Black Friday Analysis Project

Abstract

In various fields such as finance sales, and marketing, predicting customer behavior is one of the most popular applications of data visualization by building such a predictive model we can predict the impact of the decision taken on our business. Retailers can execute and develop more effective marketing strategies for certain customer categories if they have a thorough understanding of their consumer's attributes, behaviors, and motivations from previous buying seasons. Then they have track of everything starting from our needs, what we bought, and what will you need in the future.

Data Description:

- User_ID,

- Product_id,

- Gender,

- Age,

- Occupation,

- City_Category

- Marital_status

- Product_Category_1

- Product_Category_2,

- Product_Category_3

Distribution Of the Purchase
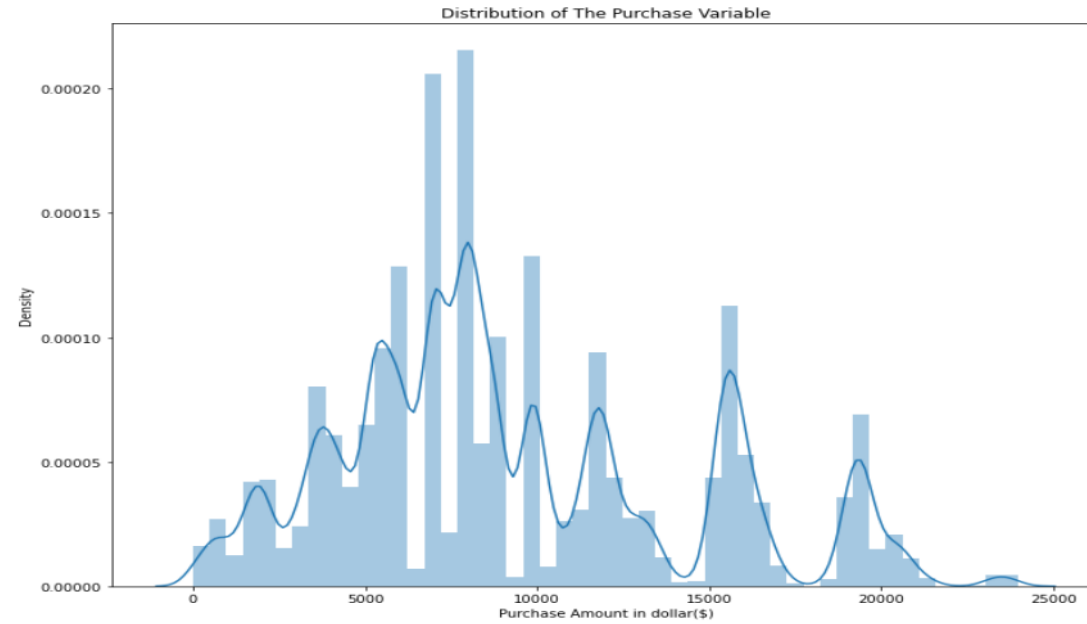
Visualization

Figure No. 2: Distribution of the Purchase Amount [2].

