Unlocking Customer Insights

A comprehensive analysis of customer shopping behavior to drive strategic decision-making.

Project Overview & Objectives

This project analyzes 3,900 purchase records to identify customer spending patterns, evaluate trends, and segment customers.

Identify Patterns

Discover meaningful patterns in customer spending behavior.

Evaluate Trends

Assess purchasing trends and the impact of discounts and subscriptions.

Generate Insights

Provide actionable insights for customer retention, product positioning, and revenue optimization.

Dataset Summary

Our dataset comprises 3,900 rows and 18 columns, offering a rich view into customer demographics and purchase details.

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

Key Features

Customer demographics, purchase details, and shopping behavior.

Demographics

Age, Gender, Location, Subscription Status.

Purchase Details

Item, Category, Amount, Season, Size, Color.

Behavior

Discount, Promo Code, Previous Purchases, Frequency, Review, Shipping.

Exploratory Data Analysis (Python)

Our Python-based EDA involved data loading, initial exploration, and crucial cleaning steps.

01
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Data Loading & Exploration

Imported dataset, checked structure and summary statistics.

02
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Missing Data Handling

Imputed missing 'Review Rating' values using median by product category.

03
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Column Standardization

Renamed columns to snake case for improved readability.

04
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Feature Engineering

Created 'age_group' and 'purchase_frequency_days' columns.

05
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Database Integration

Loaded cleaned data into PostgreSQL for SQL analysis.

SQL Analysis: Revenue & Discounts

Structured SQL queries revealed key insights into revenue generation and discount utilization.
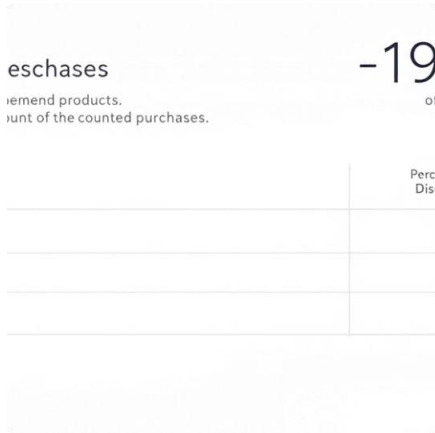

Revenue by Gender

Compared total revenue generated by male vs. female customers.

High-Spending Discount Users

Identified customers using discounts but spending above average.

Discount-Dependent Products

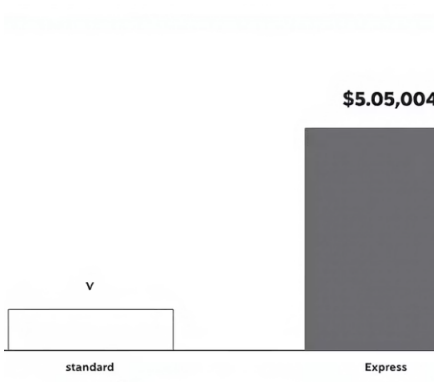*Found products with the highest percentage of discounted purchases.*

SQL Analysis: Product & Shipping

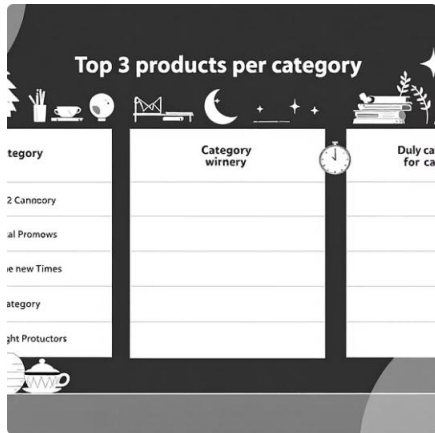*Deep dive into product performance and shipping preferences.*

Top 5 Products by Rating

Identified products with the highest average review ratings.

Shipping Type Comparison

Compared average purchase amounts between Standard and Express shipping.

Top 3 Products per Category

Listed the most purchased products within each category.

SQL Analysis: Customer Segmentation

Understanding customer segments and their relationship with subscriptions and purchase frequency.

Subscribers vs. Non-Subscribers

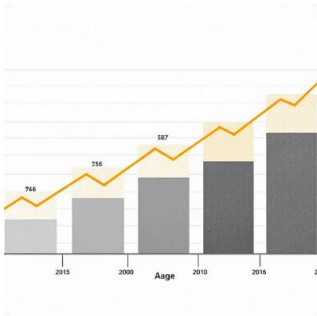*Compared average spend and total revenue across subscription statuses.*

Customer Segmentation

Classified customers into New, Returning, and Loyal segments.

Repeat Buyers & Subscriptions

Checked if customers with >5 purchases are more likely to subscribe.

Revenue by Age Group

Calculated total revenue contribution of each age group.

Interactive Power BI Dashboard

Visualizing key insights through an interactive dashboard for easy exploration.

The dashboard allows stakeholders to dynamically explore data, identify trends, and monitor performance metrics at a glance.

Actionable Business Recommendations

Leveraging data insights to formulate strategic recommendations for growth.

1

Boost Subscriptions

Promote exclusive benefits to increase subscriber base and recurring revenue.

2

Customer Loyalty Programs

Implement programs to reward repeat buyers and foster loyalty.

3

Review Discount Policy

Optimize discount strategies to balance sales boosts with margin control.

4

Product Positioning

Highlight top-rated and best-selling products in marketing campaigns.

5

Targeted Marketing

Focus efforts on high-revenue age groups and express-shipping users for maximum impact.