

Customer Shopping Behavior Analysis

1. Project Overview

This project analyzes customer shopping behavior using transactional data from 3,900 purchases across various product categories.

The goal is to uncover insights into spending patterns, customer segments, product preferences, and subscription behavior to guide strategic business decisions.

2. Dataset Summary

- Rows: 3,900

- Columns: 18

Key Features:

- Customer demographics (Age, Gender, Location, Subscription Status)
- Purchase details (Item Purchased, Category, Purchase Amount, Season, Size, Color)
- Shopping behavior (Discount Applied, Promo Code Used, Previous Purchases, Frequency of Purchases, Review Rating, Shipping Type)

Missing Data: 37 values in Review Rating column

3. Exploratory Data Analysis using Python

- Data Loading: Imported with pandas.
- Initial Exploration: Checked structure with `.info()`, generated stats with `.describe()`.
- Missing Data Handling: Imputed missing ratings using median value per category.
- Column Standardization: Renamed columns to `snake_case`.
- Feature Engineering: Made age group bins and purchase frequency columns.
- Data Consistency: Dropped redundant `promo_code_used` column.
- Database Integration: Loaded cleaned data into PostgreSQL database.

4. Data Analysis (SQL Business Transactions)

Key Questions Answered:

1. Revenue by Gender
2. High-Spending Discount Users
3. Top 5 Products by Rating
4. Shipping Type Comparison
5. Subscribers vs. Non-Subscribers
6. Discount-Dependent Products
7. Customer Segmentation
8. Top 3 Products per Category
9. Repeat Buyers & Subscriptions
10. Revenue by Age Group

5. Dashboard in Power BI

- Interactive analysis of sales, customer segments, product rankings, and seasonality.
- Filter by demographic, shipping, and more.

6. Business Recommendations

- Boost subscriptions: Promote exclusive benefits.
- Launch loyalty program: Reward repeat buyers and loyal customers.
- Review discount policy: Balance sales and margins.
- Showcase top-rated products: Increase campaign impact.
- Targeted marketing: Aim for high-revenue age groups and express-shipping users.