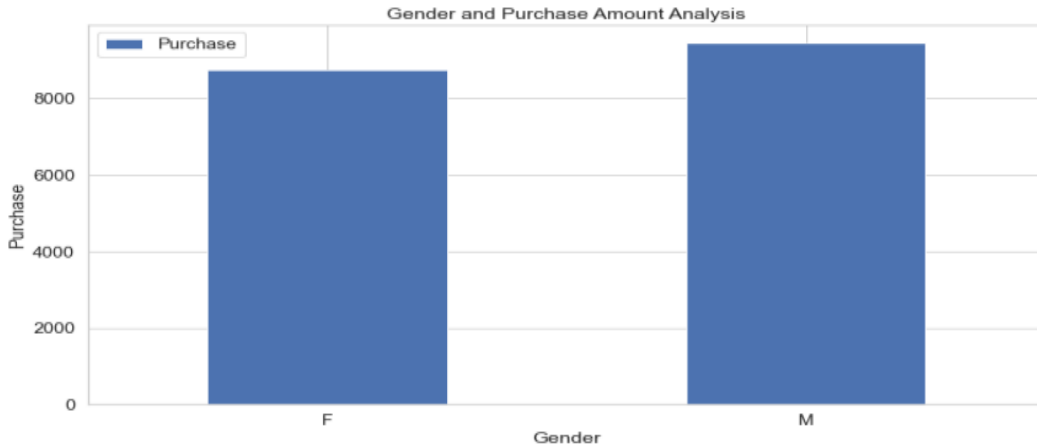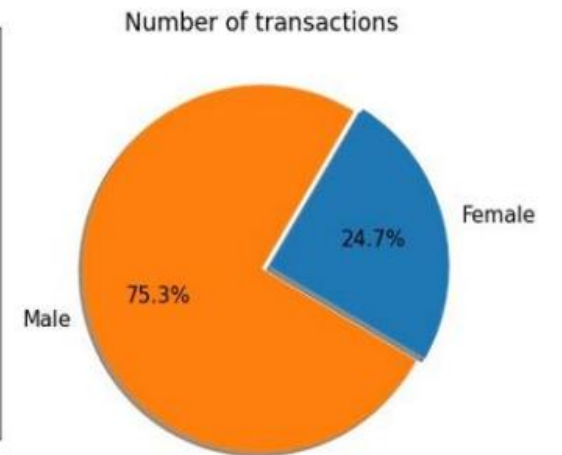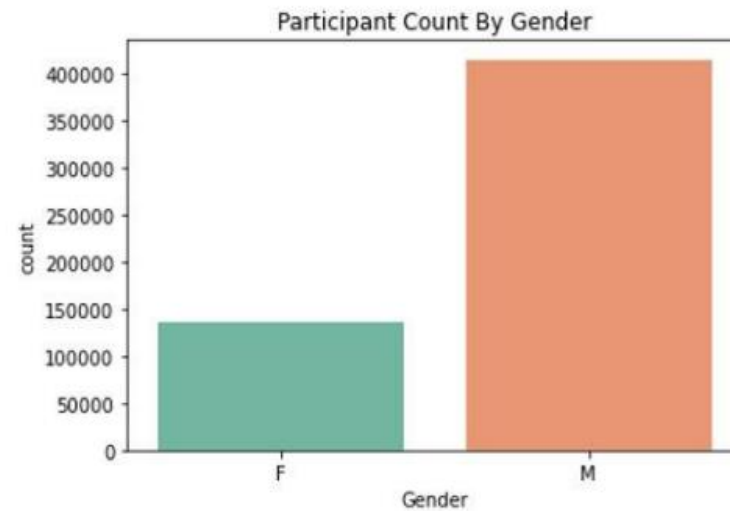# Gender and Purchase Amount

Figure No.4: Distribution of the purchase amount [2].

