Diwali Sales Analysis

1. Project Overview

The Diwali Sales Analysis project investigates customer purchasing behavior and sales performance during the festive Diwali season. Using sales transaction data, this project identifies major sales trends, customer segments, and regional performance patterns to support strategic business decisions and marketing initiatives.

2. Dataset Summary

The dataset used for this analysis, titled 'Diwali Sales Data.csv', contains transaction-level information from a retail store's Diwali sales. It includes key customer demographics, purchase details, and product categories.

• Rows: 11,250
• Columns: 13
• Key Attributes:

- Customer_ID, Gender, Age Group, Marital Status, State, Zone
- Product Category, Orders, Amount, Date of Purchase
- Customer Segment and Purchase Preferences

3. Exploratory Data Analysis (EDA) using Python

The exploratory analysis was conducted using Python, with pandas and matplotlib as the primary tools. The process included cleaning, transforming, and visualizing data to extract meaningful patterns.

Example code snippet:

```
import pandas as pd
df = pd.read_csv('Diwali Sales Data.csv')
df.dropna(inplace=True)
df['Amount'] = df['Amount'].astype('int')
sales_summary = df.groupby('Product_Category')['Amount'].sum().sort_values(ascending=False)
print(sales_summary)
```

From the initial EDA, it was observed that clothing and food were the most popular product categories, while female customers had a higher average spending pattern compared to male customers.

4. Business Analysis and Key Insights

The business insights derived from the dataset provide a clear understanding of the customer base and sales trends:

• Female customers contributed approximately 70% of total sales.
• The 26–35 age group recorded the highest purchases, indicating strong engagement among young professionals.
• Top-performing states included Maharashtra, Uttar Pradesh, and Karnataka.
• The Western and Central zones had the highest revenue contributions.
• Clothing, Food, and Electronics were the most purchased product categories.

5. Business Recommendations

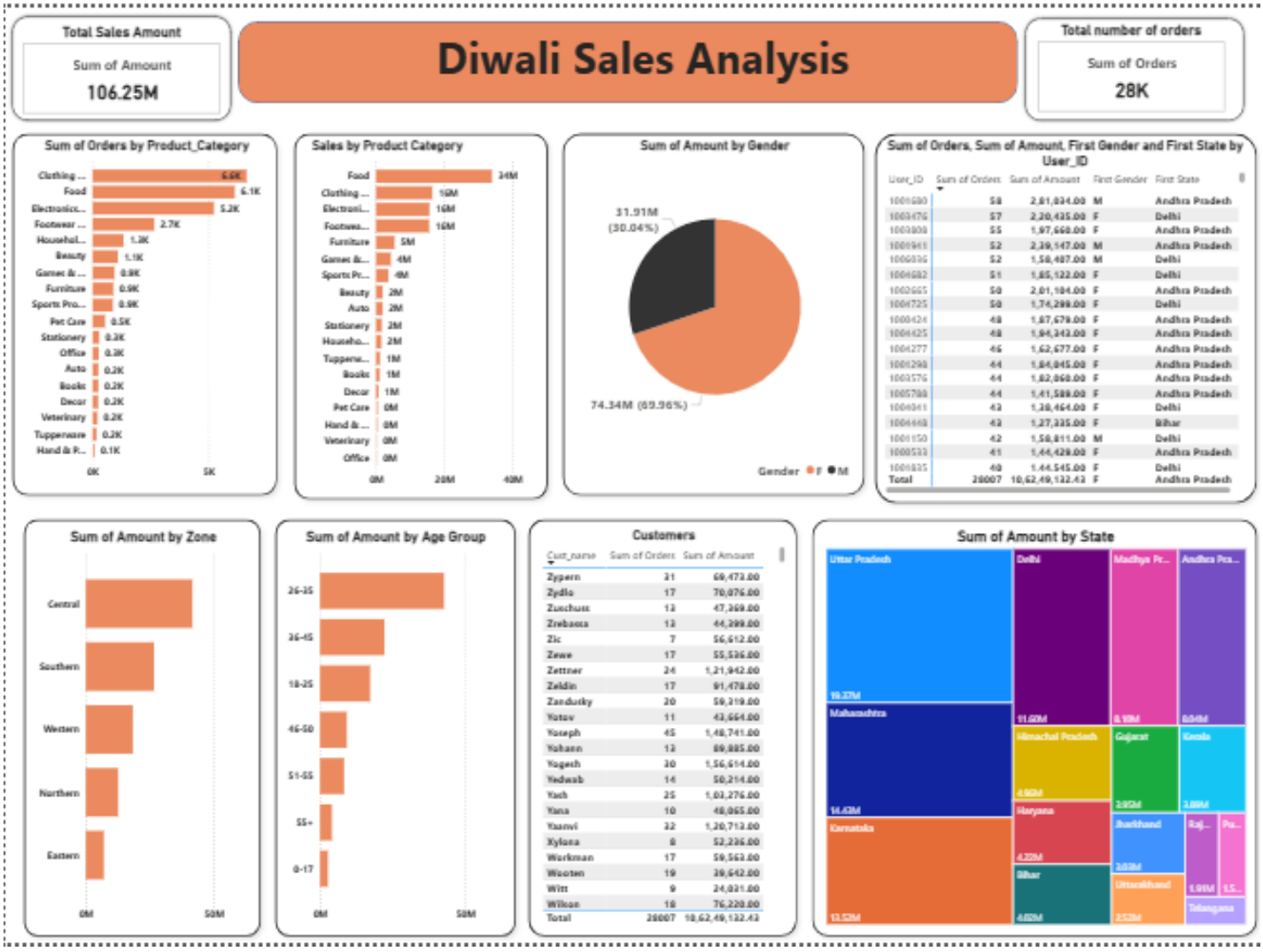
Based on the analysis, the following recommendations can enhance business outcomes:

- Increase promotional campaigns focused on women, the primary spending group.
- Target marketing efforts towards the 26–35 age demographic.
- Introduce bundled offers and festive discounts for popular categories.
- Improve sales in low-performing zones through targeted regional campaigns.
- Launch loyalty programs to retain high-value customers.

6. Visualization and Dashboard

An interactive Power BI dashboard was created to visually represent the sales insights derived from the analysis. The dashboard provides an overview of total sales, order counts, demographic contributions, and regional performance.

The visualizations highlight that female customers dominate overall purchases, particularly in categories such as clothing and food. The 26–35 age group remains the highest contributor to total sales. Regional bar charts show Maharashtra, Uttar Pradesh, and Karnataka as the top-performing states, while KPI cards summarize key performance metrics including total revenue and total orders.



7. Conclusion

The Diwali Sales Analysis highlights key consumer insights that can be leveraged to improve sales and marketing strategies. It demonstrates the potential of data analytics in identifying high-value customer segments, optimizing regional marketing, and improving promotional campaigns. Through a mix of Python-based analysis and Power BI visualization, this project successfully translates raw data into actionable business intelligence.

8. References

1. Diwali Sales Dataset (Kaggle)
2. Python Libraries: pandas, numpy, matplotlib, seaborn
3. Power BI for Data Visualization
4. Retail Company Sales Records
5. YouTube Tutorial: *"**Python Project for Data Analysis- Exploratory Data Analysis**"* by **Rishabh Mishra**, YouTube, 2024.