



Customer Shopping Behavior Analysis

Uncovering trends to drive sales, engagement, and loyalty

The Challenge

Business Problem

Retail company noticed shifting purchase patterns

Need to understand what drives consumer decisions

Our Approach

- Analyze 3,900 customer records
- 18 key features tracked
- Identify actionable insights



Our Tech Stack

01

Data Cleaning & EDA

Python (Pandas) for initial processing and feature engineering

02

Advanced Analysis

PostgreSQL for deep-dive queries and business insights

03

Visualization

Power BI for interactive dashboard creation

04

Documentation

GitHub for version control and portfolio showcase

Data Preparation



Column Formatting

Standardized to snake_case
for SQL consistency



Missing Values

Imputed using median rating
per product category

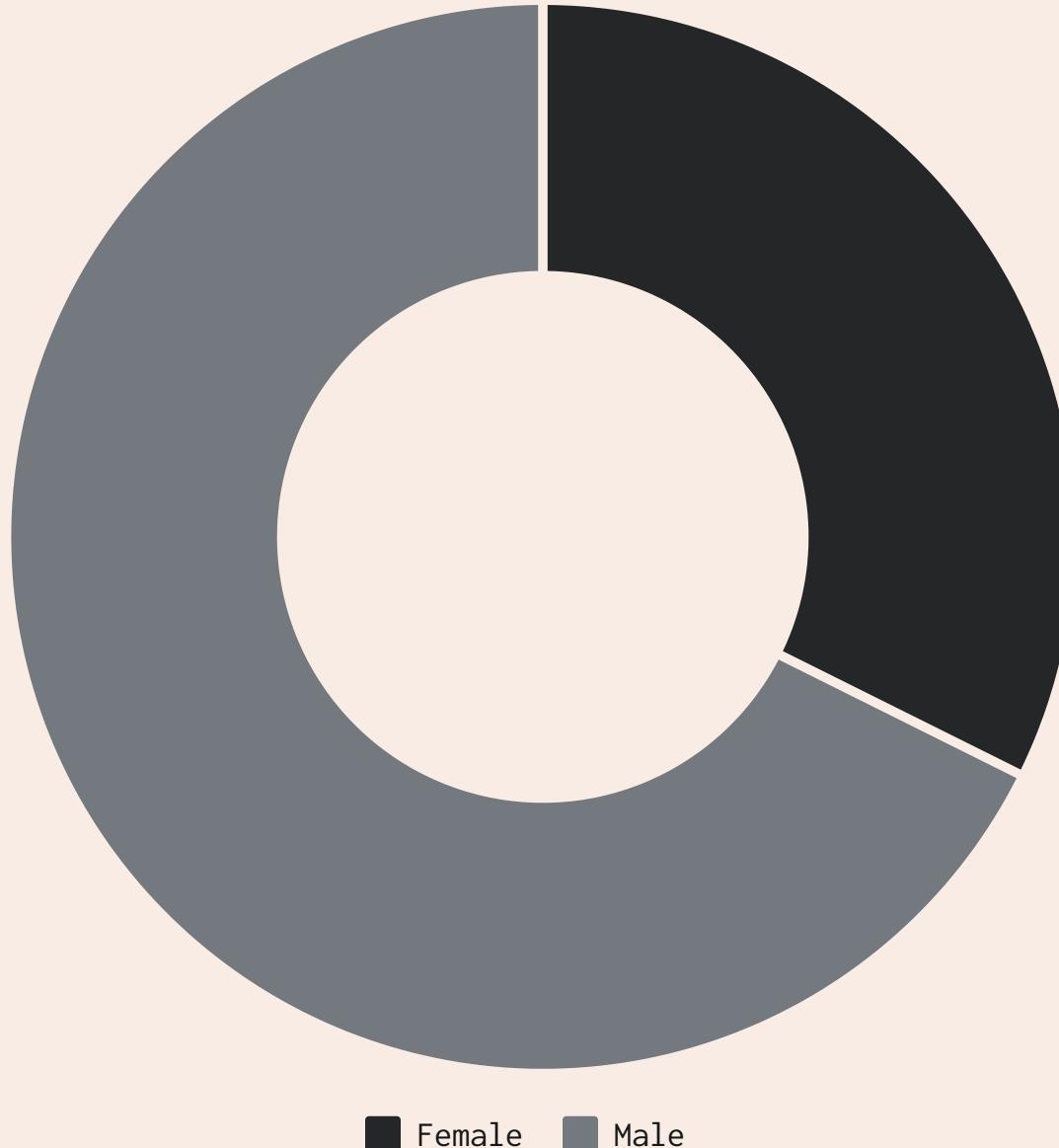


Feature Engineering

Created age_group and purchase_frequency_days columns



Revenue by Gender



Key Insight: Revenue nearly equal between genders. Both segments critical for business success.

High-Value Discount Users

customer_id	purchase_amount
2	64
3	73
4	90
7	85
9	97
12	68
13	72
16	81
20	90

Rows: 839 | Query complete 00:00:00.182

Premium Opportunity

Customers using discounts but spending above average

Discounts drive large purchases

Target with premium offers + high-value discounts

Top-Rated Products

3.86

Gloves

Highest rated

3.84

Sandals

3.82

Boots

3.80

Hat

3.78

Skirt

Highlight these products in marketing campaigns to build brand reputation

Shipping & Subscription Insights

Express Shipping Premium

Express: \$60.48 avg purchase

Standard: \$58.46 avg purchase

Speed seekers spend more

Subscription Paradox

Non-subscribers: \$170,436 total revenue

Subscribers: \$62,645 total revenue

Program needs revision

Customer Behavior Dashboard

100
Customers

Subscription Status

\$59.89

Average Purchase Amount

Revenue by Category

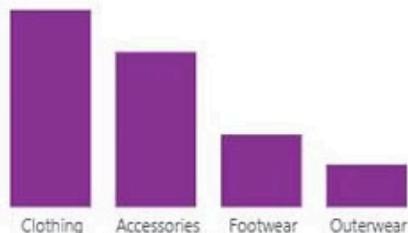
20K

15K

10K

5K

0K



Revenue by Age Group

Young Adult

Middle-aged

Adult

Senior

50

100

150

OK

Interactive Dashboard

Real-time KPIs: Total Customers, Average Purchase, Review Ratings

Segmentation by Gender, Subscription, Shipping, Category

Strategic Recommendations



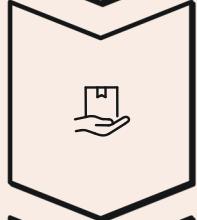
Revamp Subscription Program

Introduce tiered benefits and exclusive premium access



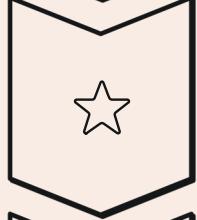
Target High-Value Discount Users

Personalized time-sensitive promotions on premium items



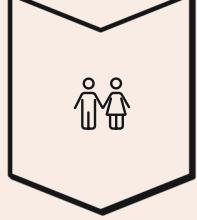
Promote Express Shipping

Free express for high-value orders to boost AOV



Leverage Top Products

Use highest-rated items as brand pillars in marketing



Age-Specific Marketing

Tailor offerings to most valuable demographics