

# Customer Shopping Trend Analysis

Uncovering actionable insights from 3,900 transactions across product categories, demographics, and purchasing behaviors



## OVERVIEW

# Project at a Glance

**3,900**

Total transactions analyzed

**18**

Data attributes tracked

**3**

Analysis phases: Python, SQL,  
Power BI

Strategic goal: Transform raw transactional data into business intelligence for marketing, product strategy, and customer engagement decisions

# Dataset Composition

## Customer Demographics

- Age, gender, location
- Subscription status tracking

## Purchase Details

- Product, category, amount
- Season, size, color preferences

## Behavioral Indicators

- Discount usage, promo codes
- Review ratings, shipping choices
- Purchase frequency patterns

# Data Preparation in Python

01

## Import & Exploration

Loaded dataset with pandas, analyzed structure and summary statistics

02

## Data Cleaning

Validated integrity, imputed review ratings where scores fell below 4.0

03

## Feature Engineering

Created age\_group bins and purchase\_frequency\_days for deeper segmentation

04

## Standardization

Renamed columns to snake\_case, removed redundant promo\_code\_used field

05

## Database Integration

Connected to MySQL, loaded cleaned DataFrame for SQL analysis

# SQL Business Queries

Structured analysis answered critical business questions across revenue, customer behavior, and product performance

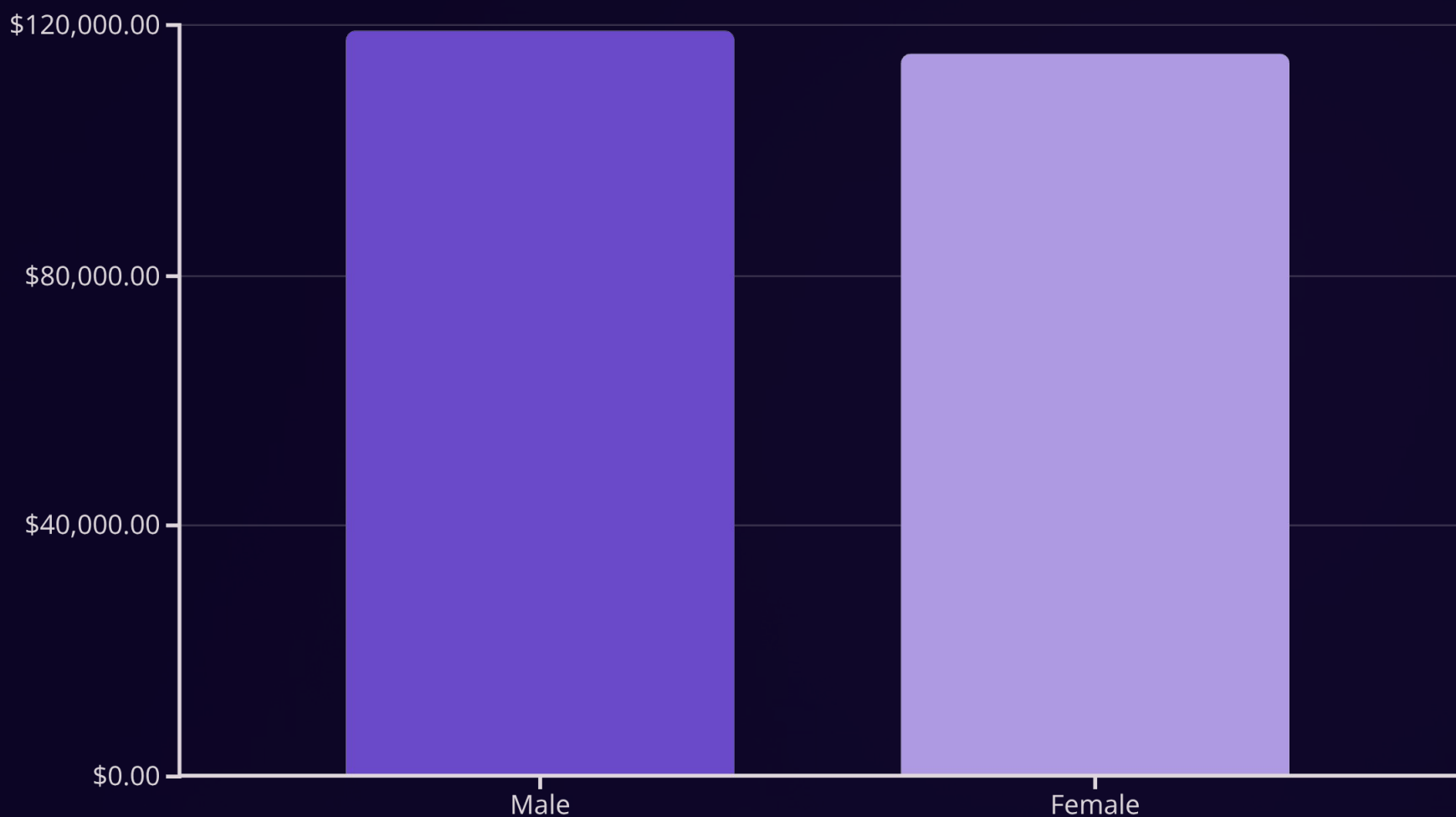
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Query 1 customer_shopping_trends
Limit to 10 rows

