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 & Dataset Summary

Project Goal

Uncover insights into spending patterns, customer segments, product preferences, and subscription behavior.

Dataset Size

3,900 rows and 18 columns of transactional data.

Key Features

Demographics, purchase details, shopping behavior, and review ratings.

Missing Data

37 missing values in the Review Rating column, handled during cleaning.

Exploratory Data Analysis with Python

01

Data Loading & Exploration

Imported dataset using pandas; checked structure and summary statistics.

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.

04

Feature Engineering

Created 'age_group' and 'purchase_frequency_days' columns.

05
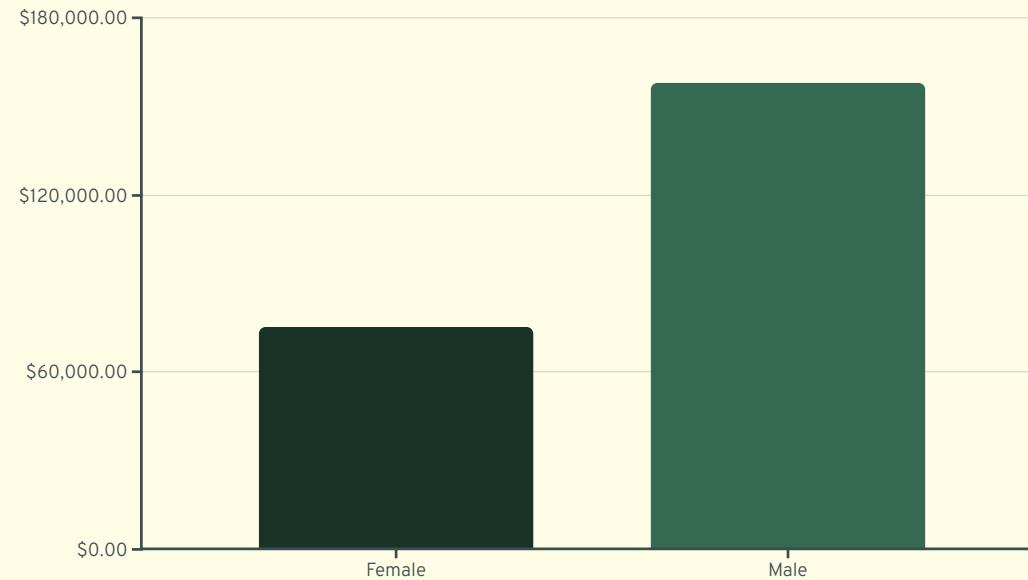
Database Integration

Loaded cleaned DataFrame into PostgreSQL for SQL analysis.

Revenue Insights: Gender & Shipping
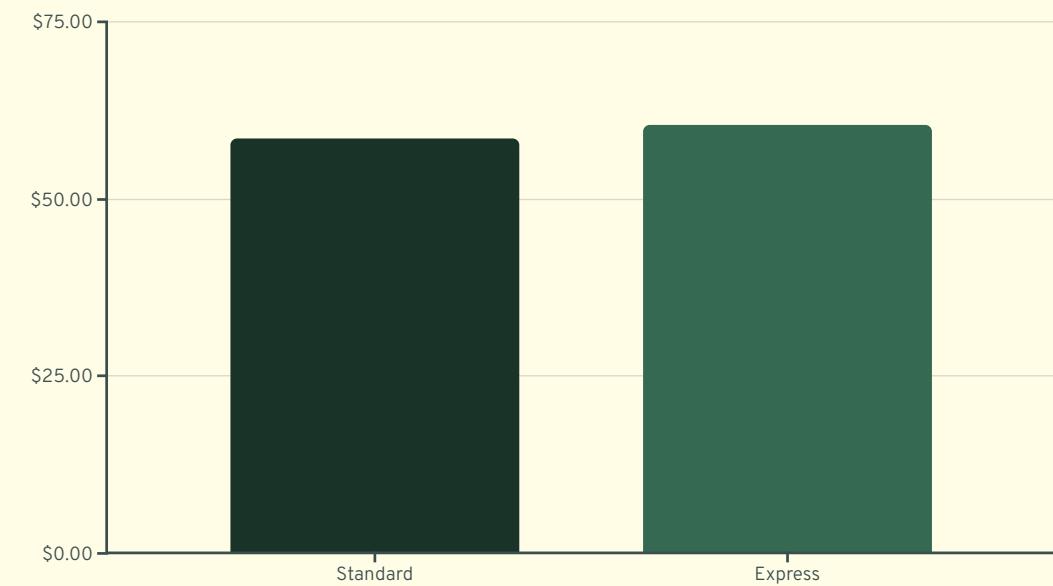
Revenue by Gender

Male customers generated significantly more revenue.

Shipping Type Comparison

Express shipping users have a slightly higher average purchase amount.

Made with GAMMA

High-Spending Discount Users

We identified 839 customers who used discounts but still spent above the average purchase amount. These customers represent a valuable segment for targeted promotions.

2	64
3	73
4	90
7	85
9	97
12	68

Product Performance & Discount Dependency

Top 5 Products by Rating

- Gloves: 3.86
- Sandals: 3.84
- Boots: 3.82
- Hat: 3.80
- Skirt: 3.78

Discount-Dependent Products

- Hat: 50.00%
- Sneakers: 49.66%
- Coat: 49.07%
- Sweater: 48.17%
- Pants: 47.37%

Customer Segmentation & Subscription Behavior

Loyal Customers

3116 customers, indicating strong retention.

New Customers

83 customers, opportunities for onboarding.

Returning Customers

701 customers, potential for increased engagement.

Customers with more than 5 previous purchases are more likely to subscribe (958 subscribers vs. 2518 non-subscribers).

Top Products by Category

Identifying the most purchased items within each category helps optimize inventory and marketing efforts.

1	Accessories	Jewelry	171
1	Clothing	Blouse	171
1	Footwear	Sandals	160
1	Outerwear	Jacket	163

Gender

Female   Male

Category
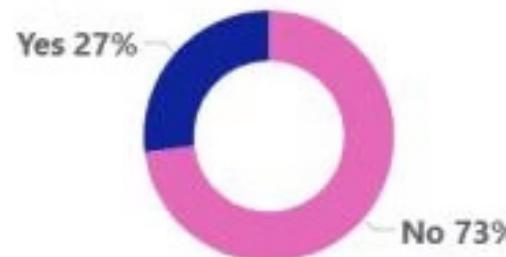
Accessories

Clothing

Footwear

Outerwear

% of Customers by Subscription Status

Yes 27%

No 73%

Revenue by Category

100K

50K

Sales by Category

2,000

1,500

1,000

500

Power BI Dashboard: Key Metrics

3.9K
Customers

Total number of unique customers.

$59.76
Avg. Purchase
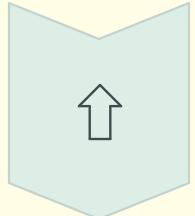
Average amount spent per purchase.

3.75
Avg. Review

Overall average review rating.

Strategic Business Recommendations

Boost Subscriptions

Promote exclusive benefits to increase subscriber base.

Customer Loyalty Programs

Reward repeat buyers to foster loyalty and move them to the "Loyal" segment.

Review Discount Policy

Balance sales boosts with margin control for sustainable growth.

Targeted Marketing

Focus efforts on high-revenue age groups and express-shipping users for maximum impact.