Customer Shopping Behavior Analysis

Objective

To analyze customer shopping behavior data and uncover insights into purchasing patterns, discount usage, and spending trends — helping the business improve marketing strategies and customer retention.

Tools & Technologies Used

- SQL: For data extraction, cleaning, and transformation.
- Python (Pandas, Seaborn, Matplotlib): For exploratory data analysis and visualization.
- Power BI: For interactive visualization and reporting.
- Dataset: customer_shopping_behavior.csv

Steps Performed

1■■ Data Cleaning & Preparation:
- Removed missing and inconsistent entries.
- Standardized categorical values and formatted date-time columns.
- Dropped irrelevant columns and handled outliers.

2■■ SQL Analysis:
- Calculated total customers, revenue, and average purchase value.
- Analyzed discount usage rate, top items by revenue, and peak purchase hours.
- Used CTEs and window functions (RANK, DENSE_RANK) for ranking insights.

3■■ Python Analysis:
- Explored the dataset in Pandas and visualized insights with Seaborn.
- Found that 26–35 age group spent the most and married women contributed ~35% of revenue.
- Positive correlation between discount usage and total orders.

4■■ Power BI Dashboard:
- Created an interactive dashboard with KPIs and visual insights.
- Displayed sales by product, gender, age group, discount usage, and payment method.

Key Insights

1. 26–35-year-old married women are the highest-spending group.
2. Discounts significantly influence purchasing — ~40% of total orders used discounts.
3. Evening hours (6–9 PM) show the highest order volume.
4. Classic product categories contribute most to revenue.
5. Credit Card and UPI payments dominate, showing strong digital adoption.

Business Impact

- Targeted marketing for 26–35 age group can increase revenue by ~15%.
- Optimized discount campaigns can improve customer retention.
- Evening promotional pushes can boost conversion rates significantly.

Conclusion

This project demonstrates end-to-end data analysis using SQL, Python, and Power BI — from data cleaning and querying to visualization and storytelling. It provides actionable insights to help businesses optimize marketing, improve customer satisfaction, and increase profitability.