

CRM Analysis and Customer Segmentation

Customer Relationship Management (CRM) analysis involves the systematic examination and interpretation of data related to interactions between a business and its customers. Through CRM analysis, companies evaluate customer behavior, preferences, and feedback to gain valuable insights into their needs and expectations.

Customer relationship management (CRM) is a tool that allows us to see the relationship between our customers and our company. According to the author the four core objectives of CRM's are:

1. Boost Customer Satisfaction
2. Improve The Efficiency Of Your Business
3. Gain New Customers
4. Strengthen Your Sales And Support Teams



CRM Analysis: Understanding Customer Behavior

Project Objective:

To analyze customer behavior using CRM data.

Identify key insights through Exploratory Data Analysis (EDA) and RFM (Recency, Frequency, Monetary) segmentation.

Tools Used: Python, Pandas, Seaborn for visualizations.

Dataset Overview:

541,909 records with 8 features: InvoiceNo, StockCode, Description, Quantity, InvoiceDate, UnitPrice, CustomerID, Country.

Highlight data challenges:

24.93% missing values in CustomerID (handled by imputing or removing).

Data Preprocessing:

Removed missing values.

Corrected data types (e.g., date, quantity).

Visual: A heatmap of missing values (from EDA) or bar chart of top 5 product sales.



Overview of CRM Analysis

Objective: Analyze customer data for segmentation and retention opportunities.

Methodology: RFM Analysis (Recency, Frequency, Monetary) and customer behavior analysis.

Key Areas: Customer segmentation, spending behavior, and purchase patterns.



Explanation of RFM:

Recency: How recently customers have made a purchase.

Frequency: How often customers purchase.

Monetary: Total amount spent by each customer.

RFM Score Calculation:

Each customer is scored on a scale based on RFM metrics.

Segment Insights:

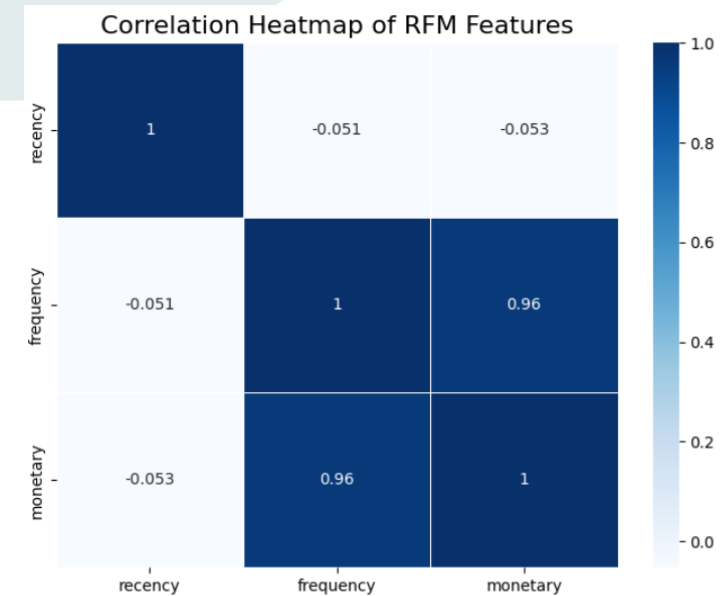
Champions: Recent and frequent buyers with high spending.


At-Risk: Haven't shopped in a while but previously had high engagement.

Hibernating: Long-time inactive customers.



