

CRM Analysis

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EDA

Mean vs. Median Analysis

- Quantity and Unit Price distributions are right-skewed, suggesting presence of outliers.
- Majority of transactions involve smaller quantities and lower-priced items.

Outlier Detection Overview

- Quantity Column: 26646
- UnitPrice Column: 35802

Duplicate Values Overview

- Exact Duplicates: 5225
- Potential Duplicates: 0
- Shape After Handling Duplicates: (Rows: 401604, Columns: 8)

Return Analysis

- Returns: 2.21% of Transactions
- Sales: 97.79% of Transactions

Missing Values Overview

- Description Column: 1454
- CustomerID Column: 135080

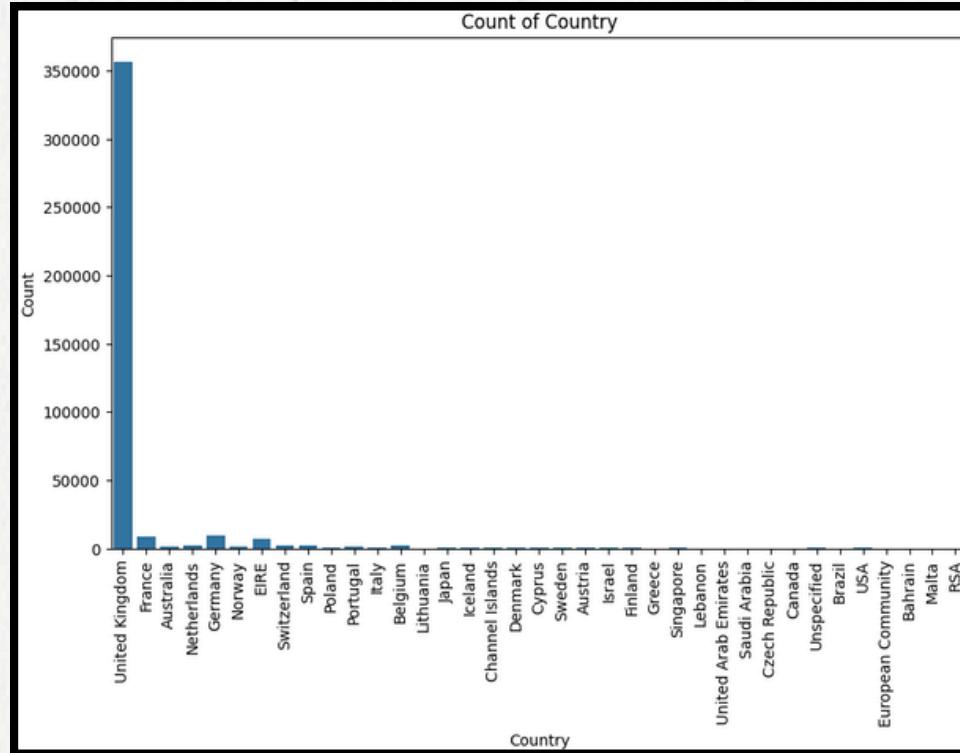


Univariate Analysis

01

Geographic Distribution of Orders

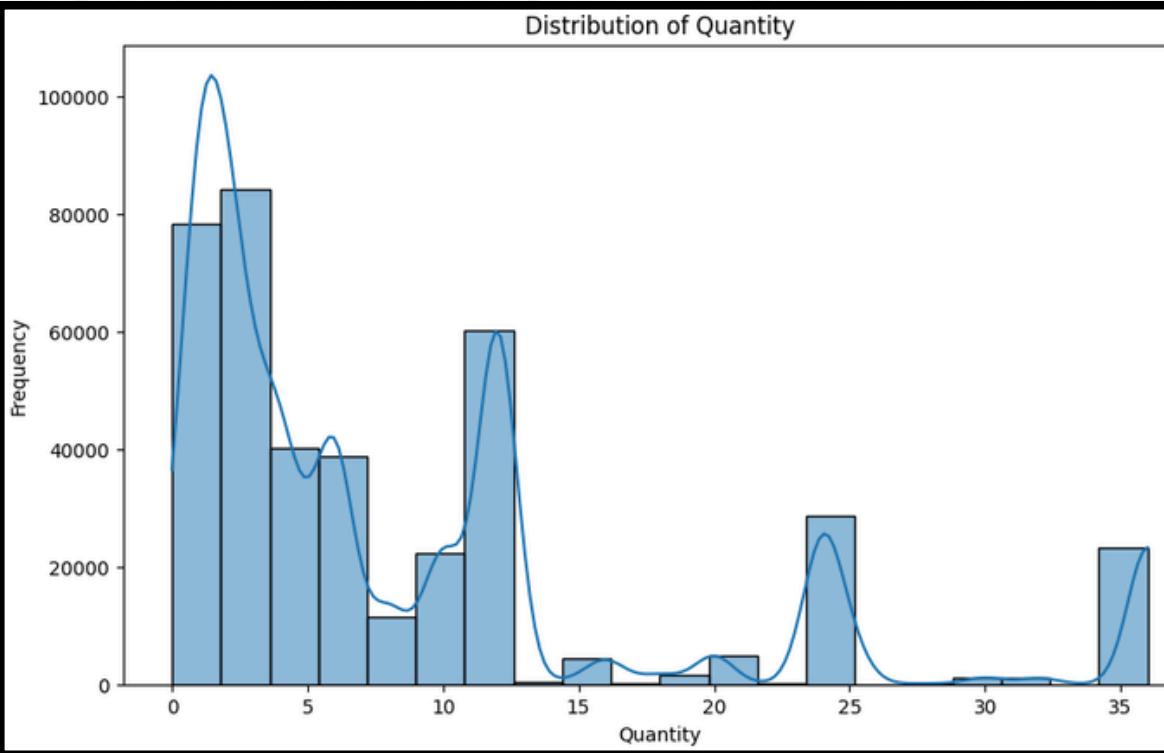
- **United Kingdom:** Dominates with approximately 88.83% of Total Orders.