4 # Business insights
5 #1. Total revenue generated by male vs Female customers
6 • SELECT gender, sum(purchase_amount) as revenue FROM `e-commerce`.customer_shopping_trends group by gender;
7
8 #2. Even though promo code applied, purchase amount > average purchase
9 • SELECT customer_id, age_group, frequency_of_purchase_days, purchase_amount FROM `e-commerce`.customer_shopping_trends where
discount_applied = "Yes" and purchase_amount > (SELECT round(avg(purchase_amount),2) FROM `e-commerce`.
customer_shopping_trends);
10
11 #3. Top 5 products with highest average review rating
12 • SELECT item_purchased, round(avg(review_rating),2) as average_review_rating FROM `e-commerce`.customer_shopping_trends group
by item_purchased order by round(avg(review_rating),2) desc limit 5;
13
14 #4. Average purchase amount based on shipping type
15 • SELECT shipping_type ,round(avg(purchase_amount),2) as average_purchase_amount FROM `e-commerce`.customer_shopping_trends
group by shipping_type order by round(avg(purchase_amount),2);
16
17 #5. Who spend more subscribed or non-subscribed? Compare average spend and total revenue between subscribers and
non-subscribers
18 • SELECT count(customer_id) as no_of_customers, subscription_status, round(avg(purchase_amount),2) as average_spend, sum(
purchase_amount) as total_revenue FROM `e-commerce`.customer_shopping_trends group by subscription_status order by avg(
purchase_amount), sum(purchase_amount);

```

# Key SQL Findings: Revenue & Behavior



## Gender Revenue Balance

Nearly equal revenue contribution from male and female customers—marketing should remain gender-neutral

## Discount Insight

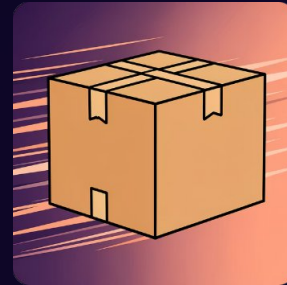
High-spending customers still use discounts, suggesting promotions don't cannibalize premium purchases

