



Customer Shopping Behavior Analysis

Uncovering insights from transactional data to guide strategic business decisions.

Project Overview

1

Data Source

Transactional data from 3,900 purchases.

2

Goal

Analyze spending patterns, segments, preferences, and subscription behavior.

3

Impact

Inform strategic business decisions.



Dataset Summary

Key Metrics

- Rows: 3,900
- Columns: 18
- Missing Data: 37 values in Review Rating

Key Features

- Customer demographics (Age, Gender, Location, Subscription)
- Purchase details (Item, Category, Amount, Season, Size, Color)
- Shopping behavior (Discount, Promo, Previous Purchases, Frequency, Review, Shipping)

Exploratory Data Analysis (Python)

01

Data Loading

Imported dataset using ``pandas``.

02

Initial Exploration

Checked structure (``df.info()``) and summary statistics (``df.describe()``).

03

Missing Data Handling

Imputed ``Review Rating`` using median by category.

04

Column Standardization

Renamed columns to ``snake_case``.

Feature Engineering & Integration

Engineered Features

- Age Group (binned ages)
- Purchase Frequency (days)

Database Integration

Connected Python to MySQL.

Loaded cleaned data for SQL analysis.



Data Analysis using SQL: Key Insights



Revenue by Gender

Male: \$157,890

Female: \$75,191



Top 5 Products by Rating

Gloves (3.86), Sandals (3.84), Boots (3.82), Hat (3.8), Skirt (3.78)



Shipping Type Comparison

Express: \$60.48 avg.

Standard: \$58.46 avg.

SQL Analysis: Customer & Product Focus

High-Spending Discount Users

Identified customers using discounts but spending above average.

Example IDs: 2, 3, 4, 7, 9...

Discount-Dependent Products

Top 5 products with highest discount rate:

- Hat (50%)
- Sneakers (49.66%)
- Coat (49.07%)





Subscription & Segmentation

Subscribers vs. Non-Subscribers

- Subscribers: 1,053 customers, \$62,645 revenue
- Non-Subscribers: 2,847 customers, \$170,436 revenue

Customer Segmentation

- Loyal: 3,116
- Returning: 701
- New: 83

Product Category Deep Dive



Accessories

Jewelry,
Sunglasses, Belt



Clothing

Blouse, Pants,
Shirt



Footwear

Sandals, Shoes,
Sneakers



Outerwear

Jacket, Coat

Revenue by Age Group & Repeat Buyers

Revenue by Age Group

- Young Adult: \$62,143
- Middle-aged: \$59,197
- Adult: \$55,978
- Senior: \$55,763

Repeat Buyers & Subscriptions

Customers with >5 purchases:

- Subscribed: 958
- Not Subscribed: 2,518