02

Quantity Distribution Overview

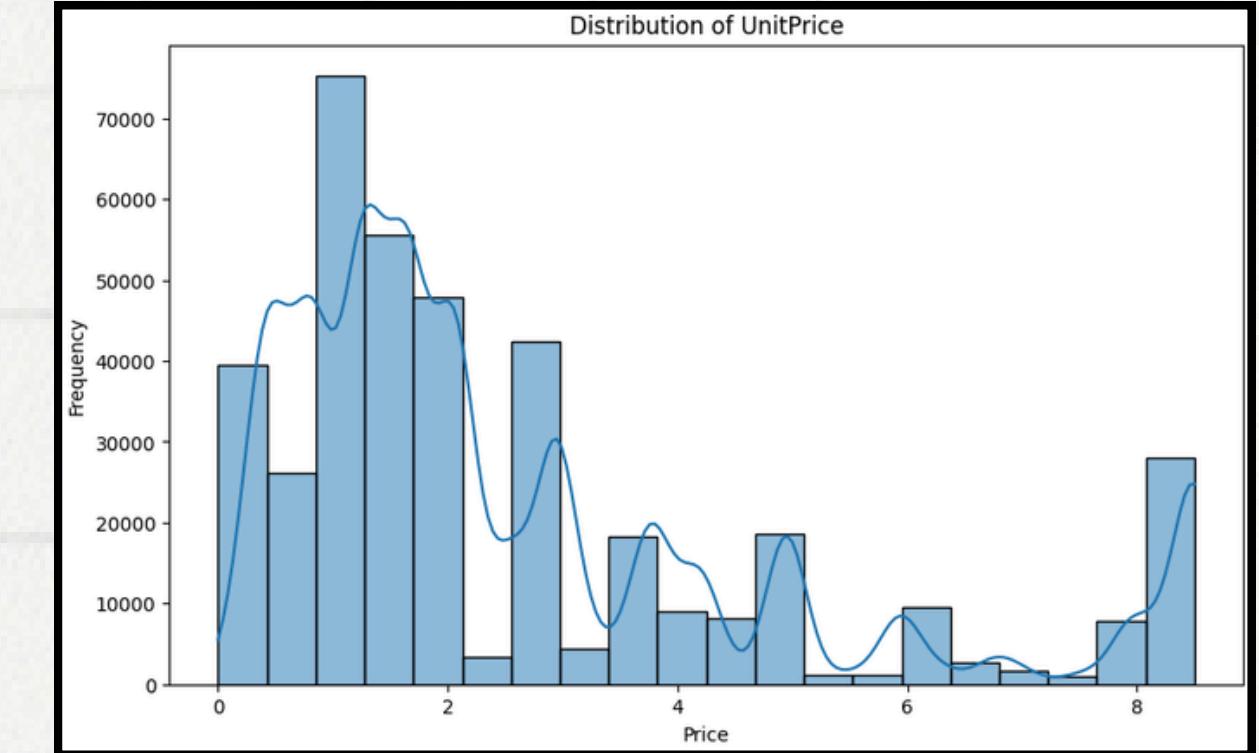
- Most values in the dataset are relatively small or close to the minimum value.



03

Unit Price Distribution Overview

- The dataset indicates that many products have low prices.

