Customer Shopping Behavior Analysis

Uncovering insights from transactional data to guide strategic business decisions.

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Project Overview & Dataset

Project Goal

Analyze 3,900 purchases to understand spending patterns, customer segments, product preferences, and subscription behavior.

Key Features

- Customer demographics (Age, Gender, Location, Subscription)
- Purchase details (Item, Category, Amount, Season, Size, Color)
- Shopping behavior (Discount, Promo, Previous Purchases, Frequency, Review, Shipping)

Dataset Summary

- Rows: 3,900
- Columns: 18
- Missing Data: 37 values in Review Rating

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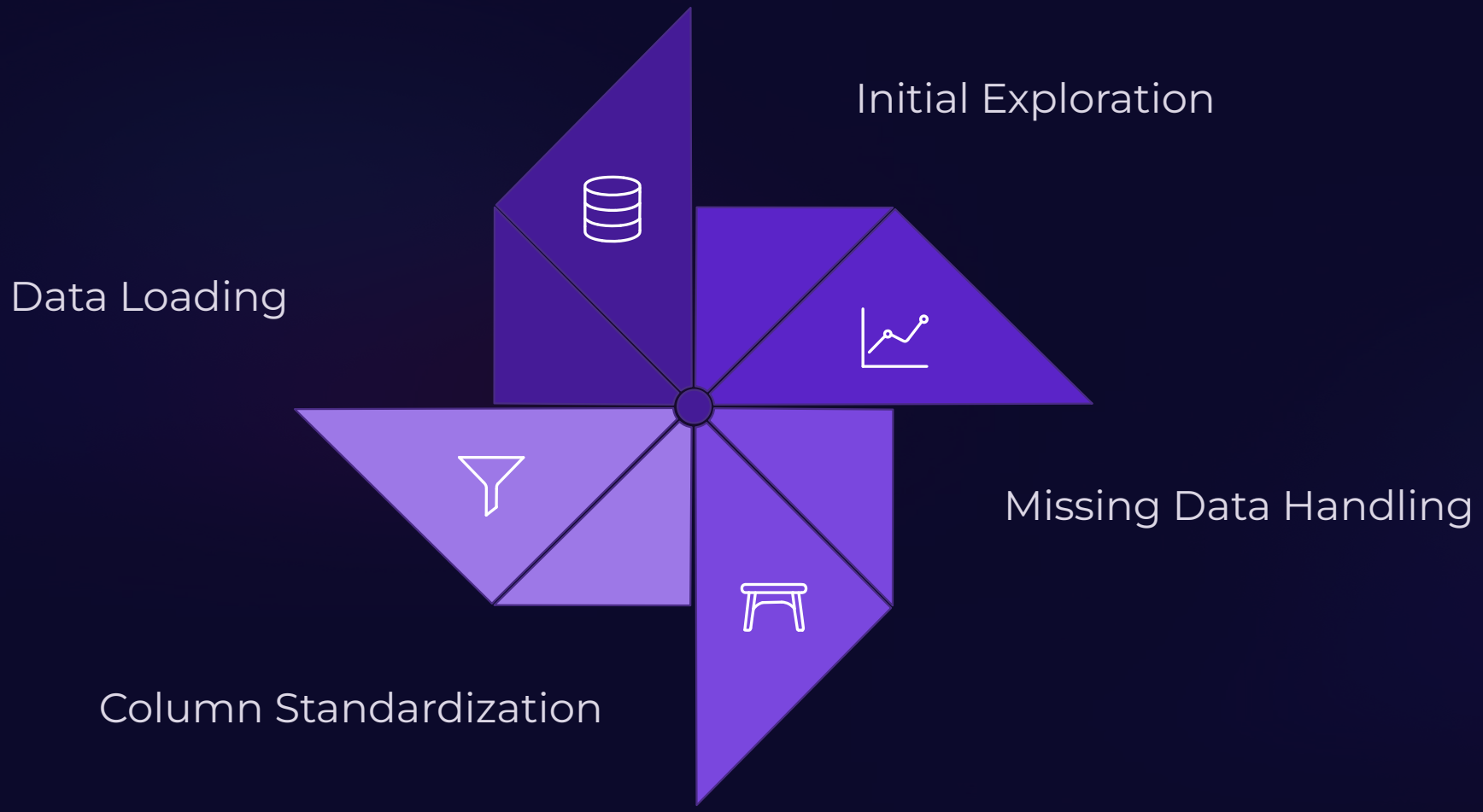
Exploratory Data Analysis (Python)



Our Python-based EDA involved loading, exploring, cleaning, and standardizing data to ensure accuracy and readiness for analysis.

