Customer Engagement Analytics

E-commerce dataset insights

Project Overview

Dataset Scale

3,900 purchase records analyzed across 18 dimensions

Core Focus

Customer behavior, spending patterns, and growth opportunities

01

Identify Segments

Key customer groups and behaviors

02

Analyze Products

High-value items and top categories

03

Drive Strategy

Data-driven sales decisions

Made with GAMMA

Dataset Architecture

Demographics

Age, Gender, Location, Subscription Status

Purchase Details

Item, Category, Season, Size, Color, Amount, Discounts

Behavioral Metrics

Previous Purchases, Frequency, Review Ratings

3.9K

Total Records

18

Data Columns

37

Nulls Imputed

Data Preparation Pipeline

Load & Explore

Pandas import, structure review, summary stats
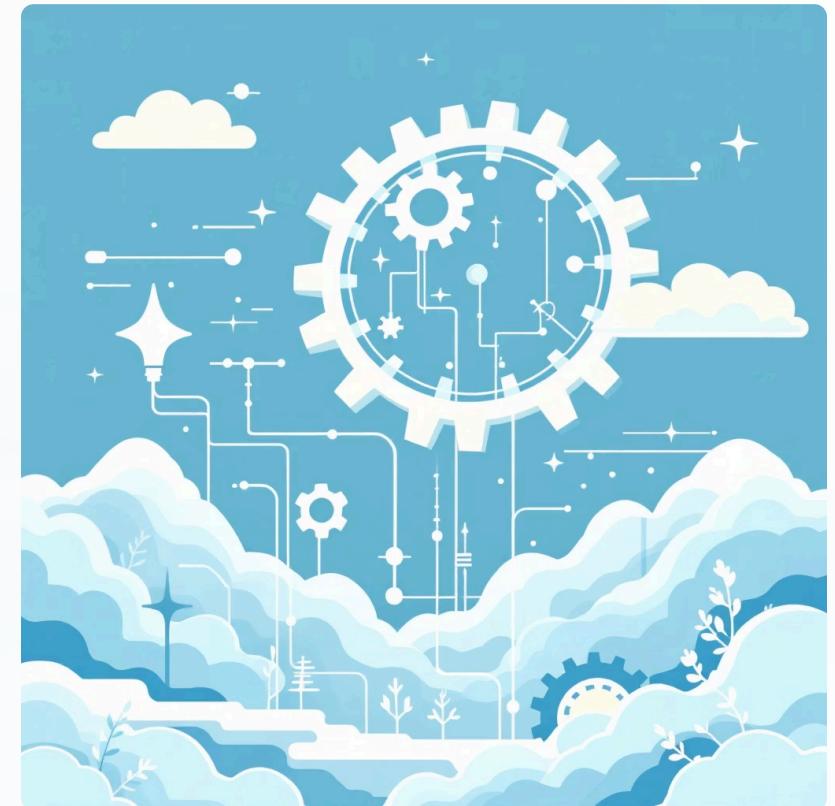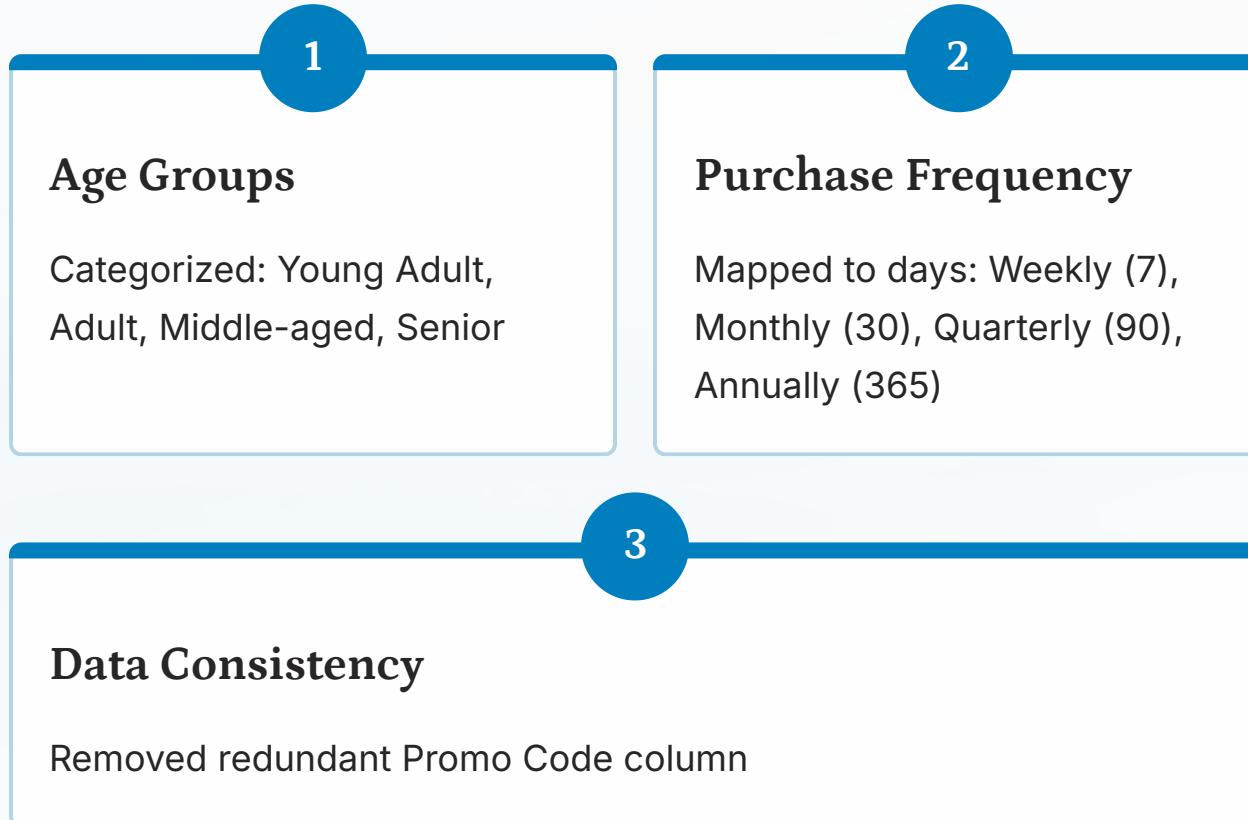
Clean & Transform

