



Customer Shopping Behavior Analysis

This project analyzes customer shopping behavior using transactional data from 3,900 purchases. Our goal is to uncover insights into spending patterns, customer segments, product preferences, and subscription behavior to guide strategic business decisions.



Project Overview: Unlocking Customer Insights

Data-Driven Decisions

Analyze 3,900 purchases to understand customer spending, segments, and preferences.

Strategic Guidance

Provide actionable insights to inform marketing, product development, and sales strategies.

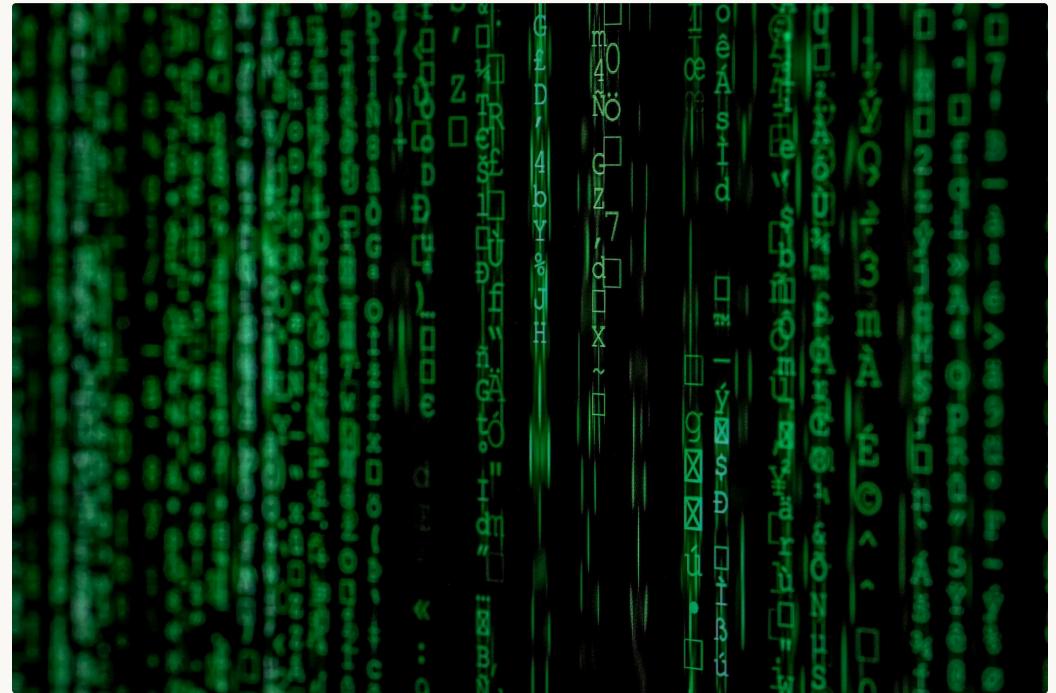
Key Areas of Focus

Spending patterns, customer segmentation, product popularity, and subscription impact.

Dataset Summary: A Comprehensive View

Our dataset comprises 3,900 rows and 18 columns, offering a rich source of information on customer behavior.

- **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 the 'Review Rating' column were identified and addressed during cleaning.

Exploratory Data Analysis (EDA) with Python

Our EDA process involved meticulous data preparation and cleaning using Python, ensuring data quality for subsequent analysis.

01

Data Loading & Exploration

Imported dataset with pandas, checked structure (`df.info()`) and summary statistics (`.describe()`).

02

Missing Data Handling

Imputed missing 'Review Rating' values using the median rating per product category.

03

Column Standardization

Renamed columns to snake_case for improved readability and consistency.

04

Feature Engineering

Created 'age_group' by binning ages and 'purchase_frequency_days' from purchase data.

05

Data Consistency & Integration

Verified discount/promo code usage, dropped 'promo_code_used', and loaded cleaned data into PostgreSQL.



SQL Analysis: Answering Key Business Questions

We leveraged PostgreSQL queries to address 10 critical business questions, focusing on revenue, customer segments, discounts, subscriptions, and product performance.



Revenue by Gender

Compared total revenue generated by male vs. female customers.



High-Spending Discount Users

Identified customers using discounts but spending above average.



Top 5 Products by Rating

Found products with the highest average review ratings.



SQL Analysis: Shipping, Subscriptions, and Discounts



Shipping Type Comparison

Analyzed average purchase amounts for Standard vs. Express shipping.



Subscribers vs. Non-Subscribers

Compared average spend and total revenue based on subscription status.



Discount-Dependent Products

Identified products with the highest percentage of discounted purchases.

SQL Analysis: Customer Segmentation & Product Performance

Customer Segmentation

Customers were classified into New, Returning, and Loyal segments based on their purchase history.



Top 3 Products per Category

We identified the most purchased products within each category to understand product popularity.



SQL Analysis: Repeat Buyers & Age Group Revenue

1

Repeat Buyers & Subscriptions

Investigated if customers with more than 5 purchases are more likely to subscribe.

2

Revenue by Age Group

Calculated the total revenue contribution from each age group to identify key demographics.

These analyses provide a deeper understanding of customer loyalty and demographic impact on revenue.



Interactive Dashboard in Power BI

An interactive dashboard was developed in Power BI to visually present the key insights derived from our analysis, making complex data accessible and actionable.

The dashboard allows stakeholders to explore data dynamically and gain a comprehensive understanding of customer shopping behavior.



Business Recommendations: Driving Growth



Boost Subscriptions

Promote exclusive benefits and incentives to increase subscriber base.



Customer Loyalty Programs

Implement reward systems to encourage repeat purchases and foster loyalty.



Review Discount Policy

Optimize discount strategies to balance sales growth with profit margins.



Product Positioning

Highlight top-rated and best-selling products in marketing campaigns.



Targeted Marketing

Focus efforts on high-revenue age groups and users preferring express shipping.