BIG BILLION DAY SALE DATA ANALYSIS REPORT

Dataset Overview

The analysis is based on sales data from a "Big Billion Days Sale" campaign containing **11,239 transactions** across **13 variables** after data cleaning. The dataset includes customer demographics, purchase information, and geographic distribution.

Key Variables:

- Customer Information: UserID, Name, Gender, Age Group, Age, Marital Status

- Geographic Data: State, Zone, Occupation

- Product Details: ProductID, Product Category

- Transaction Data: Orders, Amount

Data Cleaning Process

The data underwent several cleaning steps:

- Removed null columns: 'Status' and 'unnamed1'

- Dropped 12 rows with missing values in the 'Amount' column

- Converted Amount datatype from float to integer for consistency

- Final dataset: **11,239 valid records**

Demographic Analysis

Gender Distribution Big-Billion-Day-Sale.ipynb

Female customers dominate the sales:

- Female buyers significantly outnumber male buyers

- Females also generate substantially higher total sales revenue compared to males

This indicates that the campaign was particularly successful in attracting and converting female customers.

Age Group Analysis Big-Billion-Day-Sale.ipynb

The 26-35 age bracket is the primary customer segment:

- Highest number of purchases

- Generates the most revenue

- This is followed by the 36-45 age group

- Combined, these two age groups (26-45) represent the core customer base

Statistical Insights:

- Mean age: 35.4 years

- Age range: 12-92 years

- 50% of customers are below 33 years old

- 75% of customers are below 43 years old

Marital Status Big-Billion-Day-Sale.ipynb

Married customers show stronger purchasing behaviour:

- Married customers (Status = 1) generate higher total sales amount compared to unmarried customers (Status = 0)

- This trend is consistent across both male and female segments

Geographic Analysis

State-wise Performance Big-Billion-Day-Sale.ipynb

Top performing states by order volume:

1. Uttar Pradesh - Leads in number of orders

2. Maharashtra - Second highest

3. Karnataka - Third position

These three states represent the primary markets for the campaign, with Uttar Pradesh being the clear leader.

Zone Distribution Big-Billion-Day-Sale.ipynb

The data includes four geographic zones:

- Central

- Western

- Southern

- Northern (implied)

Based on state performance, the Central zone (Uttar Pradesh) appears to be the strongest market.

Product Analysis

Occupation Segments Big-Billion-Day-Sale.ipynb

The dataset tracks customers across various occupation categories including:

- IT Sector

- Healthcare

- Aviation

- Banking

- Government

- Automobile

- Food Processing

- Construction
  And several others, indicating a diverse customer base.

Product Categories Big-Billion-Day-Sale.ipynb

Top performing categories by sales amount:

1. **Food** - Highest revenue generator

2. **Clothing & Apparel** - Second position

3. **Electronics & Gadgets** - Third position

The visualization shows Food category with a commanding lead, followed by Clothing and Electronics as strong secondary categories.

Top 10 Products by Orders Big-Billion-Day-Sale.ipynb

Analysis of the most frequently ordered product IDs reveals:

- Product Clothing & Apparel leads in order frequency

- Followed by several other products with varying order volumes

- This indicates certain products had particularly strong appeal during the sale

Purchase Behaviour Insights

Order Statistics: Big-Billion-Day-Sale.ipynb

- Average orders per customer: 2.49

- Order range: 1-4 orders

- Median: 2 orders per customer

- Most customers (75th percentile) placed 3 or fewer orders

Amount Statistics: Big-Billion-Day-Sale.ipynb

- Average transaction: ₹9,453.61

- Minimum purchase: ₹188

- Maximum purchase: ₹23,952

- Median transaction: ₹8,109

- 75th percentile: ₹12,675

The data shows a relatively concentrated purchase amount range, with most transactions falling between ₹5,000-₹13,000.

Key Findings & Recommendations

1. Target Demographics:

- Focus marketing efforts on 26-45 age group, particularly 26-35

- Prioritize female customer acquisition and retention

- Married customers show higher purchase values

2. Geographic Strategy:

- Concentrate resources on Uttar Pradesh, Maharashtra, and Karnataka

- Central and Western zones deserve priority in logistics and marketing

3. Product Strategy:

- Food category is the revenue driver - ensure adequate inventory

- Clothing & Apparel and Electronics categories are strong performers

- Analyse top 10 products for replication of success factors

4. Customer Value:

- Average transaction of ~₹9,500 with 2-3 orders per customer

- Opportunity to increase order frequency through targeted campaigns

- Consider loyalty programs for married customers in the 26-35 age bracket

5. Occupation-based Marketing:

- Diverse occupation segments present opportunities for targeted campaigns

- IT, Healthcare, and Aviation sectors may warrant specialized approaches

This analysis provides a comprehensive view of the Big Billion Day Sale performance, highlighting key customer segments, geographic markets, and product categories that drove the campaign's success.