Median imputation, snake_case columns, feature engineering

Database Integration

MySQL loading via SQLAlchemy

Feature Engineering

1   Age Groups

Categorized: Young Adult, Adult, Middle-aged, Senior

2   Purchase Frequency

Mapped to days: Weekly (7), Monthly (30), Quarterly (90), Annually (365)

3   Data Consistency

Removed redundant Promo Code column

Business Challenge

Inconsistent revenue growth demands clarity on customer value drivers, product performance, and spending patterns across segments.

Identify High-Value Segments

Which customers generate most revenue?
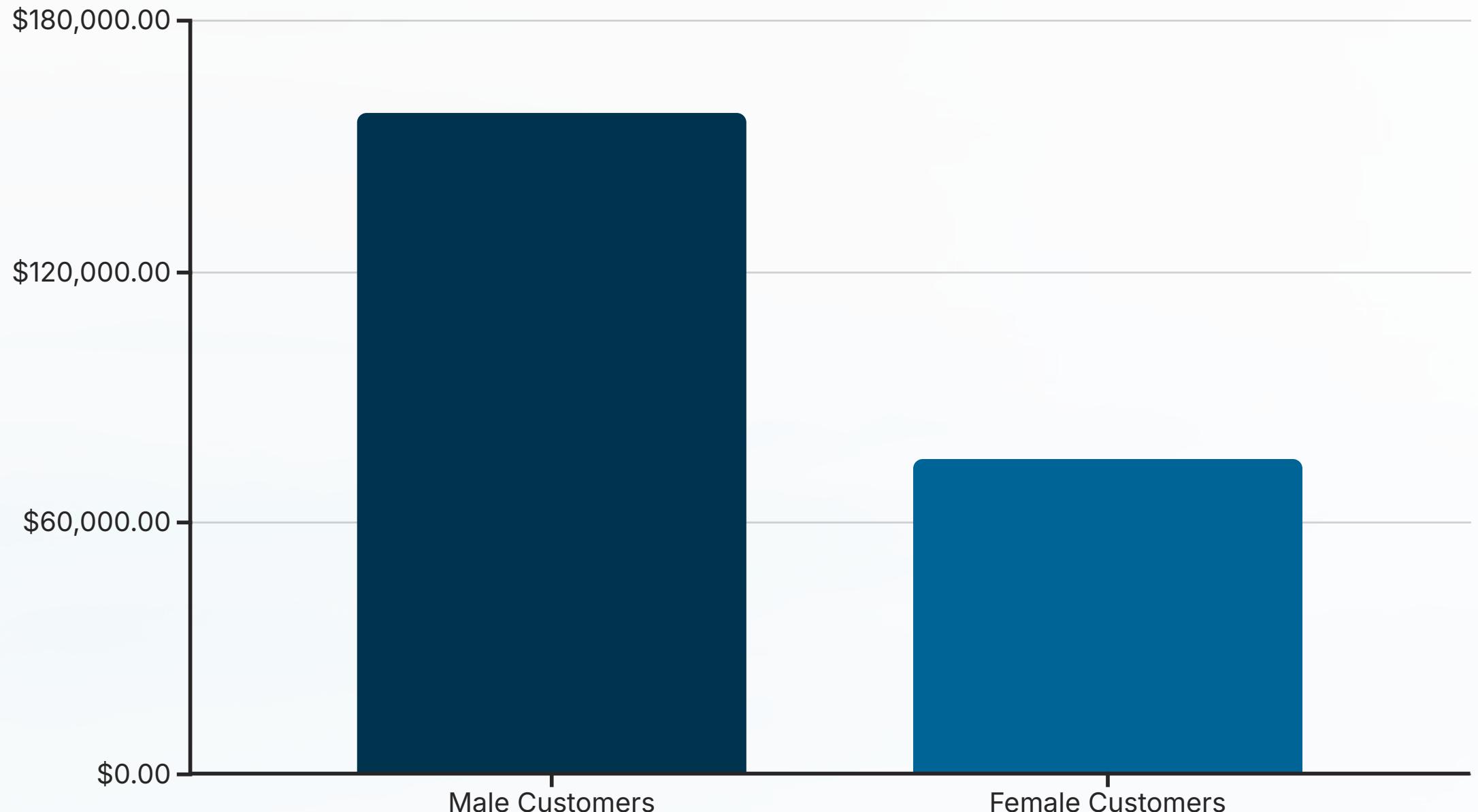
Optimize Product Strategy