RFM Analysis for Customer Segmentation





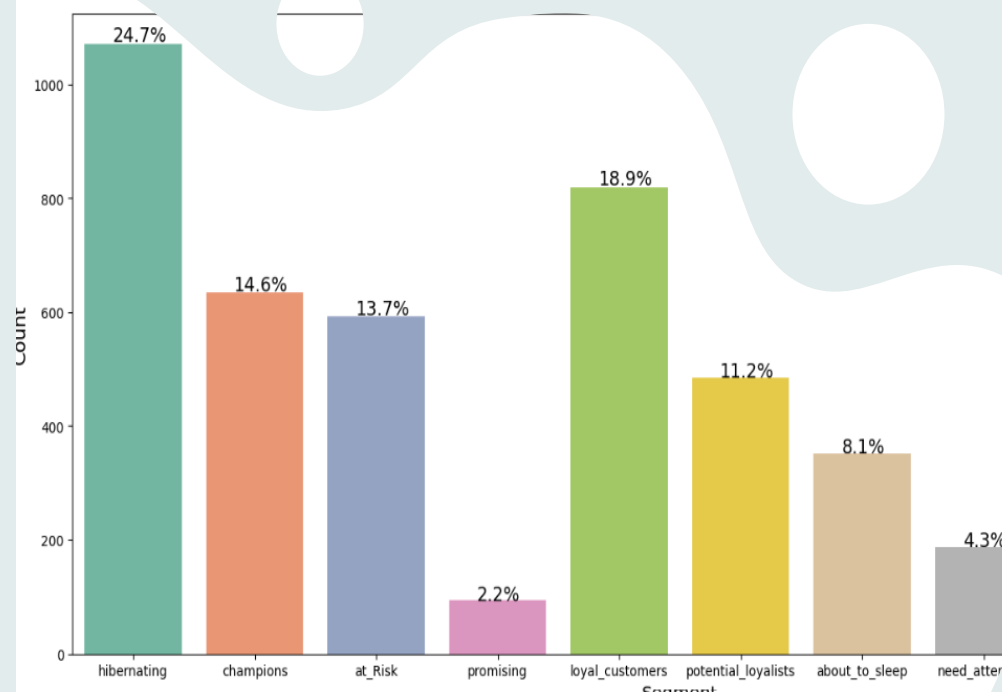
Customer Segmentation Insights

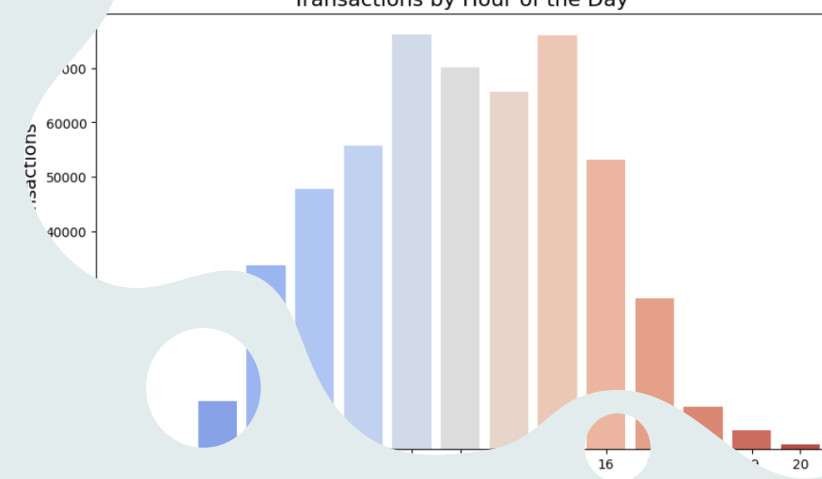
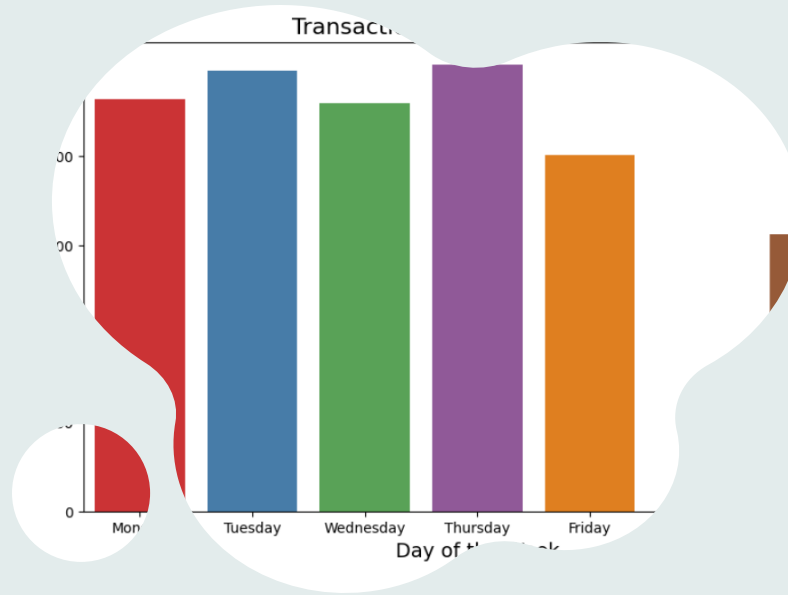
Champions: 905 high-value customers with an average spend of \$5,631.

At Risk: 650 customers with higher engagement but at risk of churn.

Hibernating: 1,604 inactive customers (263 days since last purchase).

Can't Lose: 48 valuable customers with high frequency but disengaged.





Product and Sales Insights

Top-Selling Products :

- 1.WORLD WAR 2 GLIDERS ASSTD DESIGNS.
- 2.JUMBO BAG RED RETROSPOT

Sales Distribution:

Peak sales on Fridays and Thursdays.

Highest sales between 10 AM - 4 PM.

Outliers: High-value transactions skewing data, need review.

Recommendations

Retention Strategies: Engage "At Risk" and "Can't Lose" customers with targeted offers. Retain "Champions" with exclusive loyalty programs.

Product Strategy: Focus on top-selling products and ensure inventory availability. Analyze why certain products (like "Damaged" or "Unsaleable" items) show up as negative contributors and address those issues.

Marketing Optimization: Target email campaigns during peak shopping times (Fridays, 10 AM - 4 PM). Flash sales to boost off-peak transactions.

Outlier Management: Review transactions with extreme values for possible data entry errors or special cases. Outliers could distort your overall insights if left unchecked.

Conclusion :

Customer Lifecycle Management: Automate campaigns based on purchase cycles.

Future Actions: Implement segmented re-engagement campaigns and monitor outlier transactions to refine data analysis.