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Advanced Data Preparation

Feature Engineering

Created **age_group** by binning ages and **purchase_frequency_days** from purchase data.

Data Consistency

Verified and dropped redundant **promo_code_used** column.

Database Integration

Loaded cleaned data into PostgreSQL for SQL analysis.

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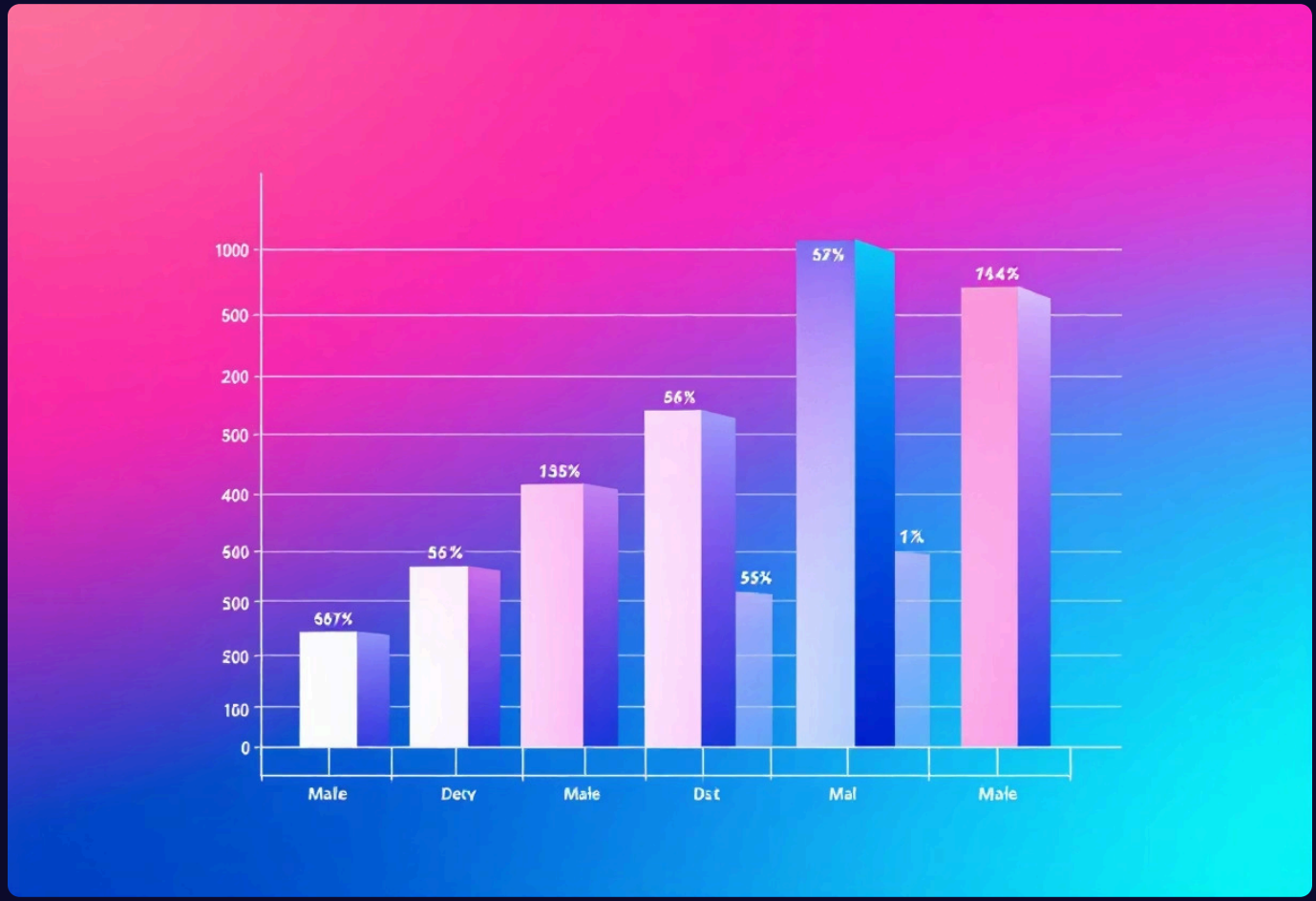
Key SQL Insights: Revenue & Products

