Retail – Customer Behavior & RFM Analysis

1.Introduction :

In today's competitive retail industry, understanding customer behavior is crucial for improving customer retention and increasing revenue. Retail businesses generate large volumes of transactional data, but without proper analysis, this data cannot be effectively utilized for decision-making.

This project focuses on analyzing retail customer behavior using RFM (Recency, Frequency, Monetary) analysis. By segmenting customers based on their purchasing patterns, the project helps businesses identify valuable customers and design targeted marketing strategies. The final insights are presented through an interactive Excel dashboard for easy interpretation.

2.Problem Statement :

Retail organizations often face challenges in identifying high-value customers and understanding purchasing behavior. Traditional analysis methods fail to provide clear customer segmentation, leading to ineffective marketing strategies and customer churn.

There is a need for a structured, data-driven approach that can segment customers based on their transaction history and provide actionable insights for business growth.

3. Objectives :

- ✓ To analyze retail transaction data and understand customer behavior
- ✓ To perform RFM (Recency, Frequency, Monetary) analysis
- ✓ To segment customers into meaningful groups
- ✓ To visualize insights using an interactive Excel dashboard
- ✓ To support data-driven decision-making in retail businesses

4. Dataset Description :

The dataset used for this project was obtained from Kaggle and contains retail transaction records. The dataset includes customer identifiers, transaction dates, purchase frequency, and monetary values.

Initial data cleaning and preprocessing were performed using Python to handle missing values, data inconsistencies, and transformations required for RFM analysis.

5. Methodology :

The project follows a structured analytical workflow:

1. Data collection from Kaggle
2. Data cleaning and preprocessing using Python in Jupyter Notebook
3. Calculation of Recency, Frequency, and Monetary values
4. RFM score generation and customer segmentation
5. Exporting the processed data to Excel
6. Creating an interactive dashboard for visualization and analysis

6. Tools & Technologies :

- ✓ Python (Pandas, NumPy)
- ✓ Google Collab
- ✓ Ai tools(ChatGPT,Gemini)
- ✓ Microsoft Excel
- ✓ Kaggle Dataset
- ✓ Data Visualization Techniques

7. Expected Outcomes :

- ✓ Clear customer segmentation based on RFM analysis
- ✓ Identification of high-value and at-risk customers
- ✓ Improved understanding of customer purchasing behavior
- ✓ Interactive dashboard for business insights
- ✓ Support for targeted marketing and retention strategies

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9. Conclusion :

This project demonstrates how RFM analysis can be effectively used to analyze retail customer behavior. By combining Python-based data analysis with Excel-based visualization, the project provides a practical and business-oriented solution.

The insights generated from this analysis can help retail businesses improve customer retention, optimize marketing strategies, and increase overall revenue.