



DATA
modern technology

Customer Shopping Behavior Analysis

Uncovering insights from transactional data to guide strategic business decisions.

Project Overview

Goal

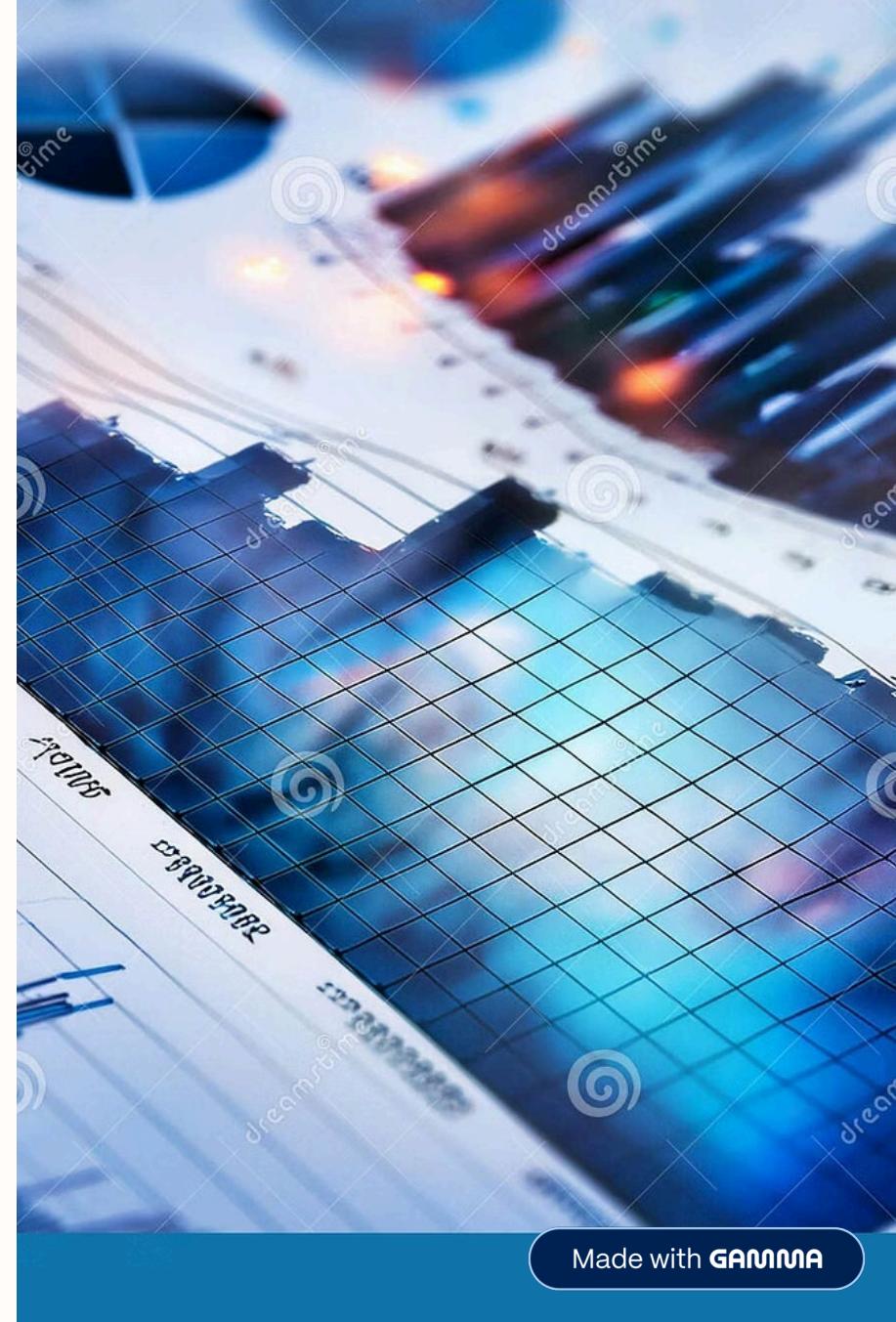
Optimize operations, reduce costs, and improve forecasting.

Data

3,900 purchases across various product categories.

Insights

Spending patterns, customer segments, product preferences, subscription behavior.





Dataset Summary

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)

Data Overview

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

Exploratory Data Analysis (Python)

01

Data Loading & Exploration

Imported dataset, checked structure and summary statistics.

02

Missing Data Handling

Imputed missing Review Ratings using median per category.

03

Column Standardization

Renamed columns to snake_case for readability.