Revenue by Gender

Male customers generated significantly more revenue ($157,890) than Female customers ($75,191).

Top 5 Products by Rating

- Gloves (3.86)
- Sandals (3.84)
- Boots (3.82)
- Hat (3.80)
- Skirt (3.78)



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SQL Insights: Shipping & Subscriptions

Shipping Type Comparison

Express shipping users had a higher average purchase amount ($60.48) compared to Standard shipping ($58.46).

Subscribers vs. Non-Subscribers

Non-subscribers contributed more total revenue ($170,436) than subscribers ($62,645), despite similar average spend.

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SQL Insights: Discounts & Loyalty

Discount-Dependent Products

Hat (50%), Sneakers (49.66%), Coat (49.07%), Sweater (48.17%), Pants (47.37%) had the highest discount rates.

Customer Segmentation

Loyal customers (3116) form the largest segment, followed by Returning (701) and New (83).

Repeat Buyers & Subscriptions

Customers with >5 purchases are more likely to be non-subscribers (2518) than subscribers (958).

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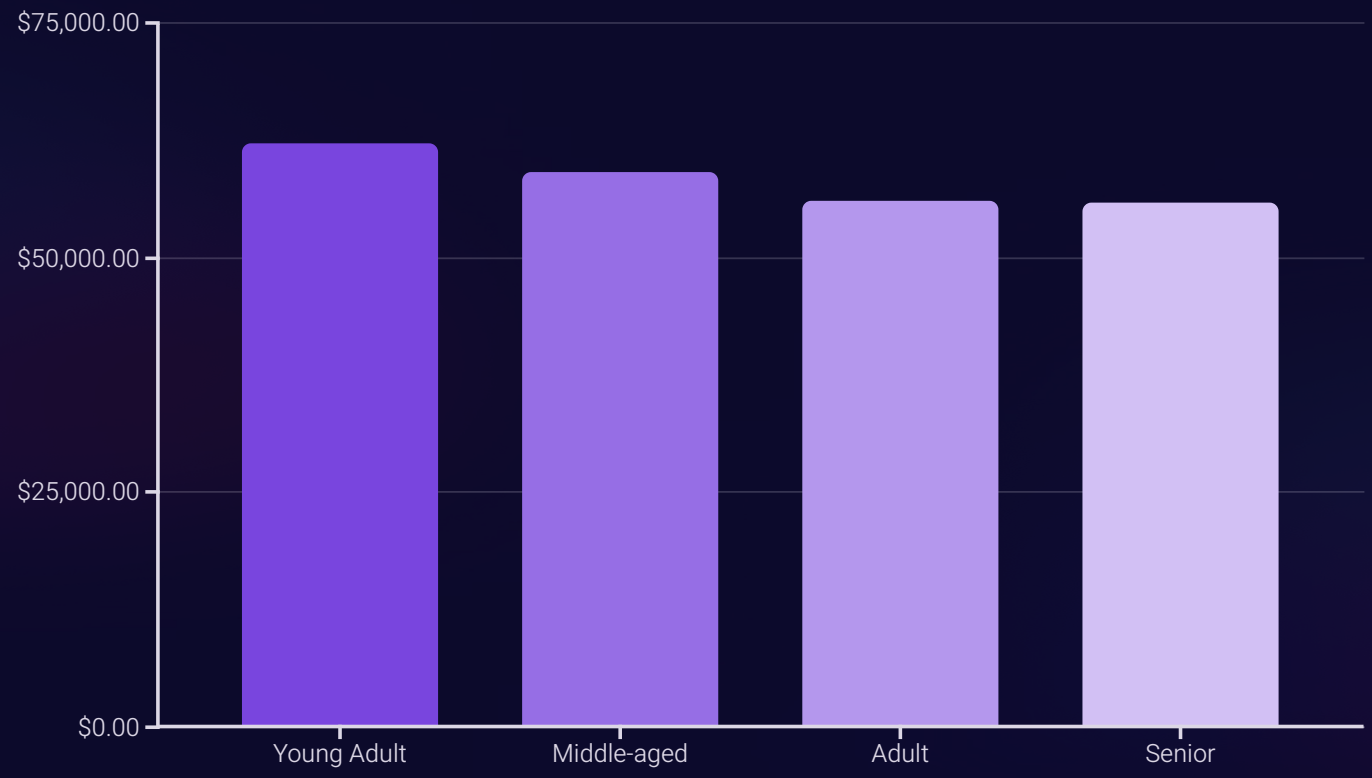
SQL Insights: Top Products & Age Groups

