# RFM Analysis Business Report

## Executive Summary

This report outlines the RFM (Recency, Frequency, Monetary) analysis conducted for an online retail business to identify customer behavior patterns and segment customers based on their transactional data. The primary objective is to provide actionable insights for strategic decision-making, including targeted marketing campaigns and resource allocation.

## Objectives

1. **Customer Segmentation**: Classify customers into meaningful groups based on their purchasing behavior.
2. **Strategic Insights**: Identify high-value customers, infrequent buyers, and potential churn risks.
3. **Data-Driven Decision Making**: Enable targeted marketing and promotional strategies.

## Process Overview

The analysis involved extracting, cleaning, and transforming data using SQL, followed by building a dynamic and visually intuitive dashboard in Power BI.

### Data Preparation

1. **Source Dataset**: Transactional data of customers.
2. **Key Metrics Derived**:
   - **Recency**: Days since the last purchase.
   - **Frequency**: Total number of transactions per customer.
   - **Monetary Value**: Total spending per customer.

### RFM Metric Calculation

#### Recency

Customers were ranked based on their recency values, with scores assigned as follows:

- Customers in the top 20% (lowest recency values) received the highest score (5).
- Customers in subsequent quintiles received scores of 4, 3, 2, and 1, respectively.

#### Frequency

Customers were ranked based on their transaction frequency:

- Highly frequent customers received the highest score (5).
- Moderately frequent to rarely active customers were segmented into scores of 4, 3, 2, and 1, respectively.

**Monetary**

Customers were segmented based on their spending values:

- Customers contributing the highest monetary value received the highest score (5).
- Lower spending customers were segmented into subsequent scores.

## Dashboard Development in Power BI

The RFM table was imported into Power BI for visualization, creating a comprehensive dashboard to explore customer segments and business performance.

**Key Visualizations**

1. **KPI Cards**:
   - Total Monetary Value: Highlights overall revenue.
   - Average Recency: Tracks the average time since last purchase.
   - Total Frequency: Displays the total number of transactions.
   - Top Customer Spending: Shows spending by the highest-paying customer.
2. **Recency Distribution**:
   - Bar chart representing the distribution of customers based on recency.
   - Insight: Identifies customers at risk of churn.
3. **Frequency Segmentation**:
   - Bar chart showing segmentation by F_Score categories (Highly Frequent, Moderate, etc.).
   - Insight: Highlights the activity levels of customers.
4. **Top Customers by Spending**:
   - Bar chart showcasing the highest-spending customers.
   - Insight: Identifies key revenue contributors.
5. **Segmented Heatmap**:
   - Heatmap showing intersections of F_Score and M_Score.
   - Insight: Segments customers into groups such as "Best Customers," "At Risk," etc.
6. **Monetary vs. Frequency Relationship**:
   - Scatter plot exploring the relationship between spending and transaction frequency.
   - Insight: Identifies trends in customer behavior.
7. **Country Slicer**:
   - Provides interactivity by filtering visuals based on regions.

# Insights & Recommendations

**Insights:**

1. **High-Value Customers**:
   - o Identified top customers contributing significantly to revenue.
   - o Strategic focus on retaining these customers.
2. **Inactive Customers**:
   - o Significant portion of customers show high recency values.
   - o Consider reactivation campaigns.
3. **Frequency Patterns**:
   - o Majority of customers are moderately frequent.
   - o Opportunity to upsell or cross-sell.
4. **Monetary Trends**:
   - o Clear correlation between high-frequency and high-monetary customers.
   - o Potential to introduce loyalty programs.

**Recommendations:**

1. **Retention Programs**:
   - o Personalized offers for top spenders to ensure loyalty.
2. **Reactivation Strategies**:
   - o Discount campaigns targeted at inactive customers.
3. **Frequency Enhancement**:
   - o Incentives to increase purchase frequency.
4. **Targeted Marketing**:
   - o Utilize RFM segmentation for tailored campaigns based on customer behavior.

# Conclusion

This RFM analysis provides a robust framework for understanding customer behavior and optimizing marketing strategies. The Power BI dashboard delivers actionable insights at a glance, enabling data-driven decision-making for sustained business growth.