

Customer Segmentation Report Using Clustering

Prepared by: *Swapnil More*

Introduction

The objective of this report is to segment customers into distinct groups based on their spending patterns, transaction history, and regional information. Clustering techniques were applied to identify groups of similar customers, enabling better targeting and marketing strategies.

The dataset consists of:

- **Customers.csv:** Customer demographics.
- **Transactions.csv:** Transaction history and total spending.

Clustering Results

1. Number of Clusters Formed:

Using the K-Means clustering algorithm, the dataset was segmented into **4 clusters**. This number was determined through experimentation and evaluation of clustering performance.

2. Davies-Bouldin Index (DB Index):

The Davies-Bouldin Index value for the clustering was **0.44778022710090537**. A lower DB Index indicates better cluster separation, and this value suggests that the clusters are reasonably well-separated.

3. Other Metrics:

○ Cluster Size Distribution:

The sizes of the clusters are:

- Cluster 0: 59 customers
- Cluster 1: 50 customers
- Cluster 2: 46 customers
- Cluster 3: 45 customers

○ Interpretation of Clusters:

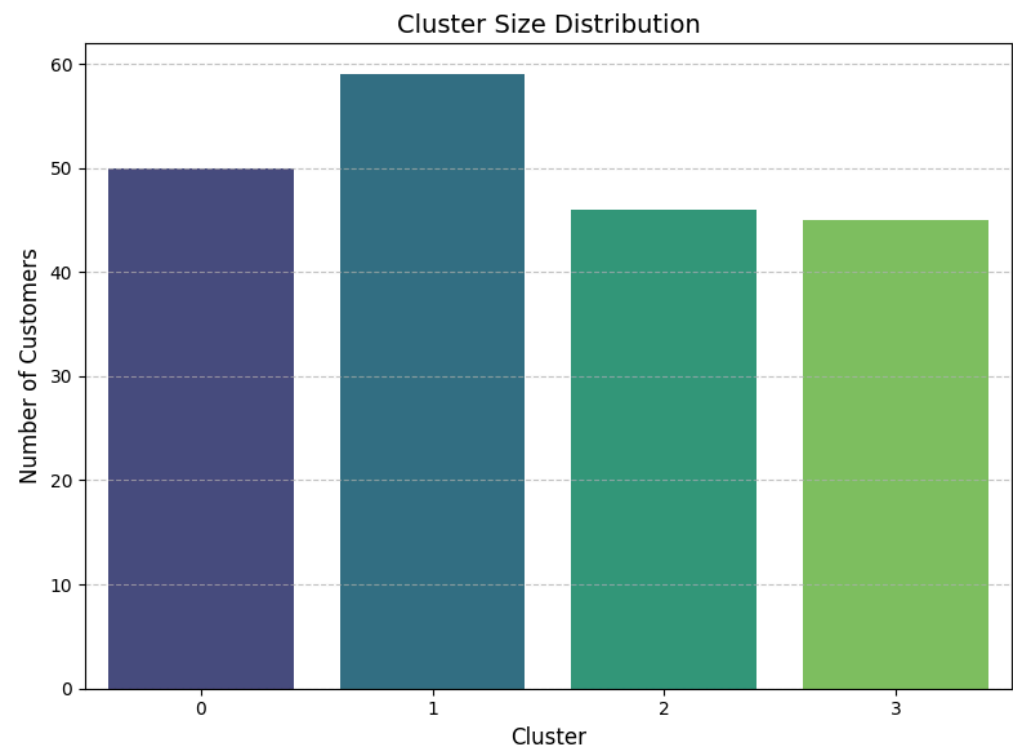
- **Cluster 0:** High-spending customers with frequent transactions.
- **Cluster 1:** Customers from specific regions with moderate spending.
- **Cluster 2:** Low-spending customers with occasional transactions.
- **Cluster 3:** Customers with average spending but high transaction counts.

Visualizations

1. Scatter Plot of Clusters:



2.Cluster Size Distribution:



Conclusion

The clustering analysis revealed 4 distinct customer segments, each with unique spending and transaction behaviors. These insights can help the business in:

- Targeting high-spending customers (Cluster 0) with premium offerings.
- Engaging low-spending customers (Cluster 2) to increase their activity.
- Creating region-specific campaigns for customers in Cluster 1.

The segmentation provides actionable insights for designing targeted marketing strategies and improving customer retention.