Top 3 Products per Category

- **Accessories:** Jewelry, Sunglasses, Belt
- **Clothing:** Blouse, Pants, Shirt
- **Footwear:** Sandals, Shoes, Sneakers
- **Outerwear:** Jacket, Coat



Young Adults contribute the highest revenue, followed closely by Middle-aged customers.

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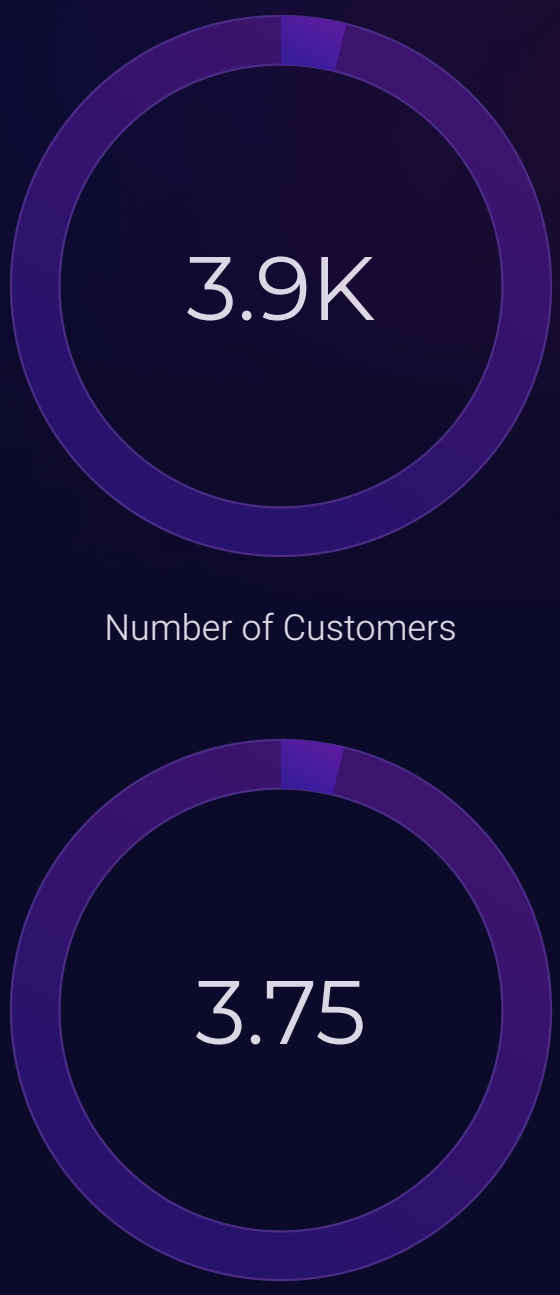
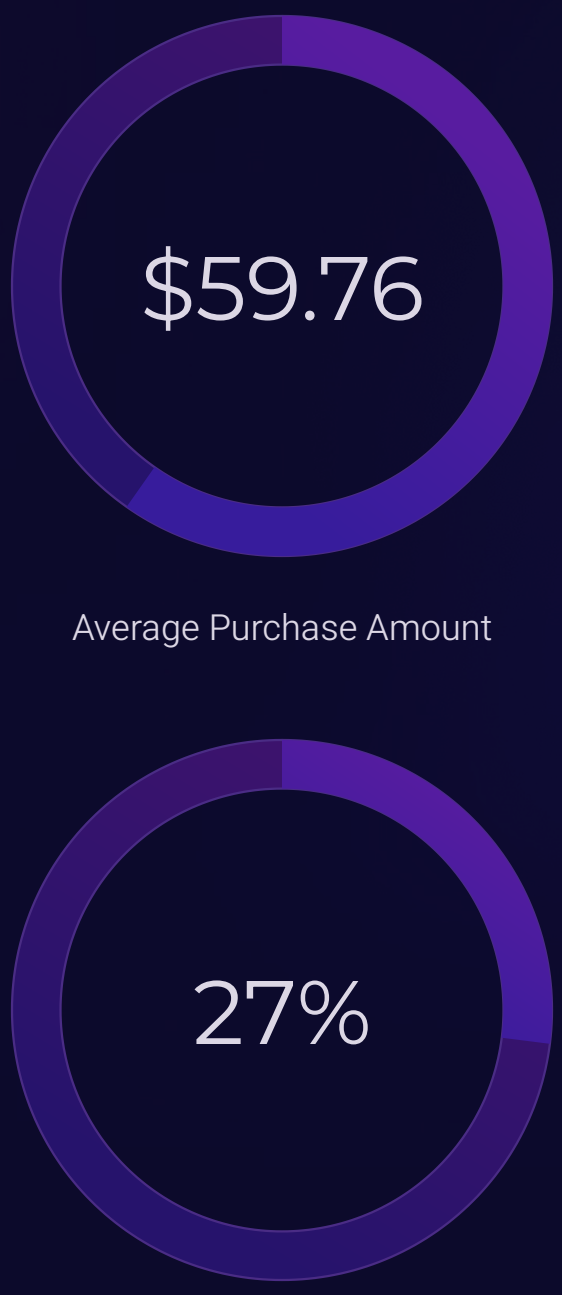
Interactive Dashboard in Power BI

