

## Report - Data Visualization

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# 1. Introduction

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This project presents a data visualization dashboard designed to analyze and showcase key insights from the Black Friday dataset.

## 2. Data Analysis Task

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### 2.1 Objective:

The primary objective of the data analysis task for the Black Friday dataset is to gain insights into customer purchasing behavior and perform customer segmentation analysis.

### 2.2 Characteristics of the Dataset:

The Black Friday dataset comprises a wide range of variables, including customer demographics (such as age, gender, marital status, and city), product categories, purchase amounts, and more.

### 2.3 Analysis Tasks

#### 2.3.1 Customer Behavior Analysis by Product Category

The first analysis task involves examining customer purchasing behavior for different product categories.

Key objectives for this task include:

- 1. Gender Distribution: Analyzing the gender distribution of customers for specific product categories to understand any gender-specific preferences or trends.
- 2. Age Distribution: Exploring the age distribution of customers for different product categories to identify age-related patterns in purchasing behavior.
- 3. City Distribution: Examining the distribution of customers across different cities for specific product categories to identify any geographical variations or preferences in purchasing behavior.

2.3.2 Customer Segmentation Analysis

The second analysis task focuses on performing customer segmentation analysis to identify distinct consumer segments within the dataset.

Key objectives for this task include:

- 1. Gender and Marital Status Analysis across Different Age Groups: In this analysis task, we will focus on examining the gender proportions and marital status proportions within different age groups.
- 2. Age Proportions Analysis by Gender and City Categories: In this analysis task, we will analyze the age proportions of different gender and city categories.

3. My Designs for the Dashboard

The dashboard's title is "Black Friday Data Analysis Dashboard." It has been divided into two sections: "Customer Behavior Analysis by Product Category" and "Customer Segmentation Analysis".



### 3.1 Customer Behavior Analysis by Product Category

At the top, a bar chart visualizes the sales volume for each category.

Two pie charts represent the gender distribution and city category proportions for a specific category.

A line chart depicts the age distribution of customers who purchased products from that category.

When hovering over a specific product in the bar chart, the pie charts and line chart update accordingly.

### 3.2 Customer Segmentation Analysis

On the left section, a dropdown menu allows selecting age groups to view the corresponding gender proportions and marital status proportions.

On the right section, a dropdown menu allows selecting gender and city categories to view the corresponding age proportions.

## 4. Patterns Revealed in the Figures

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### 4.1 Customer Behavior Analysis by Product Category

By comparing the consumer profiles of Product 1 and Product 12 based on purchase volume, it was observed that the proportion of male buyers for Product 12 is significantly higher than that for Product 1. This pattern may indicate that Product 12 appeals more to male consumers or targets a specific male-oriented market segment. Further analysis could explore the reasons behind this gender preference, such as product features, marketing strategies, or cultural influences.

### 4.2 Customer Segmentation Analysis

By comparing the age distribution of consumers in City A and City C based on the number of individuals, it was found that the 26-35 age group has a significantly higher proportion in City A compared to City C. It could be indicative of a trend where this age group is more active in the consumer market or has a higher disposable income in City A compared to City C. Further investigation could explore the socio-economic factors, lifestyle preferences, or marketing strategies that contribute to this age demographic preference in City A.