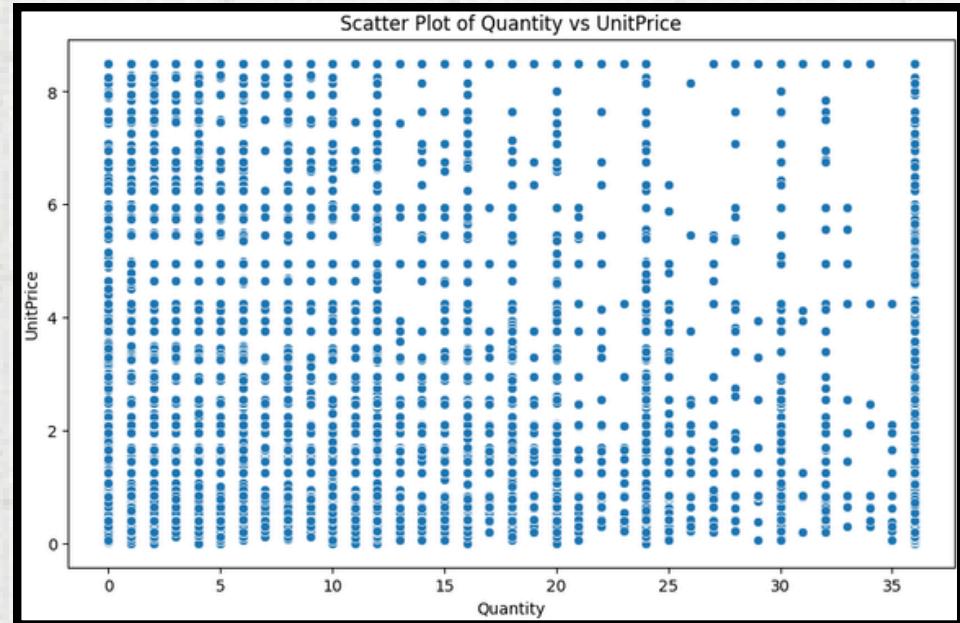


Bivariate and Multivariate Analysis

01

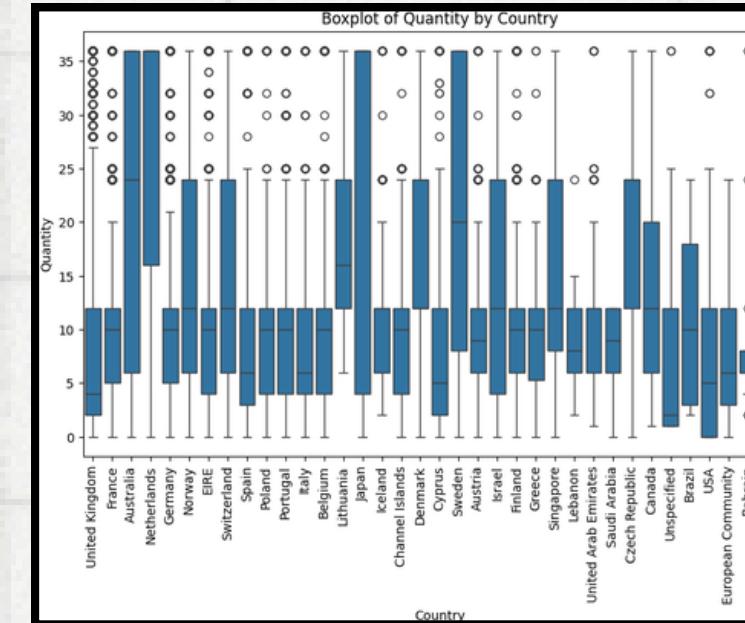
Quantity vs UnitPrice

- customers prefer to purchase larger quantities of lower-priced items, potentially indicating price sensitivity or value-seeking behavior.



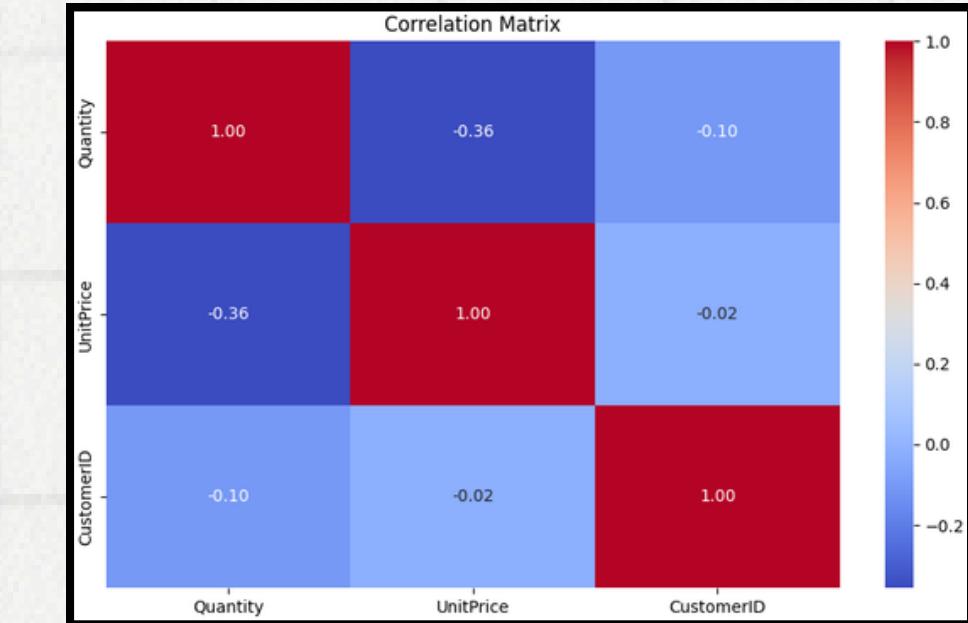
Quantity by Country

- The presence of outliers in the United Kingdom suggests unique purchasing behavior or market dynamics compared to other countries.



