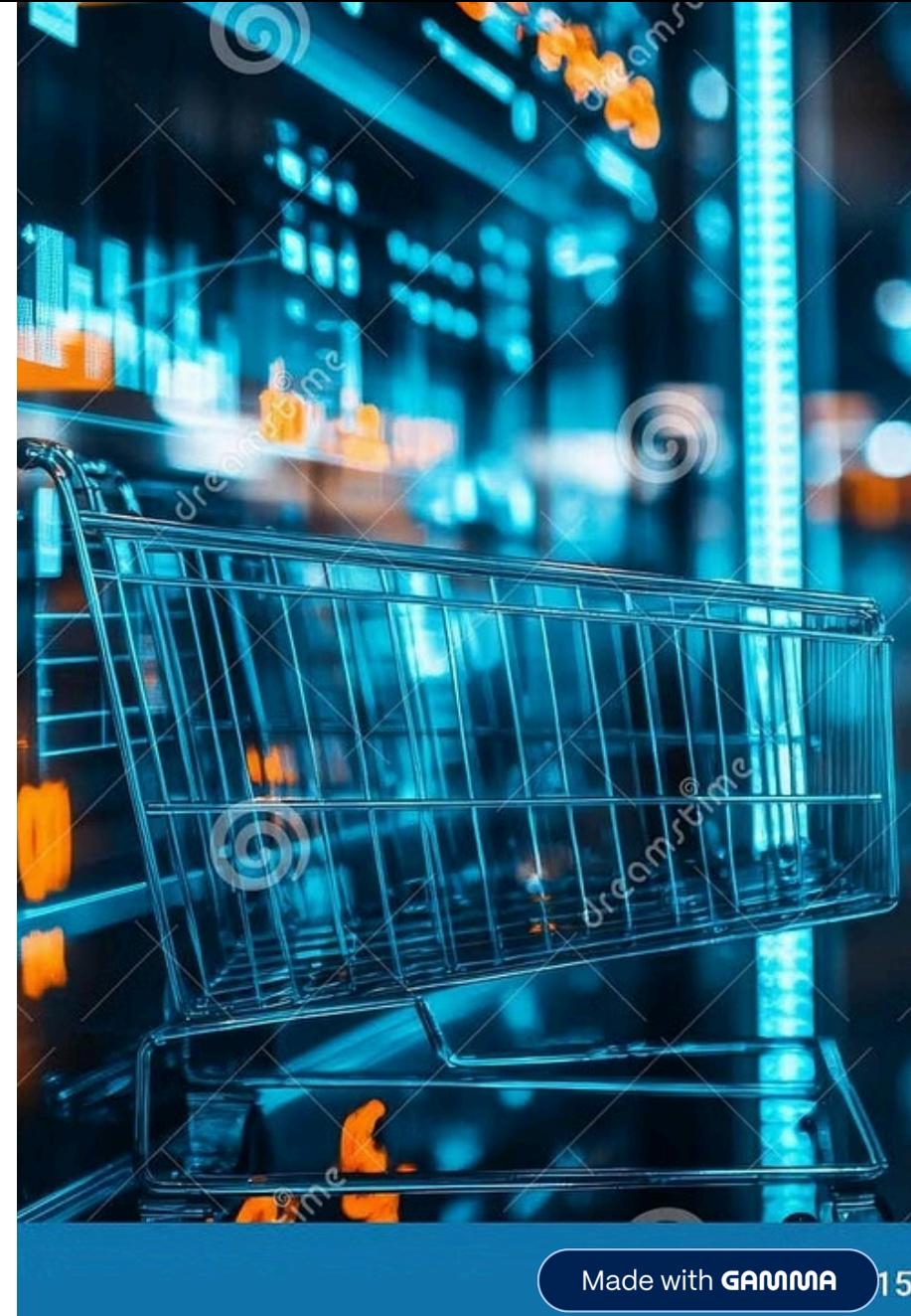


# Customer Shopping Behavior Analysis

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# Project Overview & Dataset Summary

## Project Goal

Analyze 3,900 purchases to identify insights into spending habits, segmentation, product preferences, and subscription trends for strategic business decisions.