A comprehensive Power BI dashboard visualizes key metrics:



Number of Customers



Average Purchase Amount

Average Review Rating

Customers with Subscriptions

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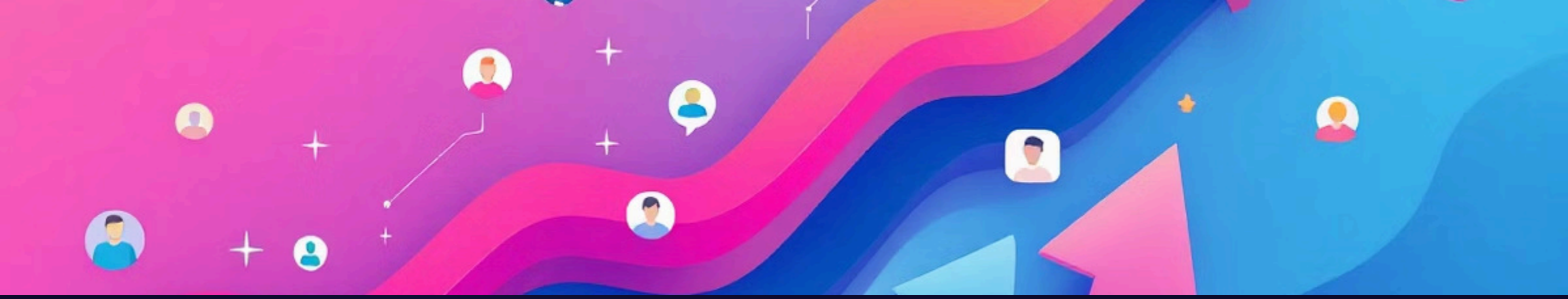

Strategic Business Recommendations

01

Boost Subscriptions

Promote exclusive benefits to increase subscriber base.

02

Customer Loyalty Programs

Reward repeat buyers to foster loyalty and retention.

03

Review Discount Policy

Optimize discount strategies to balance sales and profit margins.

04

Targeted Marketing

Focus campaigns on high-revenue age groups and express-shipping users.

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