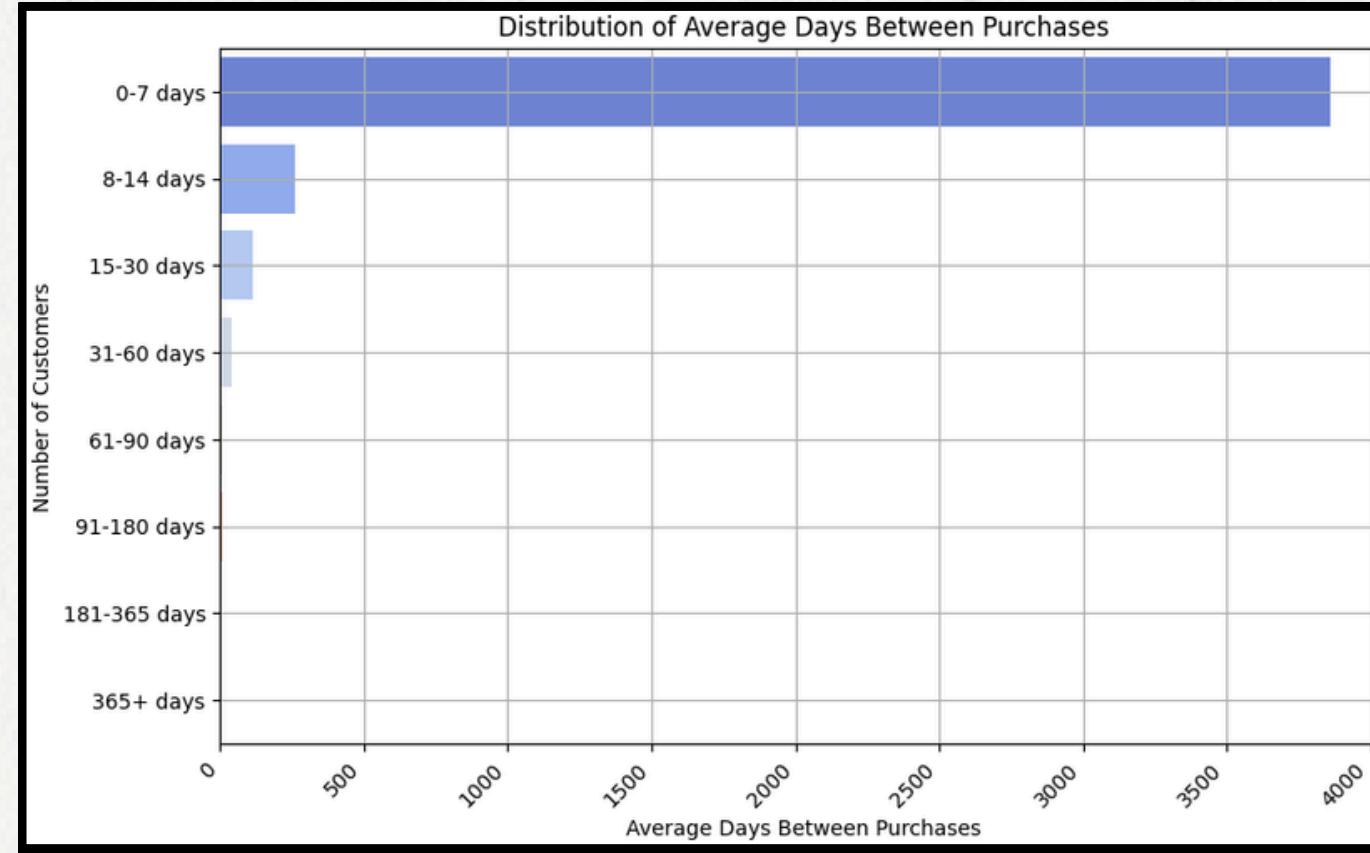
Correlation Analysis: Quantity vs. Unit Price

- Customers may exhibit price sensitivity, preferring lower unit prices for larger quantities.



Feature Engineering

Distribution of Average Days Between Purchases



High Frequency Purchasers (0-7 days)

- 3863 customers on average.
- Frequent buyers with high engagement.

Moderate Frequency Purchasers (8-14 days)

- Fewer customers than high frequency.
- Maintain regular buying habits.

Low Frequency Purchasers (15-30 days)

- Significant decrease in customer numbers.
- Longer intervals between purchases.

Infrequent Purchasers (31-60 days)

- Small number of customers.
- Infrequent or sporadic purchases.

