lines. These should be emphasized in marketing and inventory decisions.

Sub-categories with Highest Discounts

Calculated total discount per sub-category Identified areas with heavy discount spend. Visualize with plotly horizontal bar chart for better experience. It Helps for review pricing and promotion strategy.



Plot Sales & Profit Trend Over Years

The line chart comparing sales and profit over the years reveals a generally positive trend, indicating growth in both revenue and profitability. Notably, some years exhibit a gap between sales and profit, suggesting potential areas for cost optimization or a review of discounting strategies. Identifying high-performing years can guide future sales and marketing efforts, while low-profit years highlight the need for strategic adjustments.



Conclusion



1. Top Performing Cities & Customers
 - Cities like Kanyakumari, Vellore, and Bodi generated the highest sales and profit.
 - A small group of top 10 customers contributed significantly to overall revenue – highlighting the value of loyal, high-spending buyers.
2. Sales vs Profit Trend
 - Sales and profit both increased year-over-year, indicating healthy growth.
 - However, the profit line grows at a slower pace than sales – suggesting rising costs or aggressive discounting.
3. Discount Insights
 - Categories like Soft Drinks, Health Drinks, Cookies, and Chocolates received the highest total discounts.
 - Heavy discounting may drive sales but needs review to avoid margin loss.
4. Low Performing Cities
 - Some cities showed significantly lower sales – signaling a need for improved marketing, supply chain, or store experience in those areas.
5. Business Recommendations
 - Optimize discount strategies for high-selling, low-margin items.
 - Focus on customer retention via loyalty programs for top customers.
 - Boost visibility and operations in underperforming cities.