New Year Sales Analysis project

Project Title

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Introduction

This project focuses on analyzing the New Year sales dataset to uncover patterns, trends, and insights about customer purchasing behavior. By examining sales data segmented by gender, age group, state, marital status, occupation, and product categories, the project aims to understand key drivers of sales and identify the profile of high-purchasing customers. The insights gained can guide marketing and sales strategies to optimize future sales campaigns during the New Year season.

Objectives

- Explore demographic and geographic factors influencing sales.

- Analyze the purchasing power associated with gender and age groups.

- Identify states, occupations, and product categories contributing most to revenue.

- Understand the impact of marital status on purchasing behavior.

- Provide additional insights on correlations across variables to enhance marketing targeting.

- Summarize findings to profile typical high-purchasing customers.

Data Description

The dataset contains transactional sales records capturing:

- Customer information such as User_ID, Customer Name, Gender, Age Group, Age, Marital Status, State, Zone, and Occupation.

- Product details including Product_ID, Product_Category.

- Sales details including Number of Orders and Amount spent.

- Status and some unnamed columns which are not relevant for the analysis.

The data is sourced from New Year sales records across various Indian states and product segments, covering multiple demographic dimensions.

Methodology

The project methodology consists of the following key steps:

1. **Library Importation:** Utilized libraries such as pandas, numpy for data manipulation; matplotlib and seaborn for visualization.

2. **Data Loading and Cleaning:** Imported the dataset, checked for null values, dropped irrelevant columns and rows with insufficient data, and converted data types (e.g., Amount column to integers).

3. **Exploratory Data Analysis (EDA):**

    o Gender analysis to explore purchasing power by gender.

    o Age group analysis to identify purchase trends and power by age segments.

    o Analysis of state-wise order volumes and revenues to highlight key geographic markets.

    o Marital status and occupation analysis to understand their effect on purchase behavior.

    o Product category popularity and revenue analysis.

4. **Additional Analysis:** Further exploration on correlations between age and spending, variations by gender, and occupation-product category preferences.

5. **Visualization:** Created count plots, bar charts for each analysis segment to visually present findings.

6. **Summary and Insights:** Synthesized the results to understand typical customer profiles and sales influencers.

Insights

- **Gender Analysis:** Female customers generally show higher total purchase amounts despite a nearly balanced count between genders, indicating greater purchasing power among females.

- **Age Group Analysis:** The 26-35 age group leads in both purchase count and total amount spent, highlighting this group as the most lucrative segment. Younger age groups (18-25) show considerable activity but less purchasing power.

- **State Analysis:** States like Maharashtra, Uttar Pradesh, and Andhra Pradesh are key contributors to both order volumes and revenue, making them prime focus regions for sales efforts.

- **Marital Status:** Married customers tend to spend more on average, with gender differences emerging in purchasing patterns when marital status is considered.

- **Occupation:** Occupations such as IT Sector, Healthcare, and Banking contribute significantly to sales volume and revenue, suggesting these segments have higher disposable income or buying intent during the New Year.

- **Product Categories:** Product categories including Auto, Footwear & Shoes, and Electronics & Gadgets are popular with high revenue generation, emphasizing their importance in the product mix.

Additional detailed insights from extended analysis include:

- The correlation between age and spending is positive but varies by gender, indicating nuanced targeting potential.

- Specific occupations prefer particular product categories, which can tailor marketing campaigns effectively.

Visualizations Summary

The key visualizations created include:

- Count plots for gender, age groups, marital status, occupation, and product category to show distribution and popularity.

- Bar charts detailing total purchase amounts by gender, age groups, states, marital status with gender hue, occupations, and product categories.

- Geographic bar plots highlighting top 10 states by order count and revenue.

- Multi-dimensional plots exploring relationships between age group, gender, and product categories for deeper insights.

These visual tools illustrate the purchasing trends and help in clearly communicating findings.

Conclusion

This New Year Sales Analysis project successfully identifies critical customer segments and drivers of sales. Female customers and the 26-35 age group stand out as key contributors to revenue. Maharashtra, Uttar Pradesh, and Andhra Pradesh are lucrative regions, while IT, Healthcare, and Banking professionals show strong purchasing behavior. Product category insights underline the significance of Auto, Footwear & Shoes, and Electronics & Gadgets.

These findings offer a valuable foundation for targeted marketing, inventory planning, and promotional strategies during the New Year sales season. The typical high-purchasing customer is likely a female in the 26-35 age group residing in Maharashtra or Uttar Pradesh, working in IT or Healthcare, and interested in high-revenue product categories such as Auto or Electronics.