

Diwali Sales Summary Report

Project Introduction

This report provides a detailed analysis of online sales data collected during the Diwali festive season. The primary objective of this project was to leverage data analysis techniques to uncover actionable insights into customer behavior, popular product categories, and geographical sales trends. The findings of this analysis can be used to inform future business strategies, optimize marketing campaigns, and improve inventory management.

Project Overview

The analysis was performed using Python and key data science libraries, including pandas for data manipulation and matplotlib and seaborn for data visualization. The project involved several key steps, starting with data cleaning to handle missing values and inconsistencies. This was followed by an extensive exploratory data analysis (EDA) to derive meaningful metrics and trends, such as top customer demographics, product sales by category, and regional sales performance.

Methodology

The analysis began with a dataset of 11,251 rows and 15 columns. Initial data cleaning involved identifying and removing null values to ensure the accuracy of the analysis. The columns were also inspected for consistent data types. The cleaned data was then used for a series of visualizations, including bar charts and pie charts, to visually represent key trends in gender-based sales, age group demographics, and product preferences. These visualizations were crucial in identifying the primary consumer base and their purchasing habits.

Key Findings

Based on the analysis of the sales data, the following key insights were uncovered:

Demographic Insights

- **Sales by Gender:** The majority of the sales were generated by women, who were the most active buyers during the Diwali sales event, indicating a strong female-driven consumer base.
- **Age and Marital Status:** The most significant purchasing demographic was married women in the age group of 26-35 years. This group accounted for the largest share of transactions and revenue, with total sales by married customers being significantly higher than those by unmarried customers.
- **Geographic Trends:** The most active buyers were concentrated in the states of **Uttar Pradesh, Maharashtra, and Karnataka**, which collectively represented the highest sales volumes. This highlights these regions as key markets for future campaigns.
- **Occupational and Social Trends:** Customers working in the **IT, Healthcare, and Aviation** sectors were the most frequent shoppers, indicating a strong correlation between profession and purchasing power.

Product and Sales Channel Insights

- **Sales by Product Category:** The most popular product categories were **Food, Clothing, and Electronics**, which consistently drove the highest sales figures throughout the event. This suggests these categories are essential for the product mix during festive seasons.
- **Top 10 Most Sold Products:** A specific analysis was conducted to identify the top 10 most sold products by quantity, revealing which individual items were most successful and a significant driver of overall sales revenue.
- **Sales Channel Performance:** The analysis of sales channels revealed that the website was the most effective platform for generating sales, followed by the mobile app.

Conclusion

This data analysis successfully identified the most profitable target demographic for the Diwali sales event: married women aged 26-35, primarily from Uttar Pradesh, Maharashtra, and Karnataka, and working in the IT, Healthcare, and Aviation sectors. Their purchasing habits clearly favor the Food, Clothing, and Electronics categories. To maximize future sales, it is highly recommended that marketing and promotional strategies be explicitly tailored to this demographic. By focusing on targeted advertising and ensuring a robust stock of popular products, businesses can significantly enhance their sales performance in upcoming festive seasons.