



# Customer Shopping Behavior Analysis

Understanding how customers shop to increase sales, improve satisfaction, and build lasting loyalty through data-driven insights.

# The Business Problem



A major retailer noticed shifting buying patterns across age groups, product types, and shopping channels. They needed to understand what truly drives purchases—discounts, reviews, seasons, or payment preferences.

**Core Question:** How can customer shopping data reveal trends to improve engagement and inform smarter marketing decisions?

# Our Four-Phase Approach



## Data Cleaning

Python-powered preparation to fix errors and handle missing values



## SQL Analysis

Structured queries to uncover customer patterns and loyalty insights



## Dashboard Creation

Interactive Power BI visuals for actionable business intelligence



## Insights Report

Clear recommendations to drive strategic decisions

# Dataset Overview

**3.9K**

## Total Purchases

Transaction records analyzed

**18**

## Data Features

Customer and purchase attributes

## Key Data Categories

- **Customer Details:** Age, gender, location, subscription status
- **Purchase Info:** Product category, amount, season, size, color
- **Behavior Metrics:** Discounts, promo codes, frequency, ratings, shipping



# Data Preparation Process



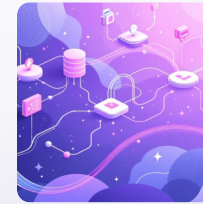
## Handling Missing Data

Found 37 missing review ratings. Filled gaps using median ratings per product category to maintain accuracy.



## Feature Engineering

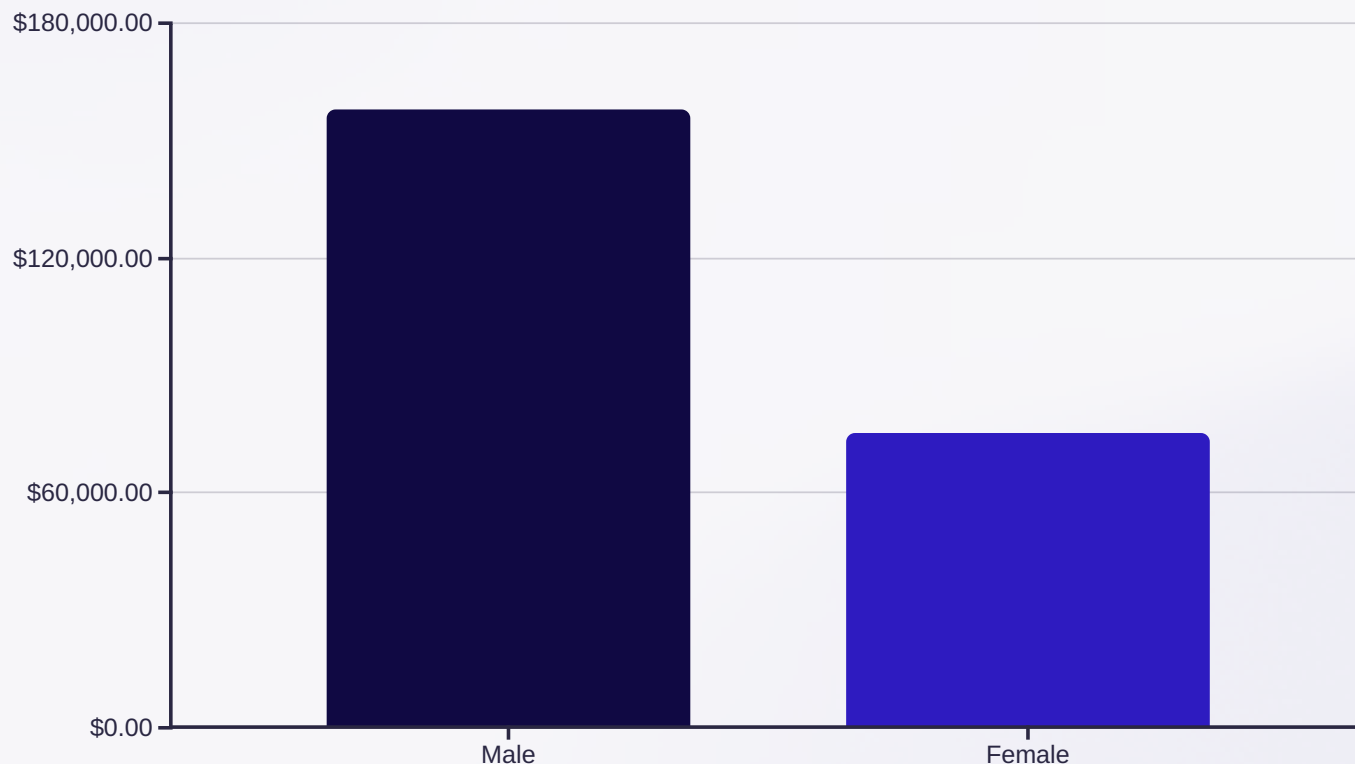
Created age\_group categories (Young Adult, Adult, Middle-age, Senior) and purchase\_frequency\_days for better analysis.



