# Customer Lifetime Value (CLV) Analysis Report

## Objective

Estimate Customer Lifetime Value to segment customers and identify high-value targets.

## Key Activities

- Merged and cleaned customer order data, transaction history, and demographic data.

- Used SQL queries to extract Total Spend, Purchase Frequency, and Recency.

- Applied RFM (Recency, Frequency, Monetary) modeling in Python.

- Used K-Means clustering to segment customers.

- Built visualizations to analyze clusters by monetary value and recency.

- Prepared actionable insights for marketing teams based on high-value customer segments.

## SQL Queries

### Total Spend Per Customer

SELECT CustomerID, SUM(Amount) AS TotalSpend  
 FROM Transactions  
 GROUP BY CustomerID;

### Purchase Frequency

SELECT CustomerID, COUNT(\*) AS Frequency  
 FROM Transactions  
 GROUP BY CustomerID;

### Recency Calculation

SELECT CustomerID, MAX(TransactionDate) AS LastPurchaseDate,  
 DATEDIFF(DAY, MAX(TransactionDate), '2025-01-01') AS Recency  
 FROM Transactions  
 GROUP BY CustomerID;

### Customer Demographics

SELECT \* FROM Customers;

## Python Steps

- Loaded and merged customer and transaction data.

- Calculated RFM metrics and scaled data.

- Applied K-Means clustering.

- Visualized customer segments using scatter plots and bar charts.