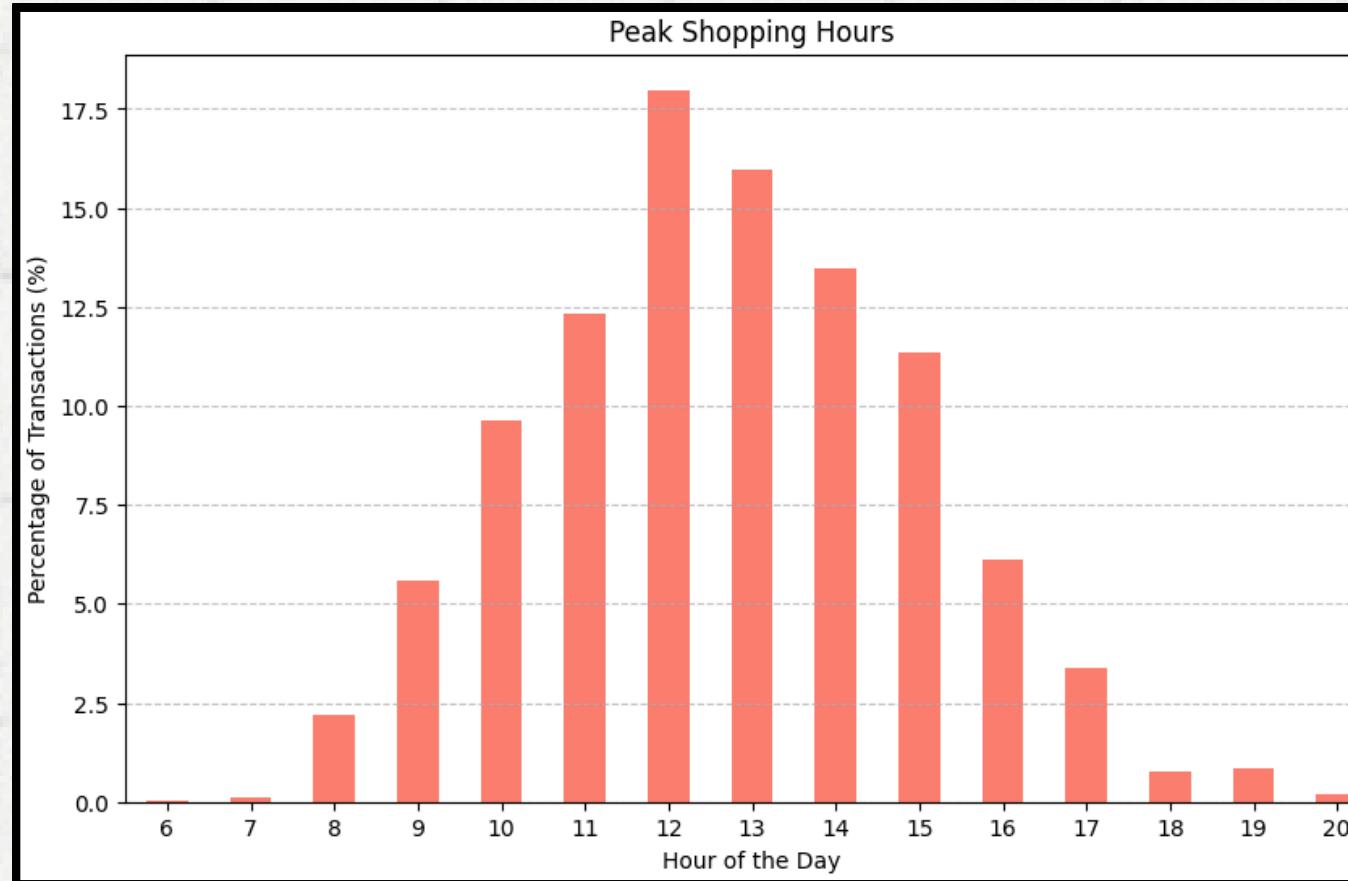
Recommendations

- **Focus on Retaining High-Frequency Purchasers:**
Prioritize engagement with high-frequency purchasers.

- **Implement Tailored Strategies for Re-engagement:**
Utilize tailored marketing, loyalty programs, and incentives to re-engage customers with longer purchase intervals.

Feature Engineering

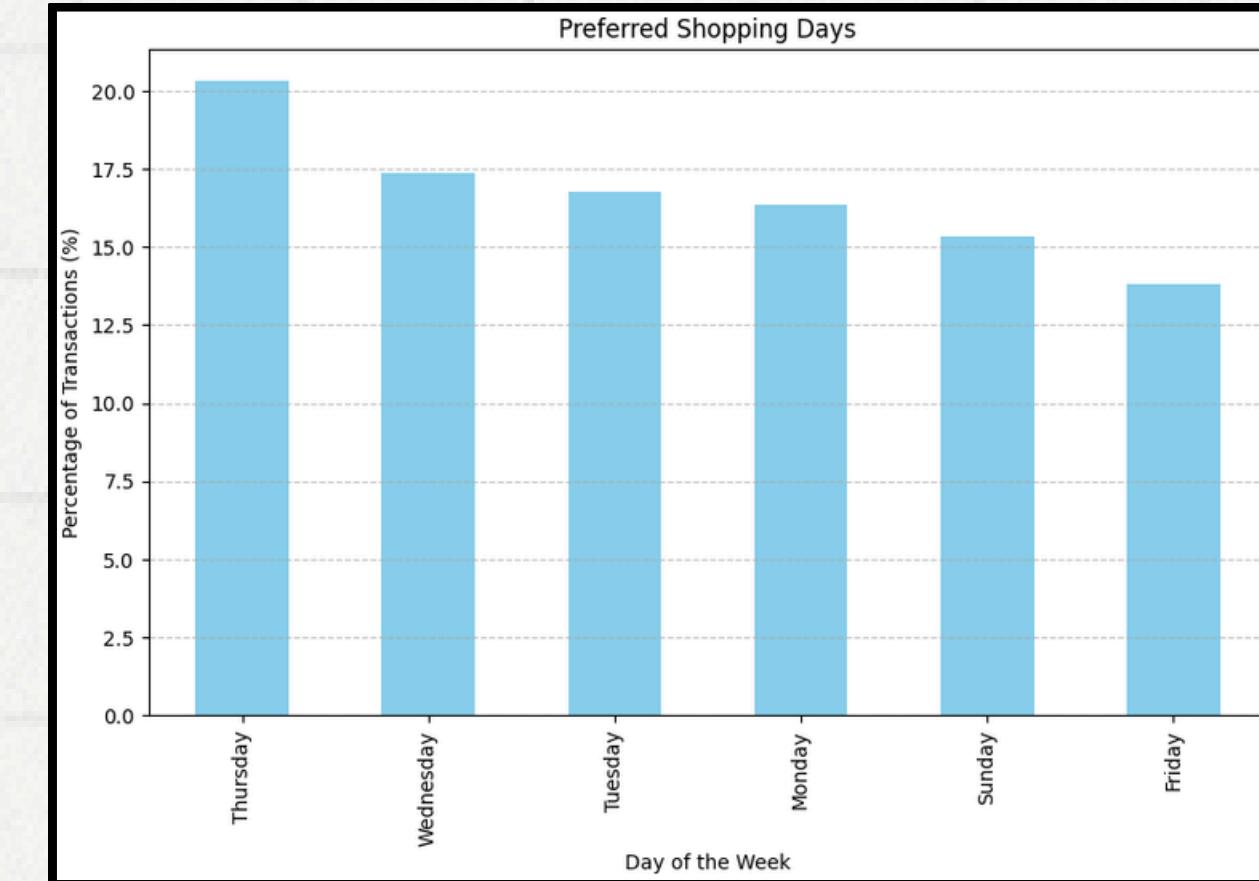
Peak Shopping Hours



The peak shopping hours seem to be around midday, with 12:00 PM (noon) being the peak hour, accounting for approximately 17.98% of purchases.

The hours from 11:00 AM to 3:00 PM (11:00 to 15:00) appear to be the busiest, with proportions ranging from 11.36% to 17.98%.