What products perform best?

Strengthen Retention

How do subscriptions impact spending?

Key Findings: Revenue Drivers

Chart with y-axis from $0.00 to $180,000.00 in increments of $60,000.00. Male Customers bar approximately $157,000; Female Customers bar approximately $77,000.

Gender Gap

Males drive 2x revenue vs females
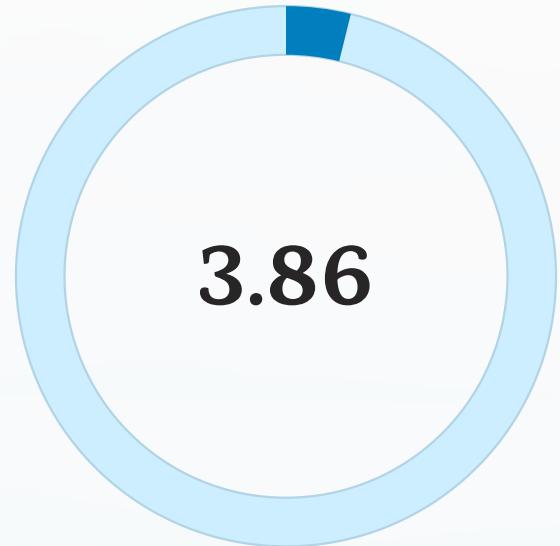
Subscription Impact

Subscribers: $59.49 avg vs Non-subscribers: $59.87

**Age Leaders**

Young Adults generate $62,143 total

Made with GAMMA

Product Performance Insights

3.86
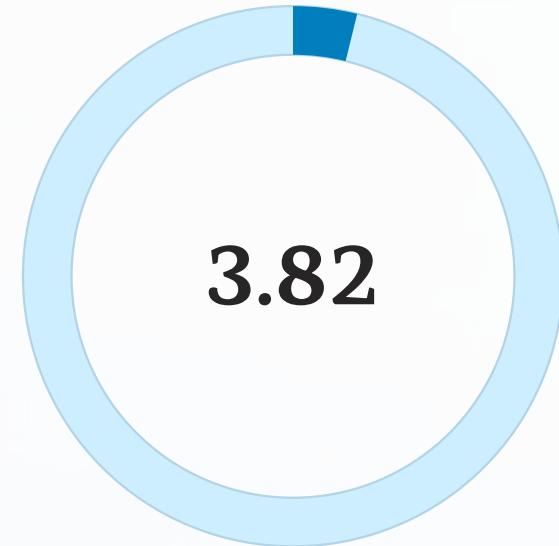
Gloves

Top-rated product

3.84

Sandals

Second highest rating

3.82

Boots

Third place rating

Category Leaders

Clothing

Blouse (171), Pants (171), Shirt (169)

Accessories

Jewelry (171), Sunglasses (161), Belt (161)

