

Customer Shopping Behavior Analysis

Uncovering insights from transactional data to guide strategic business decisions.



Project Overview

Goal

Analyze 3,900 purchases for spending patterns, segments, and preferences.

Objective

Optimize operations, reduce costs, and improve forecasting.

Outcome

Guide strategic business decisions with data-driven insights.

Dataset Summary

3,900

Rows

Total purchases analyzed.

18

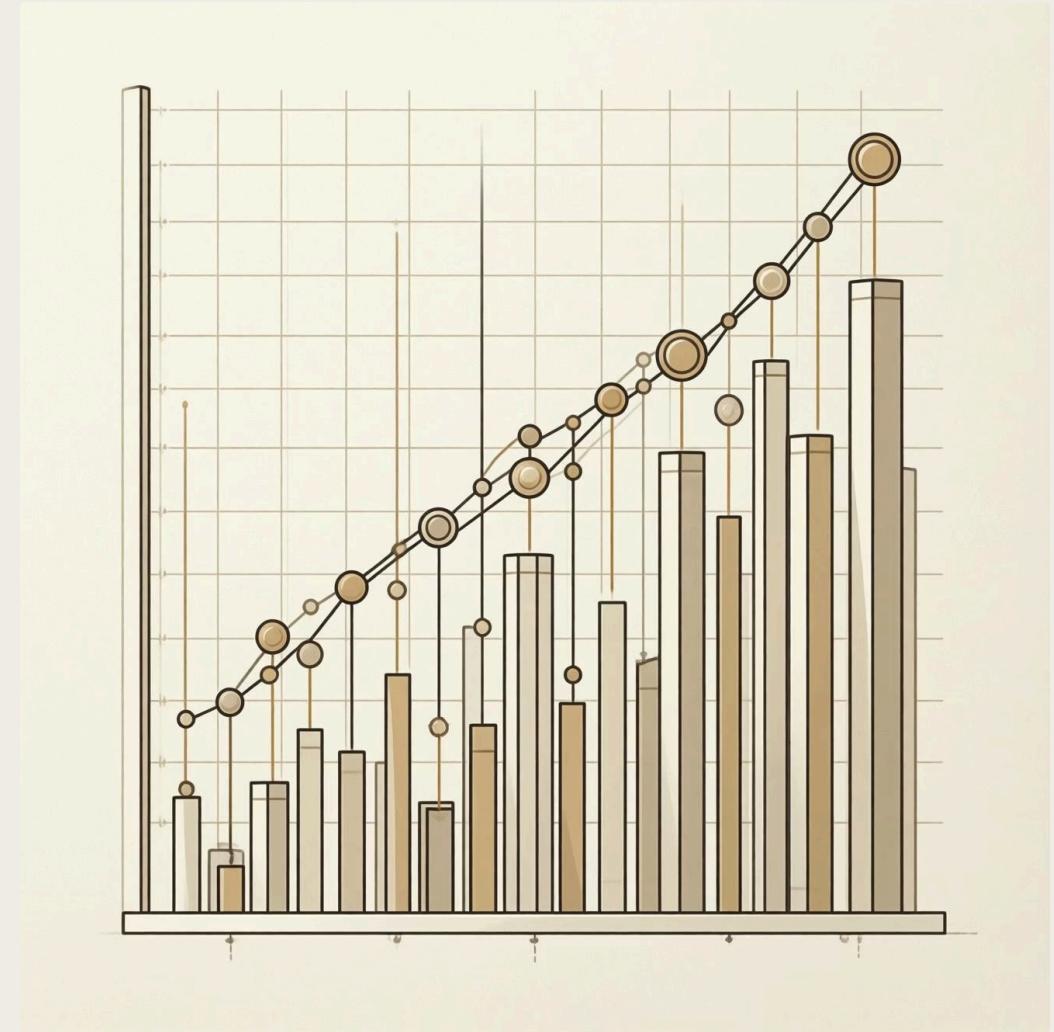
Columns

Key features for analysis.