Preferred Shopping Days

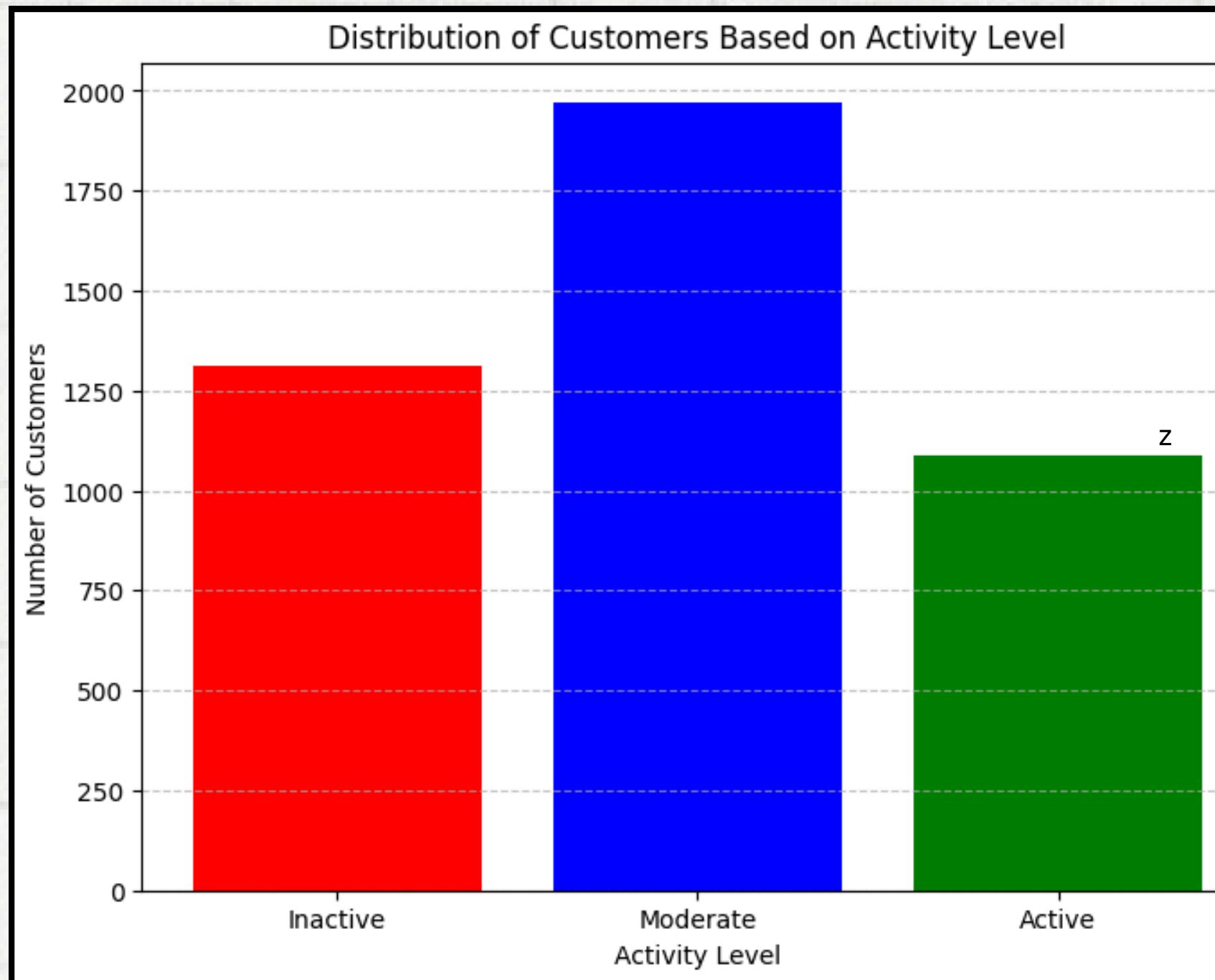


Thursday appears to be the most preferred shopping day, with approximately 20.31% of purchases occurring on that day.

Sunday and Friday have slightly lower proportions of purchases, accounting for around 15.36% and 13.82% respectively.

Feature Engineering

Distribution of Customers Based on Activity Level



Active Customers (1087)

These customers are highly engaged and make frequent purchases, contributing significantly to the business's revenue.

Moderate Customers (1972)

This segment represents customers with moderate purchase frequency and engagement.

Inactive Customers (1313)

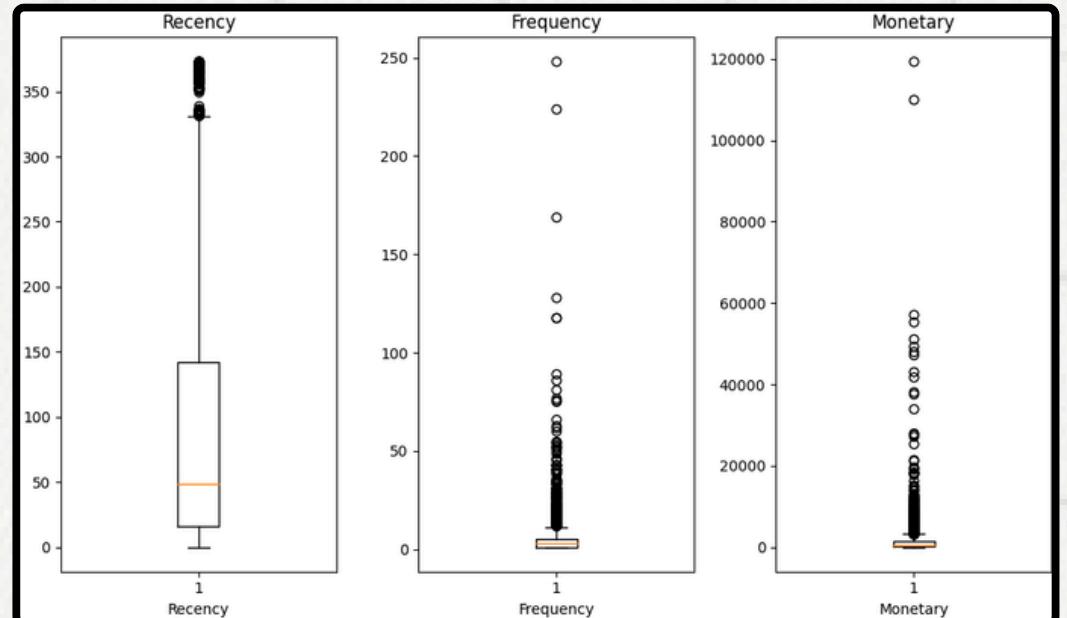
These customers make the fewest purchases and have the lowest engagement with the business.