## Dataset Details

3,900 rows, 18 columns. Includes demographics, purchase info (item, category, amount, season, size, color), and behavioral indicators (discount, promo, past purchases, frequency, review, shipping).

## Key Attributes

Customer demographics, purchase details, and behavioral indicators like discount usage and review ratings.

# Exploratory Data Analysis (Python)

01

## Data Preparation

Loaded dataset with pandas, checked structure with `df.info()` and `.describe()`.

02

## Missing Data

Filled 37 missing 'Review Rating' entries using the median for each product category.

03

## Standardization

Updated all column names to snake\_case for clarity and consistency.

04

## Feature Engineering

Generated 'age\_group' and 'purchase\_frequency\_days' features.

05

## Consistency & Integration

Removed redundant 'promo\_code\_used' and integrated cleaned data into PostgreSQL for SQL analysis.

# SQL Data Analysis: Key Business Insights

1

## Revenue by Gender

Compared total revenue from male vs. female customers.

2

## High-Spending Discount Users

Identified customers using discounts but spending above average.

3

## Top 5 Products by Rating

Found products with the highest average review ratings.

4

## Shipping Type Comparison

Compared average purchase amounts for Standard vs. Express shipping.

5

## Subscribers vs. Non-Subscribers

Analyzed average spend and total revenue across subscription statuses.

# SQL Data Analysis: Product & Customer Focus

1

## Discount-Dependent Products

Identified 5 products with the highest percentage of discounted purchases.

2

## Customer Segmentation

Classified customers into New, Returning, and Loyal segments.

3

## Top 3 Products per Category

Listed the most purchased products within each category.

4

## Repeat Buyers & Subscriptions

Determined if customers with >5 purchases are more likely to subscribe.

5

## Revenue by Age Group

Calculated total revenue contribution from each age group.

# Revenue by Gender & Shipping Type

## Revenue by Gender

Female	75191
Male	157890

Male customers generated significantly more revenue.

## Shipping Type Comparison

Standard	58.46
Express	60.48

Express shipping correlates with slightly higher average purchases.

