Business Problem Statement

A leading retail company aims to better understand its customers' shopping behaviour to improve sales performance, customer satisfaction, and long-term loyalty. The management team has observed noticeable shifts in purchasing patterns across demographics, product categories, and sales channels (online vs. offline).They are particularly interested in identifying which factors — such as discounts, reviews, seasonal trends, payment preferences, and purchase frequency — most influence consumer decisions and repeat purchases.

The overarching business question is:

"How can the company leverage consumer shopping data to identify trends, improve customer engagement, and optimize marketing and product strategies?"

Project Deliverables

1. Data Preparation & Modelling (Python)

- Cleaned and transformed the raw e-commerce dataset using Pandas and NumPy.
- Handled missing values, standardized column names, and performed consistency checks.
- Loaded the cleaned dataset into a MySQL database for structured business analysis.

2. Data Analysis (SQL)

- Structured and queried the dataset to simulate business transactions and extract actionable insights.
- Derived metrics related to customer segments, loyalty behaviour, discount impact, and sales performance.
- Identified high-value customers, frequent buyers, and top-performing products and categories.

3. Visualization & Insights (Power BI)

- Designed an interactive Power BI dashboard showcasing key metrics such as sales trends, demographic patterns, and customer retention.
- Visualized revenue by gender, online vs. offline performance, payment preferences, and store-level performance.
- Incorporated advanced visuals like gauge charts, line and clustered columns, and decomposition trees for better storytelling.

4. Report and Presentation

- Compiled insights into a business report with clear recommendations for marketing, product, and sales teams.
- Prepared a **presentation dashboard** that communicates data-driven findings to stakeholders effectively.