**Customer Segmentation and Sales Analysis Report**

# 1. Introduction

This report analyzes the purchasing patterns of customers using RFM (Recency, Frequency, Monetary) segmentation and provides insights into sales trends. The goal is to help the company optimize its marketing strategies, enhance customer retention, and increase overall sales.

Objectives:  
1. Segment customers into different groups based on their purchasing behavior.  
2. Analyze sales data to identify key trends and patterns.  
3. Create visualizations to represent the findings.  
4. Provide actionable recommendations to improve business performance.

# 2. Data Cleaning

Before analyzing the data, it was essential to clean the dataset to ensure accuracy and consistency. Here are the steps taken during the data cleaning process:

Steps in Data Cleaning:  
1. Handling Missing Values: No missing values were present in the dataset, so no imputation was necessary.  
2. Standardizing Date Formats: The Order Date column was converted to a consistent format (YYYY-MM-DD).  
3. Removing Duplicate Records: The dataset was checked for duplicates, and any that existed were removed.  
4. Final Dataset: After cleaning, the dataset consisted of 363 rows and 10 columns with no missing values or duplicate entries.

# 3. Customer Segmentation Findings

We segmented customers based on the RFM model, which evaluates Recency (how recently a customer purchased), Frequency (how often they purchase), and Monetary (how much they spend). Here are the key customer segments identified:

Key Customer Segments:  
- High-Value Customers (Best Customers): These customers have purchased recently, purchase frequently, and have high spending.  
- At-Risk Customers: These customers haven’t made recent purchases but used to buy frequently.  
- New Customers: These are customers who have made a few recent purchases and offer growth potential.

Customer Segment Distribution:  
A bar chart was provided to show the distribution of customers across these segments.

# 4. Sales Trend Analysis

Monthly Sales Trends:  
Sales trends fluctuate throughout the year, with noticeable peaks during certain months. A line chart of monthly sales shows significant sales spikes, driven by seasonal demand or promotional campaigns.

Yearly Sales Trends:  
There has been growth in total sales over the past three years, peaking in 2022, followed by a slight decline in 2023.

Top Product Categories:  
Electronics and Home & Kitchen are the top-performing categories. Books and Accessories performed poorly. A bar chart highlights the top categories.

Regional Sales Distribution:  
East and South regions generate the highest sales. A pie chart was used to display regional sales contributions.

# 5. Recommendations

1. Focus on Retaining High-Value Customers:  
Implement loyalty programs and offer exclusive discounts to keep these customers engaged.

2. Re-engage At-Risk Customers:  
Initiate re-engagement campaigns, offering personalized discounts to bring back these customers.

3. Convert New Customers into Loyal Buyers:  
Provide discounts or personalized recommendations to encourage repeat purchases from new customers.

4. Optimize Product Offerings:  
Focus on promoting and expanding inventory for top-performing categories such as Electronics and Home & Kitchen.

5. Target High-Performing Regions:  
Increase inventory and tailor marketing campaigns for regions like East and South, which generate high sales.

6. Align Promotions with Peak Sales Months:  
Plan marketing campaigns around peak sales months and introduce promotions during off-peak periods.

# 6. Conclusion

The analysis provided a comprehensive view of customer segmentation, sales trends, and product performance. By focusing on retaining High-Value Customers, re-engaging At-Risk Customers, and optimizing product and regional sales strategies, the company can enhance overall sales performance and increase customer retention.

Next Steps:  
1. Begin rolling out loyalty programs and personalized offers to High-Value Customers.  
2. Initiate re-engagement campaigns for At-Risk Customers.  
3. Optimize product promotions and inventory for Electronics and Home & Kitchen categories.  
4. Continue monitoring sales trends to adjust marketing strategies accordingly.