# Top Products & Customer Segments

## Top 5 Products by Rating

Gloves	3.86
Sandals	3.84
Boots	3.82
Hat	3.80
Skirt	3.78

## Customer Segmentation

Loyal	3116
New	83
Returning	701

# Subscription Status & Age Group Revenue

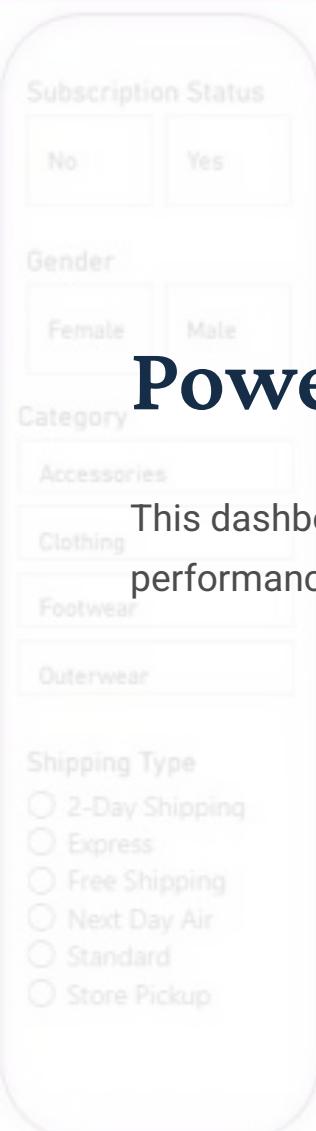
## Subscribers vs. Non-Subscribers

Yes	1053	59.49	62645.00
No	2847	59.87	170436.00

## Revenue by Age Group

Young Adult	62143
Middle-aged	59197
Adult	55978
Senior	55763

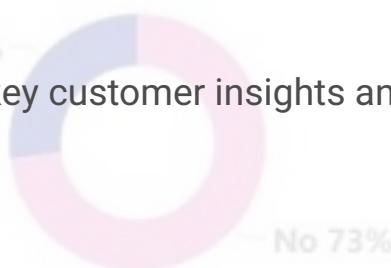
# Customer Behavior Dashboard



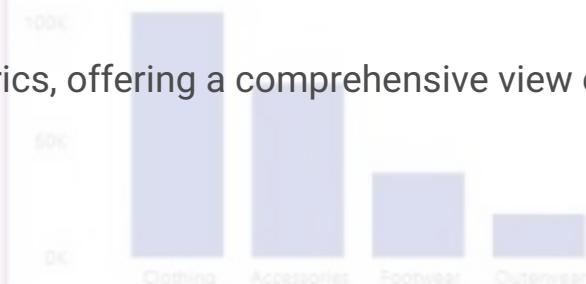
## Power BI Dashboard

Yes 27%

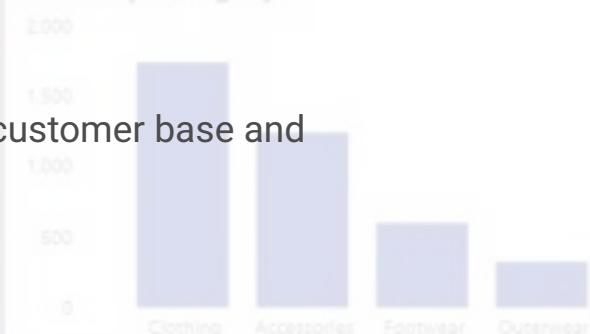
This dashboard provides key customer insights and metrics, offering a comprehensive view of our customer base and performance indicators.



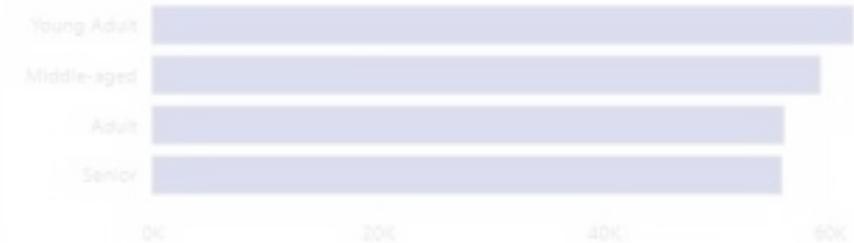
Revenue by Category



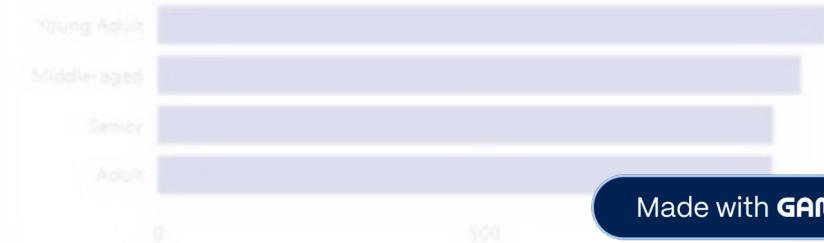
Sales by Category



Revenue by Age Group



Sales by Age Group



# Business Recommendations

## → Increase Subscriptions

Market exclusive perks more effectively to encourage customer subscriptions.

## → Enhance Loyalty Programs

Offer rewards to frequent shoppers to foster loyalty.

## → Optimize Discount Strategy

Reassess discount usage to balance sales and profit margins.

## → Improve Product Positioning

Feature top-rated and best-selling items prominently in marketing.

## → Implement Targeted Marketing

Direct promotions towards high-spending age groups and express shipping customers.

# Thank You