37

Missing Values

In Review Rating column.



Key Features



Customer Demographics

Age, Gender, Location,
Subscription Status.



Purchase Details

Item, Category, Amount,
Season, Size, Color.



Shopping Behavior

Discount, Promo,
Previous Purchases,
Frequency, Review,
Shipping.

Exploratory Data Analysis (Python)

01

Data Loading & Exploration

Imported with pandas, checked structure and summary statistics.

02

Missing Data Handling

Imputed Review Rating with median per category.

03

Column Standardization

Renamed to snake_case for readability.

04

Feature Engineering

Created age_group and purchase_frequency_days.

05

Database Integration

Loaded cleaned data into PostgreSQL for SQL analysis.

Data Analysis (SQL)

Key Business Questions

- Revenue by Gender
- High-Spending Discount Users
- Top 5 Products by Rating
- Shipping Type Comparison
- Subscribers vs. Non-Subscribers



SQL Insights



Revenue by Gender

Male: \$157,890, Female: \$75,191.



Top Products by Rating

Gloves (3.86), Sandals (3.84), Boots (3.82).



Shipping Type

Express avg. spend: \$60.48, Standard: \$58.46.



Subscribers vs. Non-Subscribers

Non-subscribers generate more total revenue.

Customer Segmentation & Product Insights

Customer Segments

- Loyal: 3116
- Returning: 701
- New: 83

Repeat Buyers & Subscriptions

958 repeat buyers are subscribers.

Top Products per Category

- Accessories: Jewelry, Sunglasses, Belt
- Clothing: Blouse, Pants, Shirt
- Footwear: Sandals, Shoes, Sneakers
- Outerwear: Jacket, Coat

Power BI Dashboard

Interactive dashboard visualizing key customer behavior metrics and trends.

Customer Behavior Dashboard

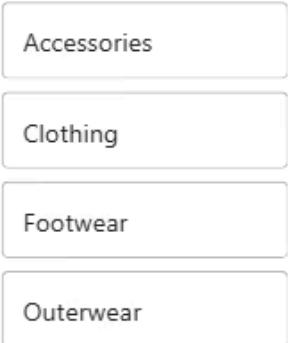
Subscription Status



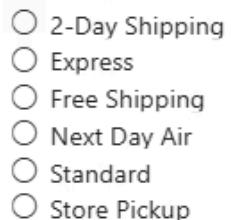
Gender



Category



Shipping Type



3.9K

Number of Customers

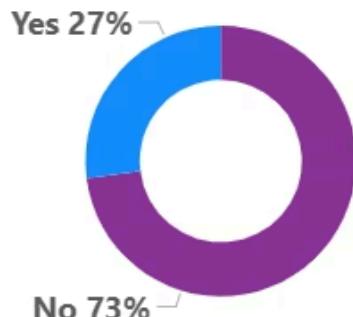
\$59.76

Average Purchase Amount

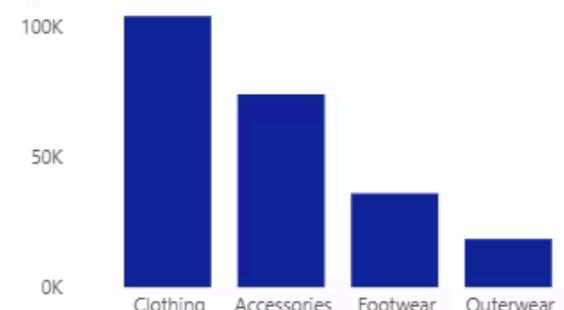
3.75

Average Review Rating

% of Customer by Subscription Status



Revenue by Category



Sales by Category



Revenue by Age Group



Sales by Age Group



Business Recommendations

→ Boost Subscriptions

Promote exclusive benefits to increase subscriber base.

→ Customer Loyalty Programs

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

→ Review Discount Policy

Balance sales boosts with margin control for sustainable growth.

→ Targeted Marketing

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