RCM Analysis

01

Recency, Frequency & Monetary

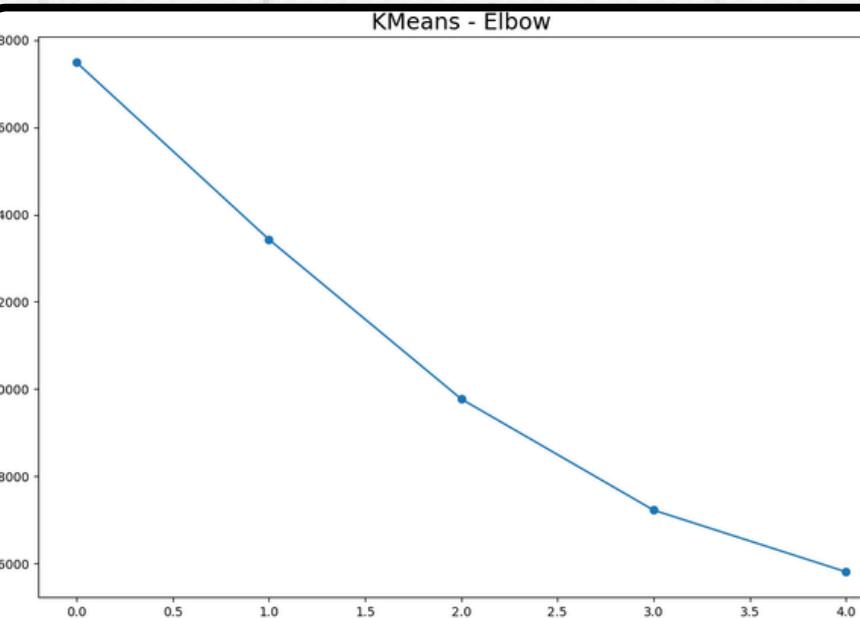
- RFM analysis is a customer segmentation technique based on three key metrics: Recency, Frequency, and Monetary value.



02

K-Means Clustering

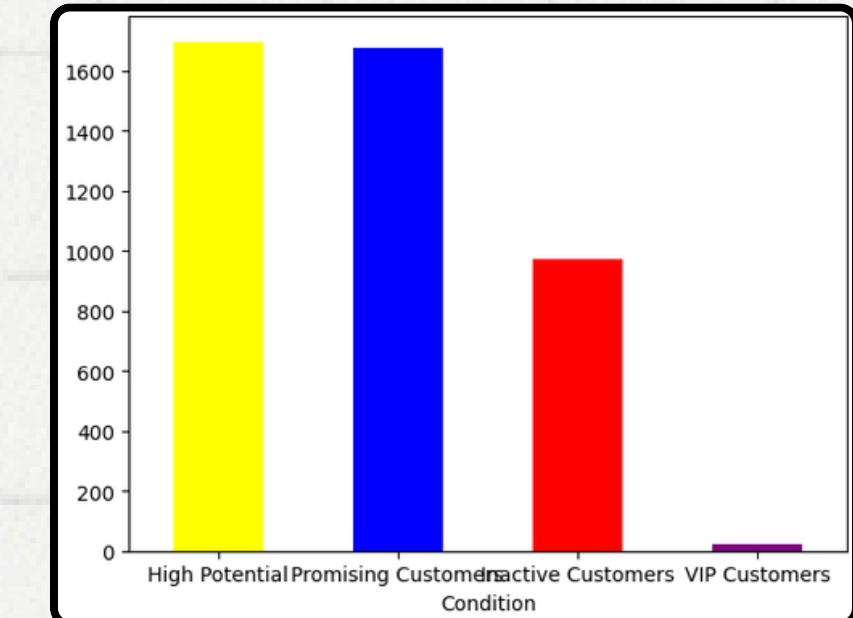
- Performing KMeans clustering on the dataset using 4 numbers of clusters.



