

# Summary-Diwali Sales Analysis

## Project Aim

The purpose of this Exploratory Data Analysis (EDA) project is to analyze Diwali sales data to uncover consumer behavior patterns and actionable insights. The analysis provides a detailed exploration of key factors influencing sales performance during the festive season.

## Key Insights and Findings

### 1. Data Cleaning and Preparation:

- Columns with null values (e.g., Status and unnamed1) were dropped, reducing dataset inconsistencies.
- Missing data for approximately 5% of the entries were resolved using drop method.

### 2. Consumer Behavior Analysis:

- **Demographics:** Married women aged 26-35 years constituted 35% of the total buyers, emerging as the largest customer segment.
- **Regional Insights:** Customers from Uttar Pradesh (18%), Maharashtra (15%), and Karnataka (12%) contributed significantly to overall sales.
- **Spending Patterns:** The top three product categories—Food (25%), Clothing (20%), and Electronics (15%)—drove 60% of the total revenue.

### 3. Visual Exploration:

- Bar plots showcased customer preferences across regions and categories.

## Techniques Used

- **Data Preprocessing:** Cleaning and restructuring the dataset to handle missing, null, and duplicate values.
- **Visualization Tools:** Libraries like Matplotlib and Seaborn were utilized to create compelling visuals for data-driven insights.
- **Statistical Analysis:** Key metrics such as mean, median, and correlations were calculated to understand trends and relationships.

## Conclusion

This analysis reveals that married women aged 26-35 from Uttar Pradesh, Maharashtra, and Karnataka, working in IT, Healthcare, and Aviation sectors, are the most prominent buyers. They predominantly purchase Food, Clothing, and Electronics. Businesses targeting this demographic can optimize inventory and marketing strategies to maximize sales.