# Product & Shipping Intelligence



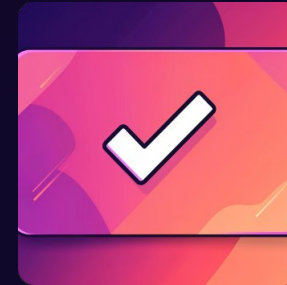
## Top-Rated Products

Jewelry, sunglasses, dress lead reviews—amplify in campaigns



## Shipping Preferences

Express shipping users show higher avg. spend—premium delivery option drives revenue



## Subscriber Value

Subscribers generate consistently higher revenue per transaction



## Discount Dependency

Sandals, sweaters, shirts rely heavily on promotions—review pricing strategy



# Customer Segmentation Breakdown

Three Tiers Identified

33%

New Buyers

First-time purchasers

41%

Returning

2+ purchases

26%

Loyal

Frequent buyers

## Critical Insight

Customers with 2+ purchases show significantly higher subscription rates—repeat behavior predicts loyalty potential

## Top Categories

Clothing dominates across all segments, with accessories and footwear as strong secondary drivers

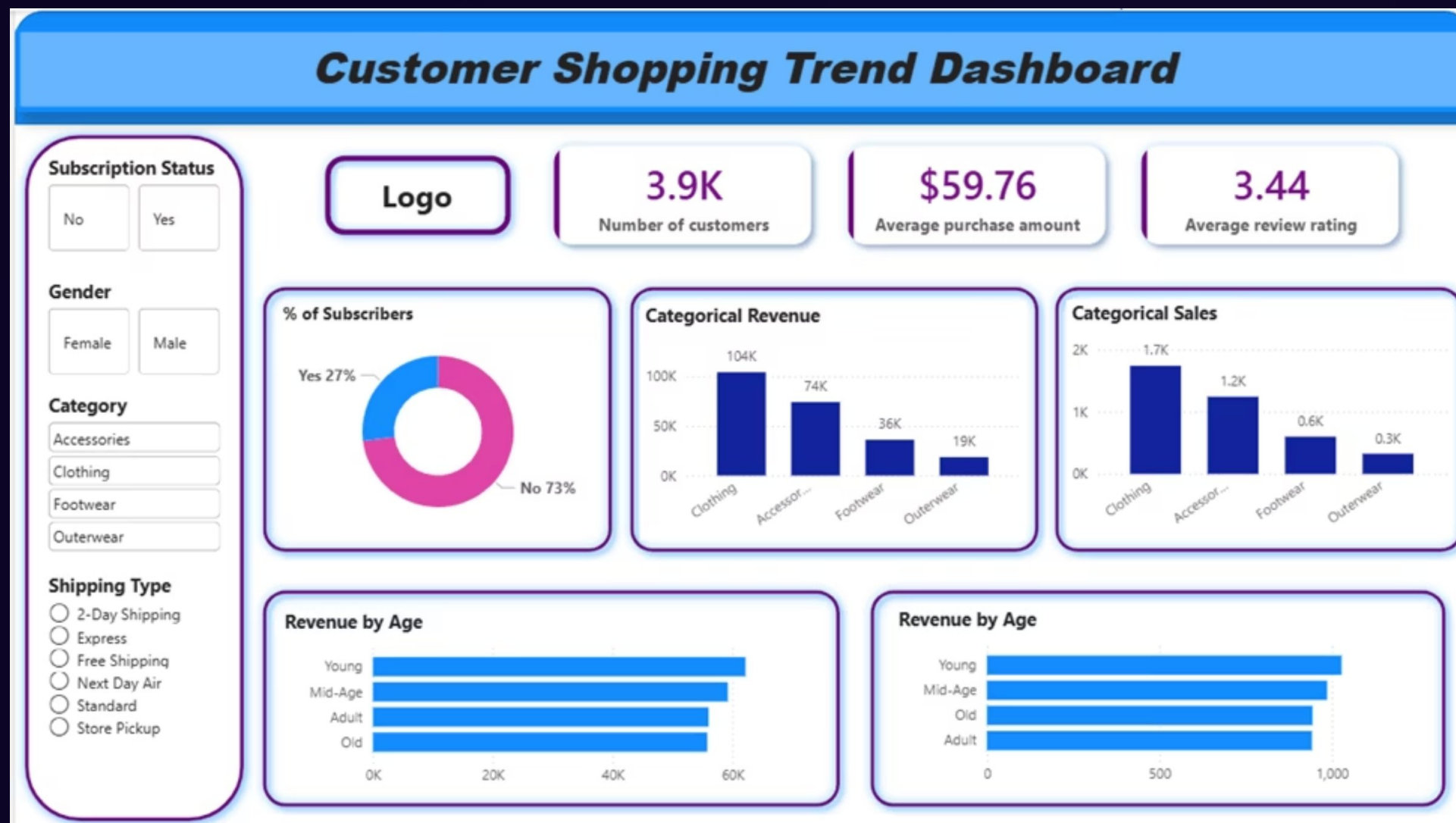
## Age Group Leaders

Young adults and middle-aged customers contribute highest total revenue



# Interactive Power BI Dashboard

Consolidated insights into visual interface for real-time exploration of trends, segments, and performance metrics



# Strategic Recommendations

## Boost Subscription Adoption

Promote exclusive perks and benefits—target returning customers with 2+ purchases

## Loyalty Program Launch

Reward repeat buyers with points, early access, VIP experiences to accelerate segment progression

## Review Discount Strategy

Balance promotional volume with margin protection—test dynamic pricing for discount-dependent products

## Product Positioning

Feature top-rated items and category bestsellers prominently in campaigns and homepage placements

## Targeted Marketing

Focus ad spend on high-revenue age groups and promote express shipping to premium-spend audiences