

Customer Shopping Behavior Analysis

Uncovering insights from transactional data to drive strategic business decisions.

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Project Overview

Goal

Analyze 3,900 purchases to understand spending patterns, customer segments, product preferences, and subscription behavior.

Data Source

Transactional data from various product categories.

Objective

Guide strategic business decisions with actionable insights.



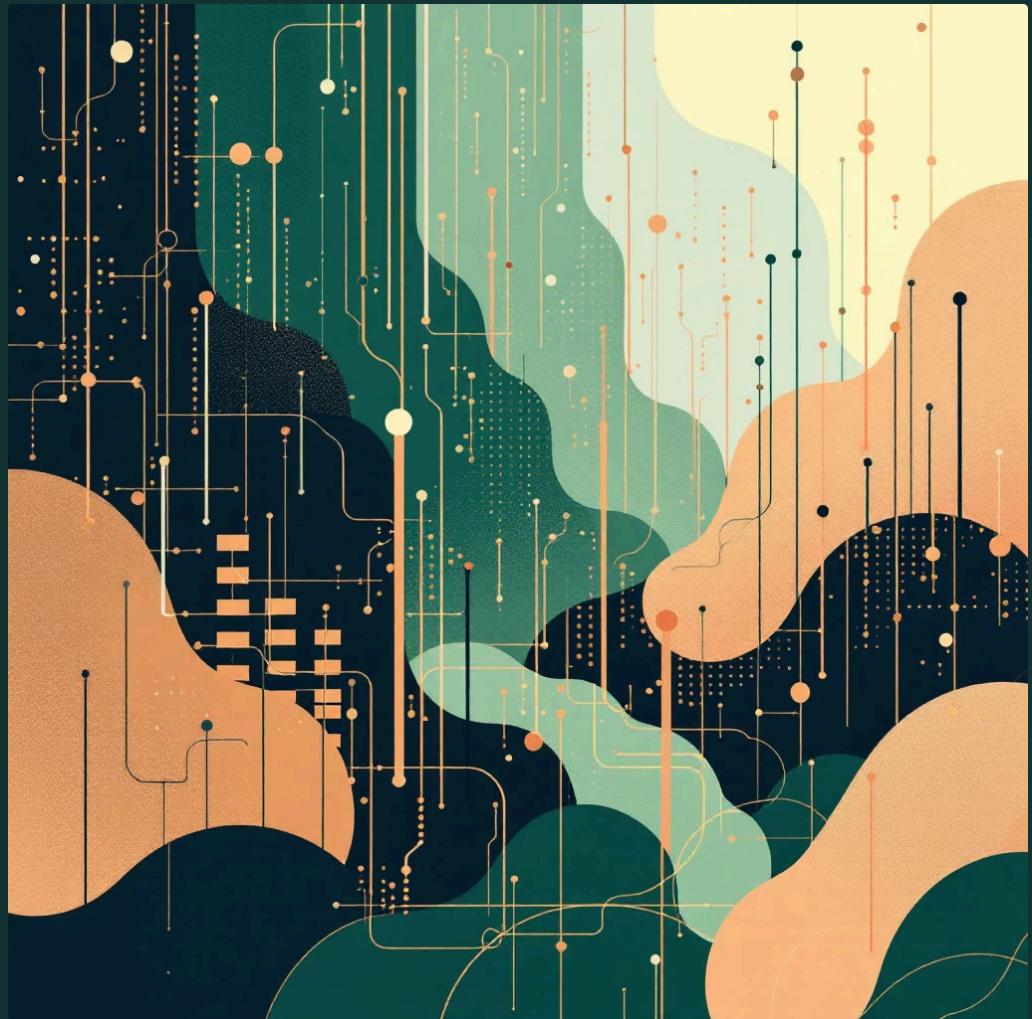
Dataset Summary

Rows: 3,900

Columns: 18

Key Features:

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



Missing Data: 37 values in Review Rating column.



Exploratory Data Analysis (Python)

01

Data Loading & Exploration

Imported dataset with pandas; used `df.info()` and `.describe()` for initial checks.

02

Data Cleaning

Imputed missing 'Review Rating' values using median per category.

03

Feature Engineering

Created 'age_group' and 'purchase_frequency_days' columns.

04

Database Integration

Loaded cleaned data into PostgreSQL for SQL analysis.



Data Analysis (SQL)

Structured analysis in PostgreSQL answered key business questions.

1

Revenue by Gender

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

2

High-Spending Discount Users

Identified 839 customers spending above average with discounts.

3

Top 5 Products by Rating

Gloves (3.86), Sandals (3.84), Boots (3.82), Hat (3.80), Skirt (3.78).

4

Shipping Type Comparison

Express: \$60.48 avg purchase; Standard: \$58.46 avg purchase.

Subscription & Discount Insights

Subscribers vs. Non-Subscribers

Yes	1053	59.49	62645
No	2847	59.87	170436

Discount-Dependent Products

Top 5 products with highest percentage of discounted purchases:

- Hat (50%)
- Sneakers (49.66%)
- Coat (49.07%)
- Sweater (48.17%)
- Pants (47.37%)

Customer Segmentation & Loyalty

Customer Segments

Loyal	3116
New	83
Returning	701

Repeat Buyers & Subscriptions

Customers with >5 purchases are more likely to subscribe:

Yes	958
No	2518

Top Products & Revenue by Age

Top Products per Category

- **Accessories:** Jewelry (171), Sunglasses (161), Belt (161)
- **Clothing:** Blouse (171), Pants (171), Shirt (169)
- **Footwear:** Sandals (160), Shoes (150), Sneakers (145)
- **Outerwear:** Jacket (163), Coat (161)

Revenue by Age Group

Young Adult	62143
Middle-aged	59197
Adult	55978
Senior	55763

Business Recommendations

→ Boost Subscriptions

Promote exclusive benefits to increase subscriber base.

→ Customer Loyalty Programs

Reward repeat buyers to foster loyalty and retention.

→ Review Discount Policy

Optimize discounts to balance sales 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 express-shipping users.