Analysis of Consumer Buying Patterns on Black Friday

Project Proposal

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1 Personal Statement

I hope that this program will improve my business skills in solving business problems and allow me to analyze consumer buying patterns during Black Friday by leveraging data analysis, with the aim to uncover the underlying trends and preferences that drive consumer purchases.

2 Objectives

1. Analyze the propensity of different groups of consumers (age, gender, marital status, type of city, length of stay in the current city) to consume individual products.

2. Analyze the impact of Black Friday on individual product categories, customer behavior, and the impact of intrinsic product retail prices on customer purchasing behavior.

3. Use a multilevel modeling approach to assess differences in purchase amounts within and between customer segments and product categories. Evaluate potential interactions between customer demographics and product details that may influence purchase behavior.

3 Data

The data is from kaggle(https://www.kaggle.com/datasets/sdolezel/black-friday/data)

The data contains 233,599 samples and 11 variables. It includes user demographics (User ID, Gender, Age, Occupation, City Category , Years Stay In Current City, and Marital Status)
and product details(Product ID, Product Category1, Product Category2, and Product Category3).

4 Method

The centerpiece of my analysis will be the deployment of multilevel models to accommodate the hierarchical structure of the data—individual purchases nested within broader consumer profiles. Also, I will apply clustering to segment customers and use association rule mining to identify product patterns. Insights will be displayed on a user-friendly dashboard for easy data exploration.This technique will enable us to dissect the influence of demographics on buying behavior while accounting for the nested variability in product choices across different segments.

5 Reference

Javed Awan, Mazhar, Mohd Shafry Mohd Rahim, Haitham Nobanee, Awais Yasin, and Osamah Ibrahim Khalaf. "A big data approach to black friday sales." MJ Awan, M. Shafry, H. Nobanee, A. Yasin, OI Khalaf et al.," A big data approach to black friday sales," Intelligent Automation &Soft Computing 27, no. 3 (2021): 785-797.