

Executive Summary: Retail Store Sales Analysis

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This analysis provides a comprehensive overview of retail sales data to uncover key business insights, customer behavior trends, and product performance. The study combines data cleaning, transformation, and insightful visualizations using Python libraries such as Pandas, Matplotlib, and Seaborn.

Dataset Link :- [Retail store sales data](#)

Data Cleaning & Preparation

- The dataset was initially cleaned by:
- Removing duplicates and missing values.
- Converting the Transaction Date to datetime format.
- Setting Transaction ID as the index for clarity.
- Removing outliers in the Total Spent column to prevent skewed insights.

Exploratory Data Analysis (EDA)

Top 10 High-Demand Products

- Products were grouped by Category and Item.
- The top-demand items were identified based on the sum of quantity sold, with a clear bar chart showing which product categories dominate sales.

Revenue by Category

- A bar chart displayed the total revenue contributed by each product category.
- This helped highlight the most lucrative categories driving overall revenue.

Revenue by Customer

- Analysis of customer-wise revenue showed top-spending customers, offering insights into potential loyalty or high-value customers.

Most Used Payment Methods

- A pie chart with data labels showed the distribution of payment methods used by customers.
- This insight can help tailor future payment service offerings and promotions.

Discount Application Count

- A bar plot illustrated how often discounts were applied across different transactions.
- Useful for understanding the impact of discount strategies on overall sales.

Sales Trend Over Time

- Using Transaction Date, you extracted year, month, and month name to observe sales trends.
- A line chart was plotted with:
- X-axis: Month Name
- Y-axis: Total Sales (Total Spent)
- Legend: Year
- Markers added to each line provided a clear month-over-month performance comparison across years.
- This trend analysis highlighted seasonal variations and growth over time.

Key Takeaways

- Clear identification of high-demand products and top-paying customers.
- Insights into payment preferences and sales cycles.
- Smart use of visual storytelling with meaningful, well-labeled plots.
- Valuable foundation for inventory management, marketing decisions, and customer segmentation.