03

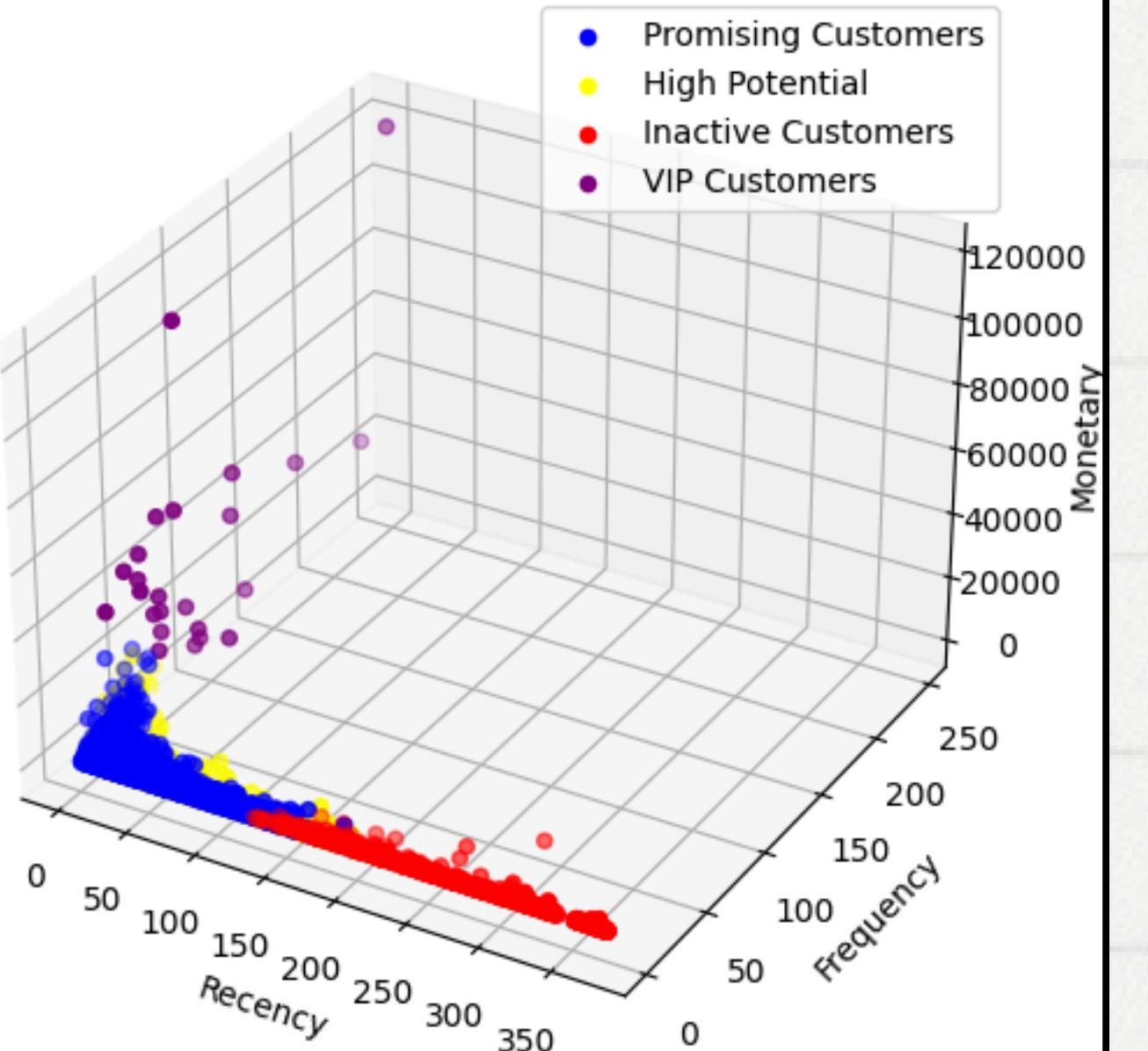
Customer Segmentation:

- Assigning a customer segment label based on the value of the 'Cluster_No' column in the row.



RCM Analysis

3D Representation of Segmented Customers



Cluster 1: Promising Customers

- This cluster has moderate recency, indicating somewhat recent purchases.
- Frequency and monetary values are also moderate, suggesting potential for higher engagement and spending in the future.

Cluster 2: VIP Customers

- This cluster has very low recency, indicating very recent purchases.
- Both frequency and monetary values are significantly higher compared to other clusters, suggesting high-value customers.

Cluster 3: Inactive Customers

- This cluster has high recency, indicating less recent purchases.
- Both frequency and monetary values are relatively low, suggesting inactive or low-engagement customers.

Cluster 4: High Potential

- This cluster has relatively low recency, indicating recent purchases.
- The frequency and monetary values are moderate, suggesting consistent but not high spending behavior.

Recommendations based on RCM Analysis

Promising Customers

- Segment these customers based on their preferences and purchase history to tailor marketing efforts.
- Offer incentives such as loyalty programs, referral rewards, or exclusive deals to encourage repeat purchases.
- Collect feedback to understand their needs and preferences better and adjust strategies accordingly.

VIP Customers

- Provide VIP customers with exclusive benefits, such as early access to new products, VIP-only events, or dedicated customer support.
- Personalize communications and offerings based on their preferences and purchase history.
- Regularly engage with VIP customers to show appreciation for their loyalty and ensure their continued satisfaction.

Inactive Customers

- Re-engage inactive customers through personalized email campaigns, offering discounts or incentives to return.
- Conduct surveys or reach out to understand the reasons for their inactivity and address any concerns or issues.
- Implement strategies to reactivate dormant accounts, such as reminder emails for abandoned carts or exclusive offers for returning customers.

High Potential Customers

- Implement targeted marketing campaigns to nurture and retain these customers. Offer personalized discounts or promotions to encourage repeat purchases and loyalty.
- Provide excellent customer service to enhance their shopping experience and strengthen their relationship with the brand.

Final Recommendations

- ◆ Targeted Marketing for High Potential Customers
- ◆ Segmentation and Incentives for Promising Customers
- ◆ Re-Engagement Strategies for Inactive Customers
- ◆ Exclusive Benefits for VIP Customers
- ◆ Targeted Marketing Based on Shopping Patterns



**Thank you
very much!**