## Database Integration

Connected Python to MySQL and uploaded cleaned dataset for structured SQL analysis.

# Key Customer Insights



## Revenue by Gender

Male customers generate 68% of total revenue (\$157,890 vs \$75,191), representing a significant opportunity to better engage female shoppers.

## Shipping Preferences

Express shipping users spend slightly more on average (\$60.48) compared to Standard (\$58.46), indicating willingness to pay for convenience.



# Customer Segmentation Analysis

## Three-Tier Customer Base

Segmented 3,900 customers by purchase history to enable targeted marketing strategies.



### Loyal

3,116 customers with frequent purchases

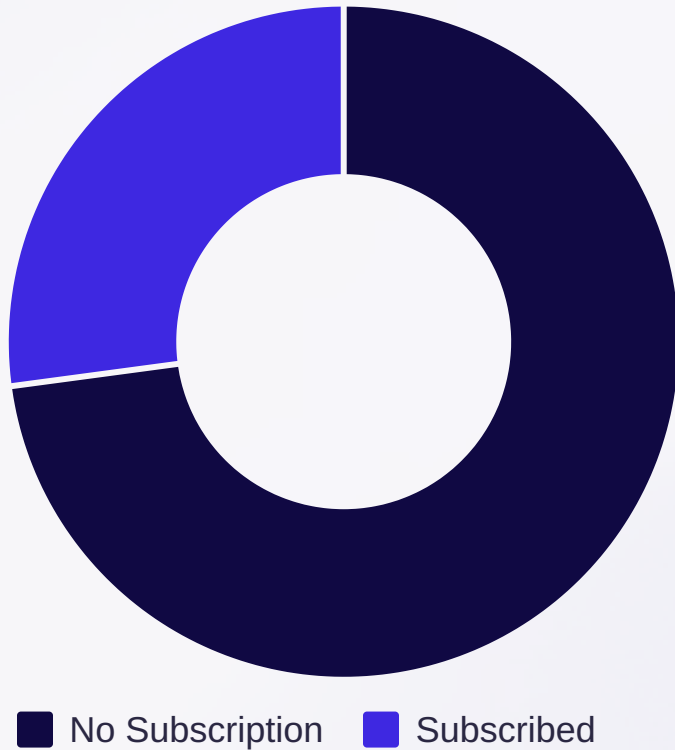
### Returning

701 customers with moderate activity

### New

83 customers with few purchases

# Subscription Impact



## Untapped Subscription Potential

Only 27% of customers are subscribed, yet they contribute \$62,645 in revenue with similar average spending (\$59.49 vs \$59.87).

**Opportunity:** Converting more customers to subscriptions could significantly boost repeat purchases and lifetime value.



# Strategic Action Plan

1

## Boost Subscriptions

Offer exclusive benefits like special discounts, early product access, and free shipping to increase the 27% subscription rate.

2

## Strengthen Loyalty Programs

Reward repeat customers with points and cashback to move them from "Returning" to "Loyal" segments.

3

## Optimize Discount Strategy

Balance promotional offers with profitability. Some products show 50% discount dependency—review pricing strategy.

4

## Target High-Value Segments

Focus marketing on Young Adults (highest revenue: \$62,143) and express shipping users who demonstrate higher spending.



# Key Takeaways

## Data-Driven Growth

Analysis revealed critical patterns in age, discounts, subscriptions, and ratings that directly impact sales performance.

## Customer Value Identified

Segmentation uncovered high-value customers and popular products, enabling precise targeting strategies.

## Revenue Opportunities

Strategic recommendations can improve marketing effectiveness, increase loyalty, and drive sustainable revenue growth.

# Conclusion

This customer shopping behavior analysis demonstrates the power of data-driven decision-making in retail. By understanding purchase patterns, customer segments, and key drivers of spending, the retailer can implement targeted strategies to increase revenue, improve customer satisfaction, and build long-term loyalty. The insights uncovered—from subscription opportunities to gender-based engagement gaps—provide a clear roadmap for optimizing marketing efforts and maximizing customer lifetime value.