Footwear

Sandals (160), Shoes (150), Sneakers (145)

Dashboard Overview

3.9K

Total Customers

$59.76
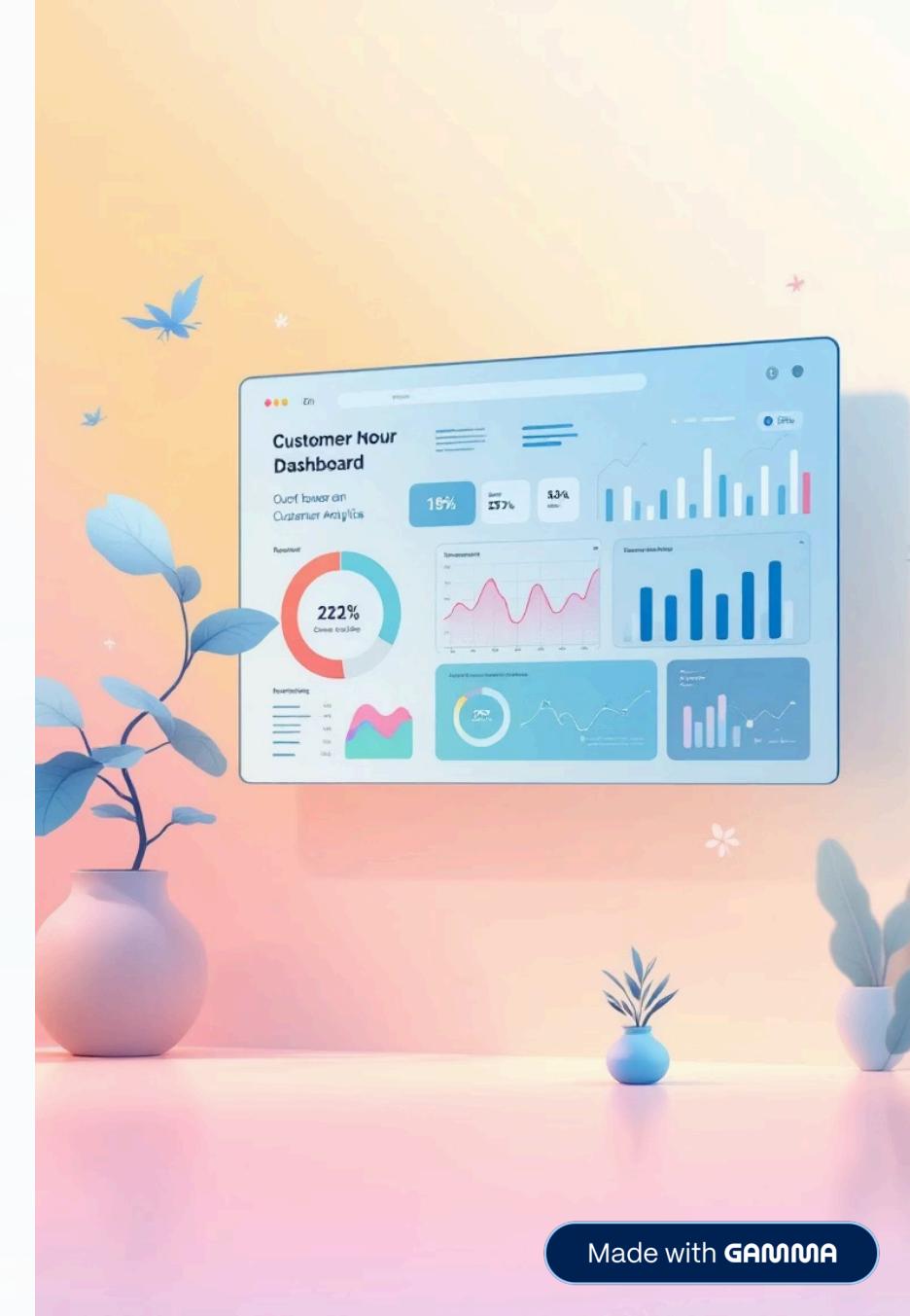
Avg Purchase

3.75

Avg Rating

27%

Subscribers

Strategic Recommendations

Prioritize Male Segment

2x revenue driver—targeted campaigns essential

Optimize Discounts

839 high-spenders use discounts—segment strategy needed

Feature Top Products

Highlight 3.79-3.86 rated items in campaigns

Revamp Subscriptions

Lower spend vs non-subscribers—redesign value prop

Retain Loyal Base

3,324 loyal customers—core revenue drivers

Promote Express Shipping

$60.48 avg spend—bundle with top products