

# Customer Shopping Behavior Analysis

## 1. Project Overview

This project analyzes customer shopping behavior using transactional data from 3,900 purchases across various product categories. The goal is to uncover insights into spending patterns, customer segments, product preferences, and subscription behavior to guide strategic business decisions.

## 2. Dataset Summary

- Rows: 3,900
- Columns: 18
- Key Features: Customer demographics, Purchase details, Shopping behavior metrics
- Missing Data: 37 values in Review Rating column

## 4. Data Analysis using SQL (Business Transactions)

### *Customer Segmentation – New, Returning, Loyal*

Segment customers into New, Returning, and Loyal based on previous purchases , and show the count of each segment.

```
!3]: pd.read_sql("""
WITH customer_type AS (
    SELECT
        customer_id,
        previous_purchases,
        CASE
            WHEN previous_purchases = 1 THEN 'New'
            WHEN previous_purchases BETWEEN 2 AND 10 THEN 'Returning'
            ELSE 'Loyal'
        END AS customer_segment
    FROM customer_shopping_behavior
)
SELECT
    customer_segment,
    COUNT(*) AS `Number of Customers`
FROM customer_type
GROUP BY customer_segment
""", engine)
```

```
!3]:
```

	customer_segment	Number of Customers
0	Loyal	3116
1	Returning	701
2	New	83

## Shipping Type Comparison – Standard vs Express

compare the average purchase amounts between standard and express shipping

```
from sqlalchemy import create_engine

engine = create_engine(
    "mysql+mysqlconnector://root:possible24680@localhost/customer"
)
```

```
pd.read_sql("""
SELECT
    shipping_type,
    AVG(purchase_amount) AS avg_purchase_amount
FROM customer_shopping_behavior
WHERE shipping_type IN ('Standard', 'Express')
GROUP BY shipping_type
""", engine)
```

	shipping_type	avg_purchase_amount
0	Express	60.4752
1	Standard	58.4602

## 5. Dashboard in Power BI



## **6. Business Recommendations**

- Boost Subscriptions – Promote exclusive benefits for subscribers.
- Customer Loyalty Programs – Reward repeat buyers to move them into the Loyal segment.
- Review Discount Policy – Balance sales boosts with margin control.
- Product Positioning – Highlight top-rated and best-selling products in campaigns.
- Targeted Marketing – Focus efforts on high-revenue age groups and express-shipping users.