Gender Analysis

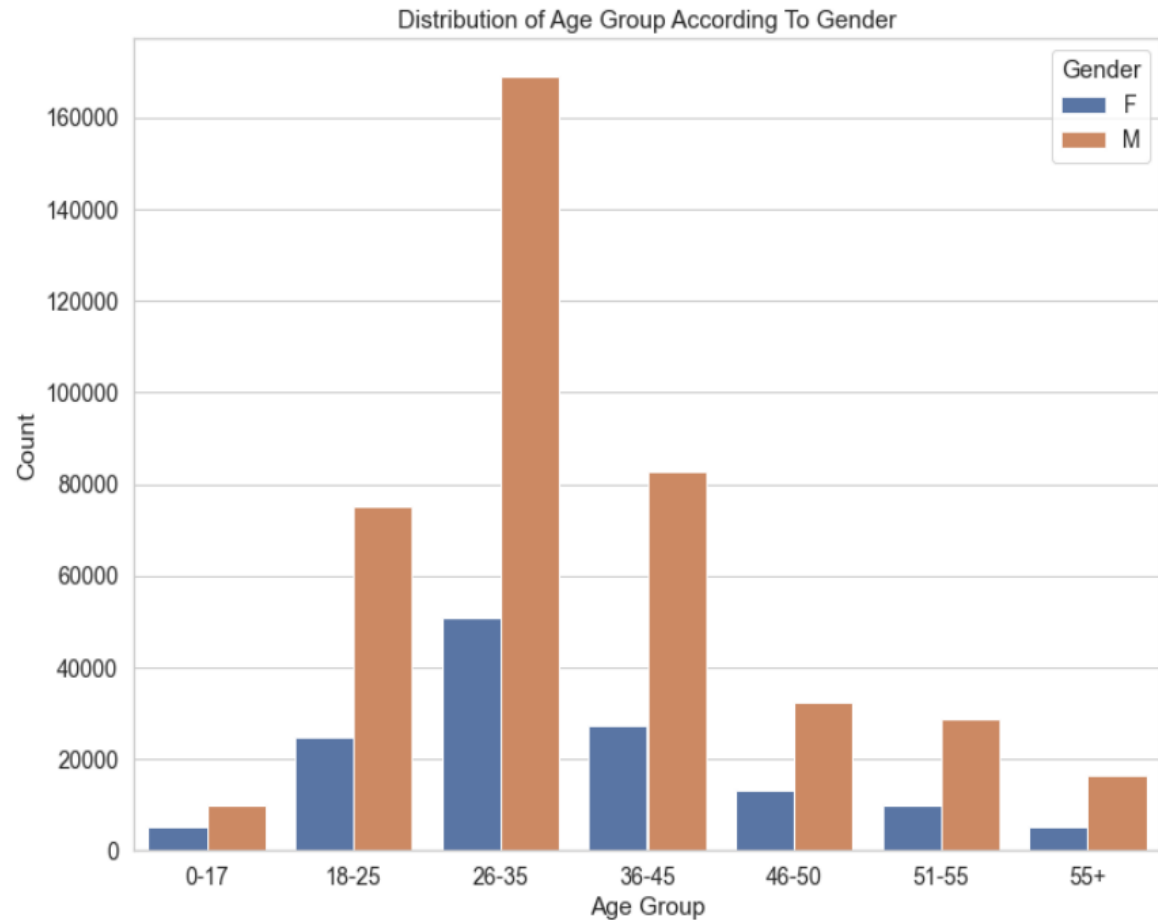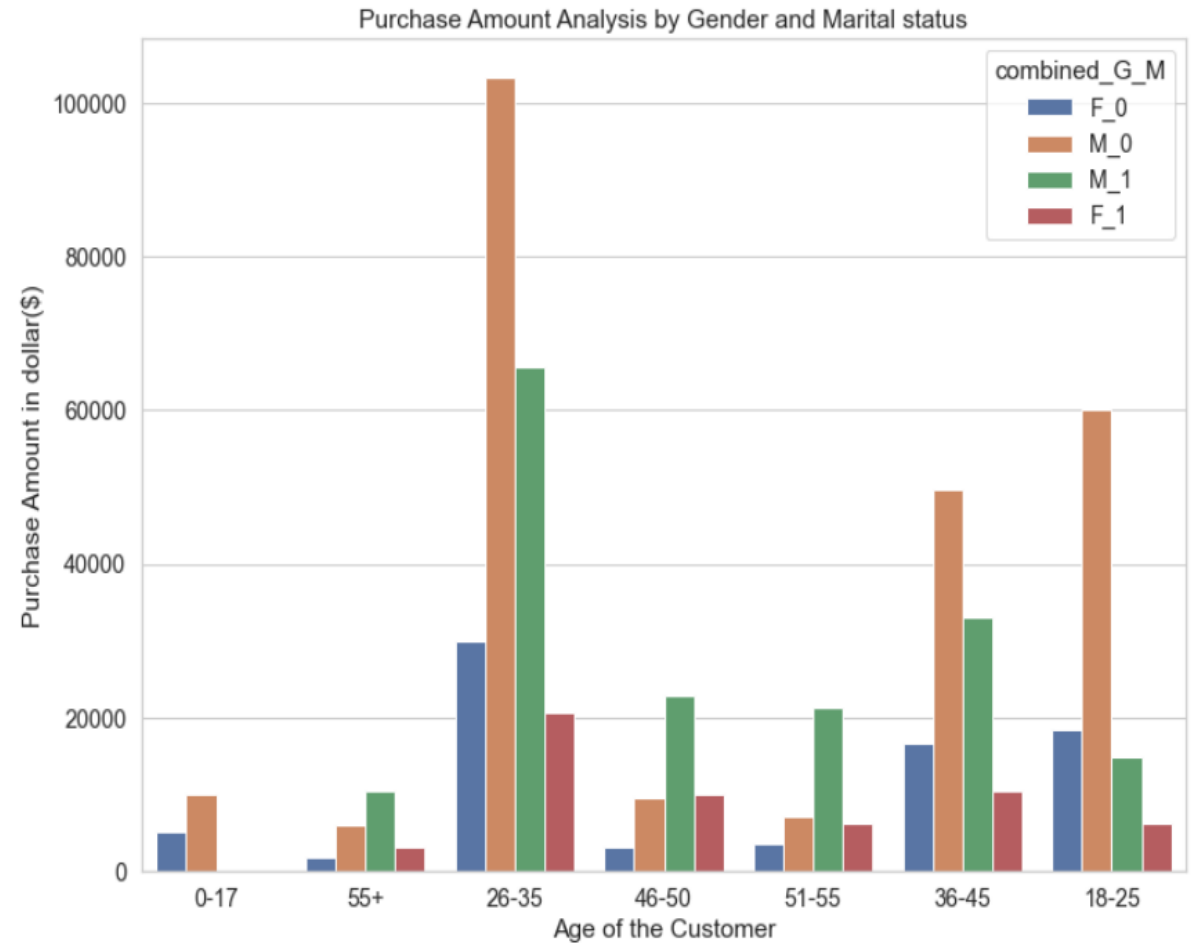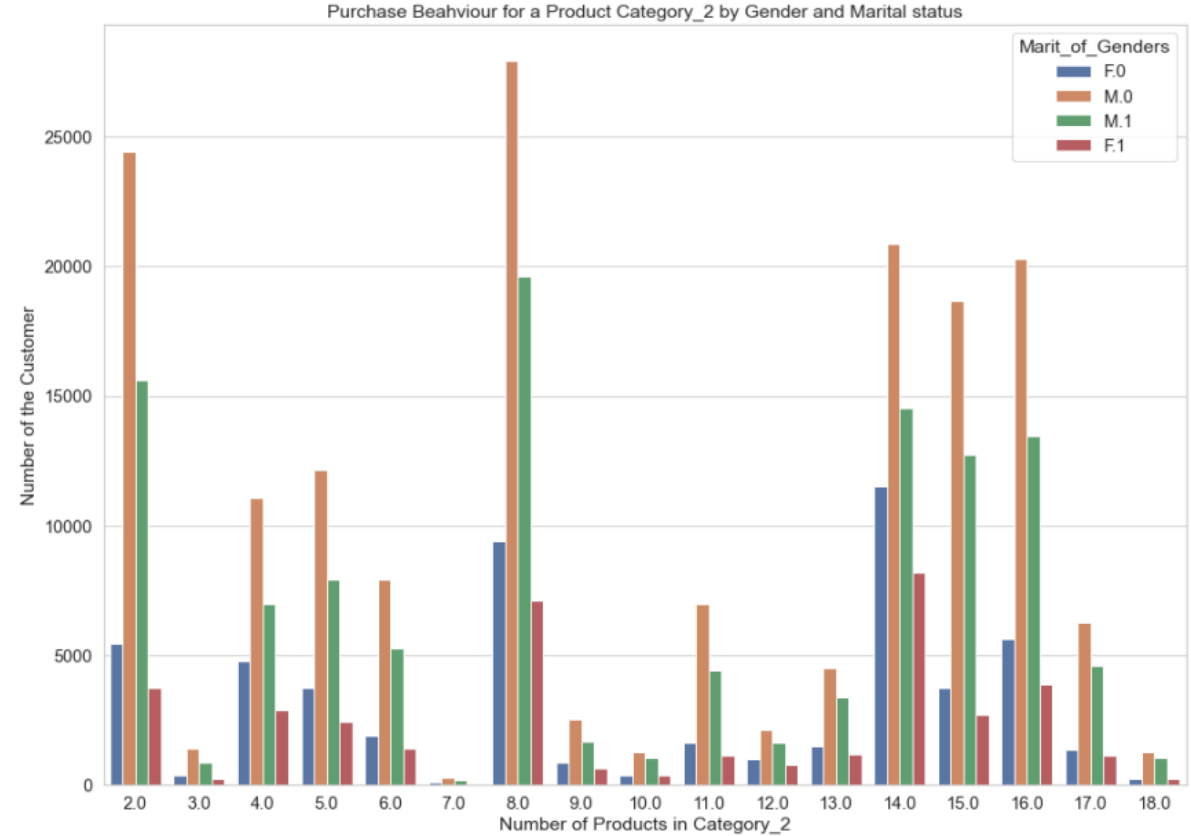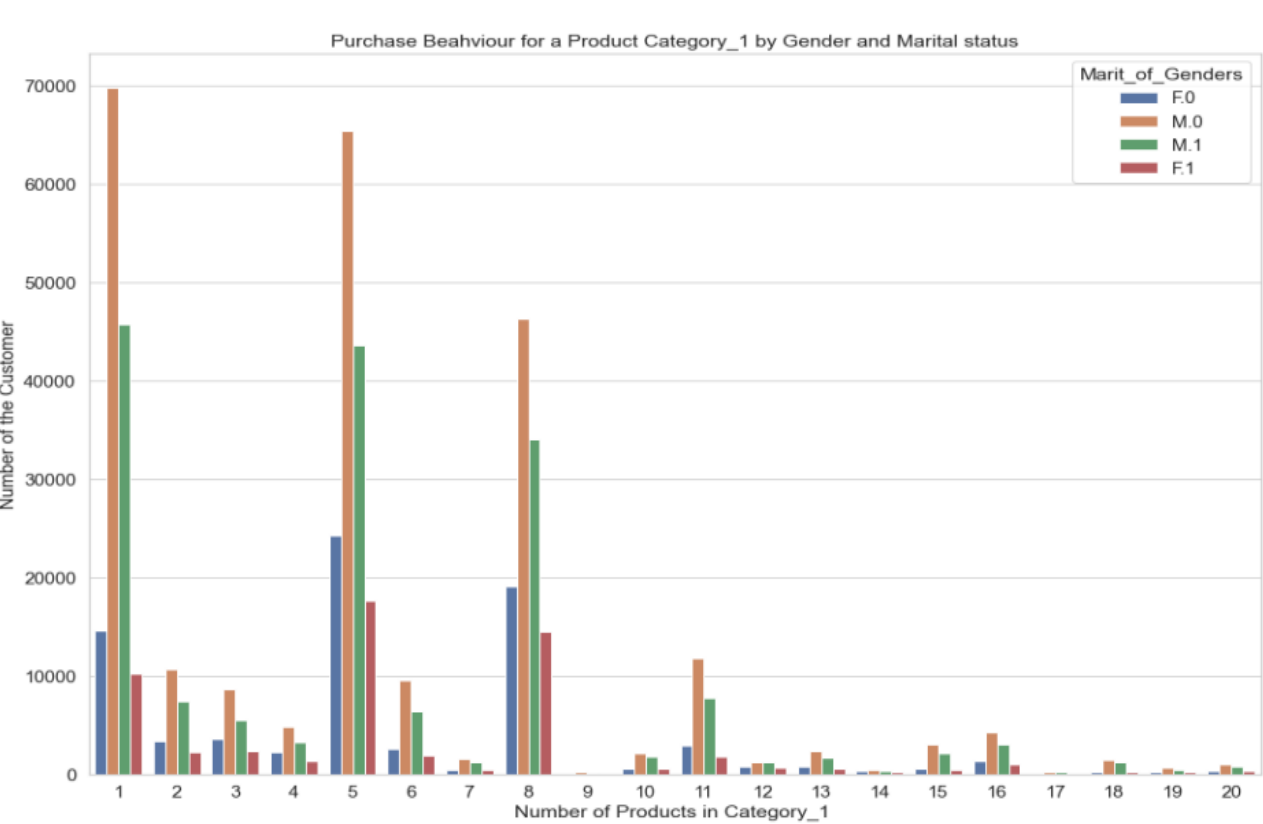# Purchase Amount Analysis By Age, Gender, and Material Status

Figure No. 5: Purchase amount over different age categories [2].

Purchase Amount By city category and stability

Purchase Behavior According to product category

Model:

I have applied linear regression and random forest regression because here have to find out the numerical values for our independent variable. I used the Sckit library which is widely used to apply different machine learning algorithms. So According to root mean square Error, Random forest has a better result.

Model Results based on RMSE:

Machine Learning Model	Root Mean Squared Error
Linear Regression	16056332.502767263
Random Forest Classifier	10609292.354180276

Conclusion:

- Men had more than 3 times more transactions than women in the given black Friday dataset but the purchase amount of both gender during the sale is almost equivalent.
- The people between age group 26-35 should be target customers for a retail company and keep in mind this fact they build their future strategy to increase their sales.
- Product numbers 1, 5, and 8 are popular products from product_category_1. So that company can manage their stocks and if possible then give discounts on that products to increase their overall profit.
- A company can focus on the most renowned products and have opportunities for their R&D department to improve the product and make it more customer-friendly.