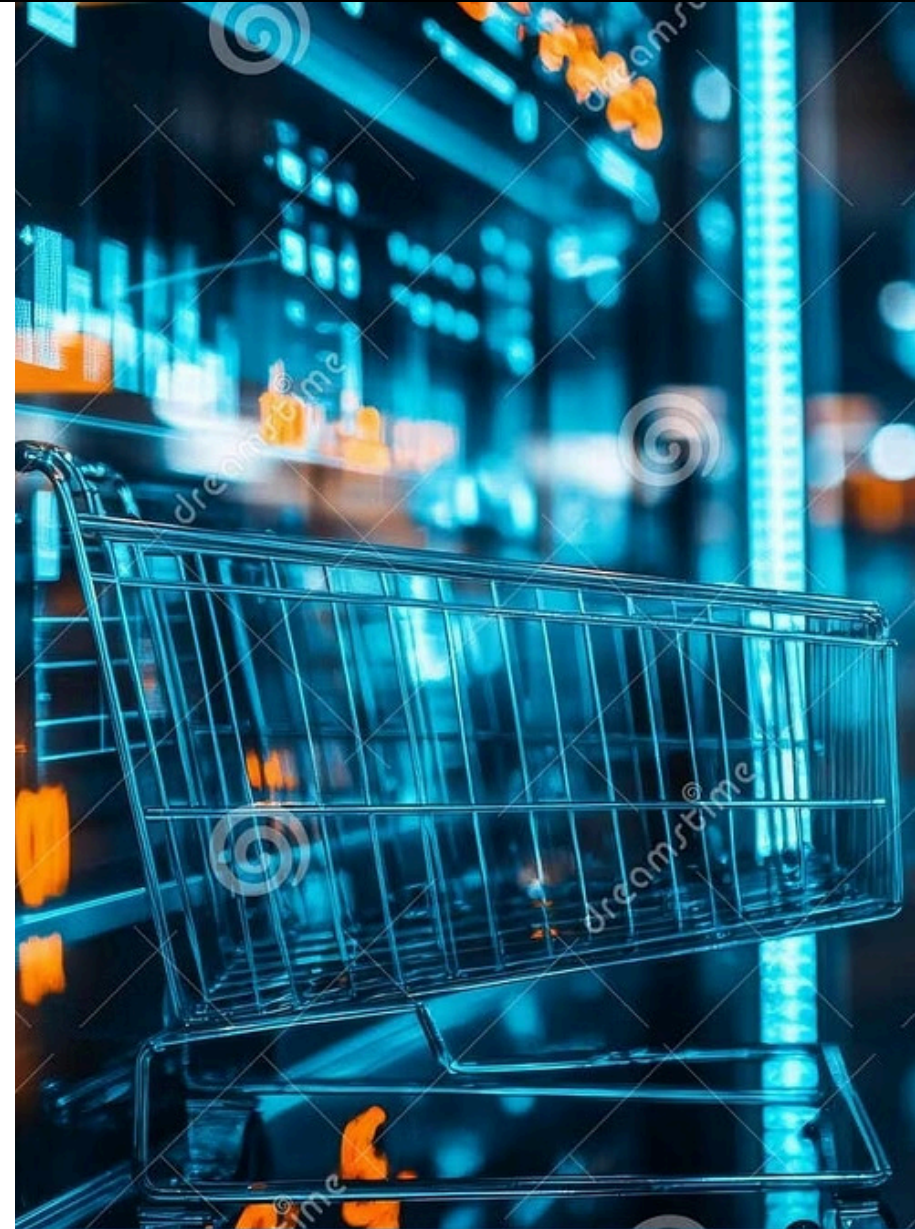


Customer Shopping Behavior Analysis

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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

Subscription Status

No

Yes

Gender

Female

Male

Category

Accessories

Clothing

Footwear

Outerwear

Shipping Type

☐ 2-Day Shipping

☐ Express

☐ Free Shipping

☐ Next Day Air

☐ Standard

☐ Store Pickup

3.9K

Number of Customers

\$59.76

Average Purchase Amount

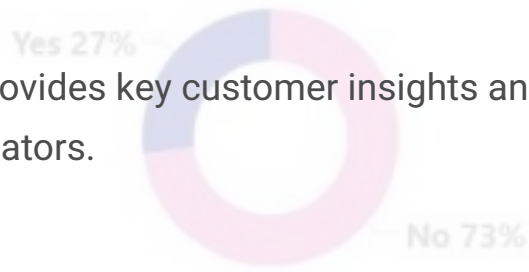
3.75

Average Review Rating

Power BI Dashboard

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

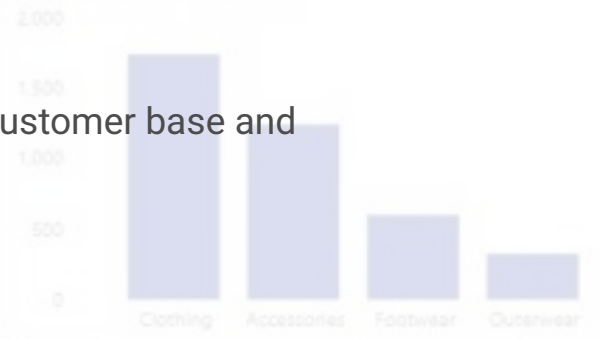
Customer Subscription Status



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