04

Feature Engineering

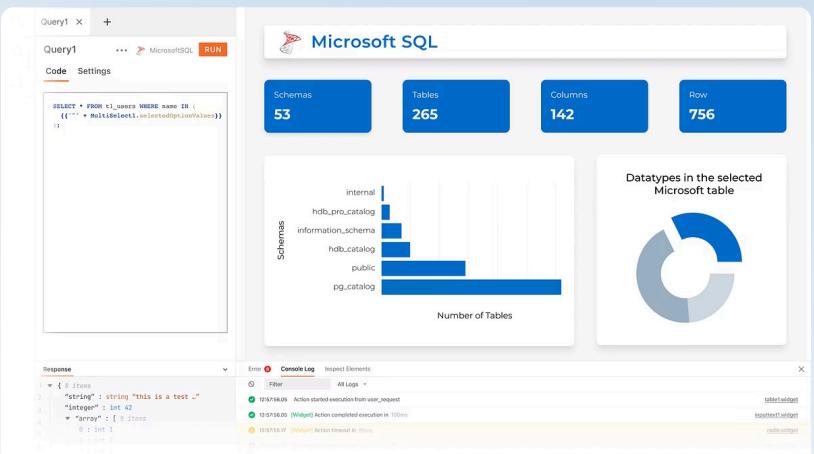
Created age_group and purchase_frequency_days.

05

Database Integration

Loaded cleaned data into PostgreSQL for SQL analysis.

Data Analysis (SQL)



1

Revenue by Gender

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

2

High-Spending Discount Users

839 customers identified.

3

Top 5 Products by Rating

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

4

Shipping Type Comparison

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

SQL Insights: Subscriptions & Discounts

Subscribers vs. Non-Subscribers

Yes	1053	59.49	62645.00
No	2847	59.87	170436.00

Discount-Dependent Products

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

Customer Segmentation

Loyal

3,116 Customers

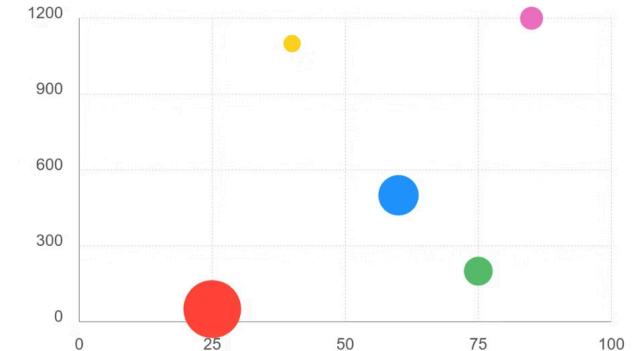
Returning

701 Customers

New

83 Customers

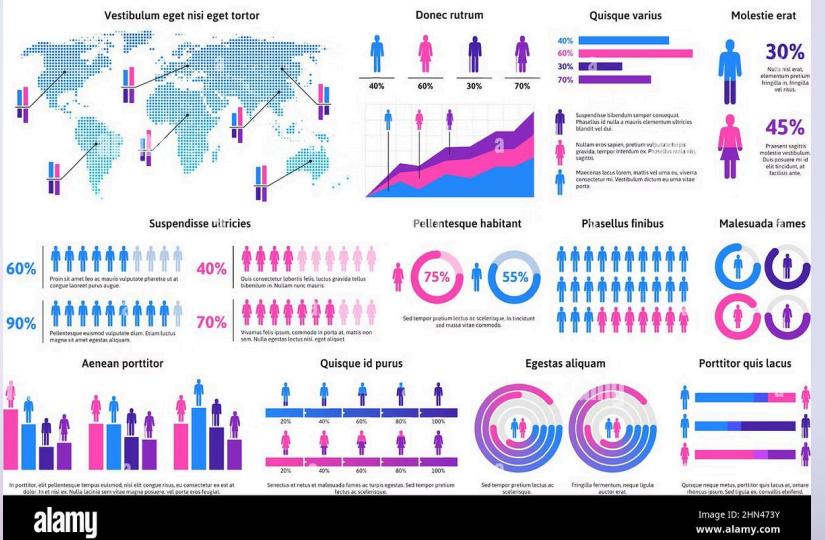
Customer Segmentation:
Engagement vs. Value Analysis



Top Products by Category

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

DEMOGRAPHICS INFOGRAPHIC



Repeat Buyers & Revenue by Age

Repeat Buyers & Subscriptions

Customers with >5 purchases:

- No Subscription: 2,518
- Yes Subscription: 958

Revenue by Age Group

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

Business Recommendations

→ **Boost Subscriptions**

Promote exclusive benefits.

→ **Customer Loyalty Programs**

Reward repeat buyers.

→ **Review Discount Policy**

Balance sales with margin control.

→ **Product Positioning**

Highlight top-rated products.

→ **Targeted Marketing**

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