

Unlocking Customer Insights: A Transactional Data Analysis

This presentation delves into customer shopping behavior, leveraging transactional data to unearth actionable insights for strategic business decisions.



Project Overview: Illuminating Shopping Patterns

Data-Driven Insights

Analyzed 3,900 customer purchases across diverse product categories.

Strategic Goal

Uncover spending patterns, customer segments, and product preferences to inform business strategy.

Subscription Behavior

Examined how subscription status influences purchase frequency and value.



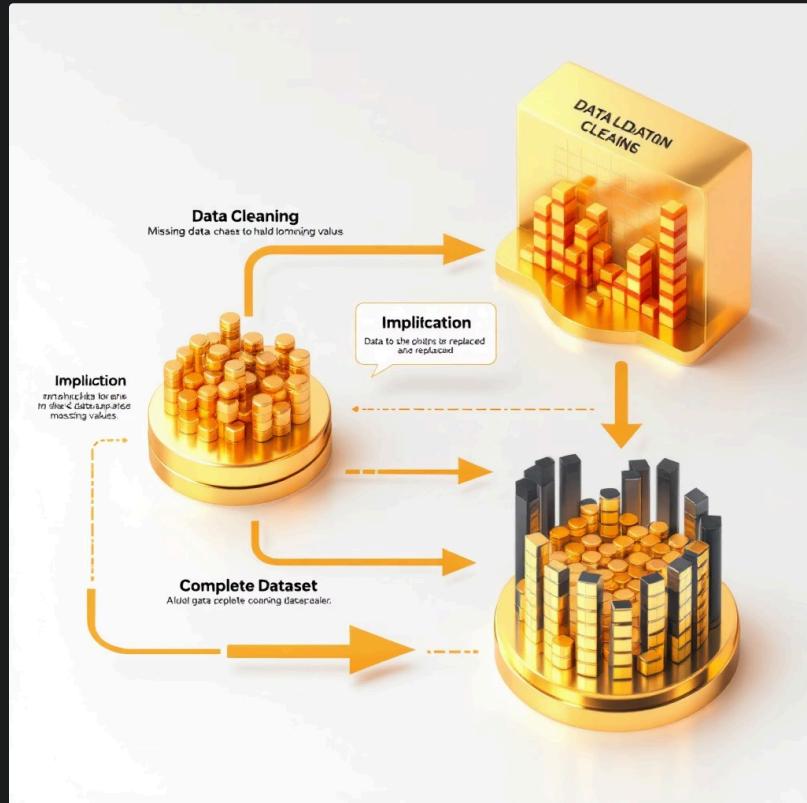
Dataset at a Glance: The Foundation of Our Analysis

Rows	3,900 customer transactions
Columns	18 detailed features
Key Demographics	Age, Gender, Location, Subscription Status
Purchase Details	Item, Category, Amount, Season, Size, Color
Shopping Behavior	Discount, Promo Code, Previous Purchases, Frequency, Review Rating, Shipping Type

A rich dataset provides a comprehensive view of customer interactions.



Addressing Data Challenges: Handling Missing Values



Even robust datasets can have gaps. Our analysis meticulously addressed missing data to ensure accuracy.

→ Missing Data

37 values in the 'Review Rating' column identified.

→ Imputation Strategy

Missing review ratings were imputed using the median rating for each product category.

→ Ensuring Integrity

This method maintains data integrity while preserving nuanced category-specific sentiments.

Python's Role: Exploratory Data Analysis & Preparation

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1

Data Loading

Seamlessly imported the dataset using the `pandas` library.

2

Initial Exploration

Utilized `df.info()` and `.describe()` for structural and statistical overview.

3

Missing Data Handling

Identified and imputed null values in 'Review Rating' with category medians.

4

Column Standardization

Renamed columns to `snake_case` for enhanced readability and maintainability.

Feature Engineering: Enriching Our Data

1

Age Group Segmentation

Created an `age_group` column by categorizing customer ages into meaningful bins.

2

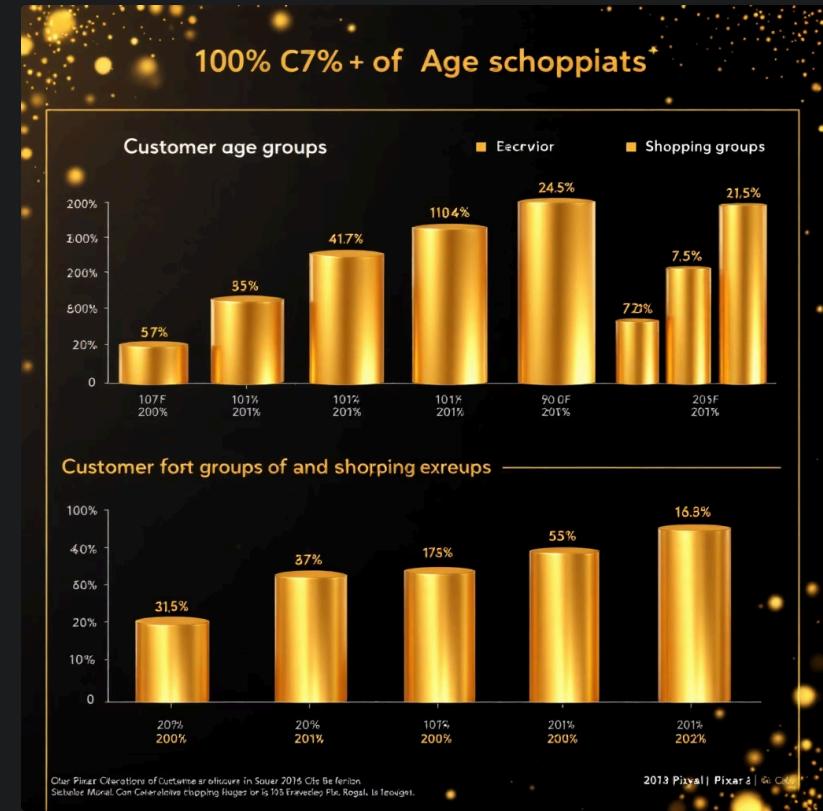
Purchase Frequency

Developed a `purchase_frequency_days` column to quantify buying habits.

3

Enhanced Analysis

These new features provide deeper insights into customer demographics and behavior.





Data Consistency & Optimization

Ensuring the integrity and efficiency of our dataset was crucial for accurate analysis.



Redundancy Check

Verified if 'discount_applied' and 'promo_code_used' conveyed similar information.



Streamlined Data

Removed the 'promo_code_used' column to eliminate redundancy and simplify the dataset.



Optimized Structure

This step improved data quality and prepared it for robust analysis.

Database Integration: From Python to PostgreSQL



The cleaned and prepared data was seamlessly transitioned for advanced SQL querying.

01

Python Connection

Established a secure connection between our Python environment and a PostgreSQL database.

02

Data Loading

The processed DataFrame was efficiently loaded into the PostgreSQL database.

03

SQL Readiness

This integration enables powerful SQL-based analytical operations.

Next Steps: Deep Dive into SQL Analysis

With the data meticulously prepared and integrated, the next phase focuses on extracting granular insights.



Segmentation

Identify distinct customer groups based on behavior and demographics.



Product Performance

Analyze popular products, categories, and their impact on revenue.



Subscription Impact

Quantify the value and behavior of subscribed customers.



Actionable Insights

Translate findings into strategic recommendations for marketing and product development.

Turning Data into Decisions

Our comprehensive analysis of customer shopping behavior provides the foundational intelligence needed to drive impactful business growth and foster deeper customer relationships.

Thank You!

