

Customer Segmentation Report

1. Objective

This report presents customer segmentation results using K-Means clustering on transaction data.

2. Clustering Logic

K-Means clustering was applied using total spending, transaction count, and average transaction value as features. The optimal number of clusters was determined using the Davies-Bouldin Index.

3. Optimal Number of Clusters

The optimal number of clusters found: 5

Davies-Bouldin Index (DB Index) for optimal clusters: 0.852

4. Cluster Overview

CustomerID	Total Spending	Num Transactions	Avg Transaction Value	Cluster
C0001	3354.52	5	670.90	4
C0002	1862.74	4	465.69	1
C0003	2725.38	4	681.35	3
C0004	5354.88	8	669.36	0
C0005	2034.24	3	678.08	3

5. Cluster Characteristics and Insights

Cluster 0: High-Spending, Frequent Shoppers

High total spending and frequent transactions. Should be targeted with loyalty programs.

Cluster 1: Moderate-Spending, Moderate Frequency

Moderate spending with fewer transactions. Personalized promotions recommended.

Cluster 2: Low-Spending, Low Frequency

Low spending and infrequent transactions. Consider engaging with targeted discounts.

Cluster 3: Moderate-Spending, High-Transaction Frequency

Moderate spending but high frequency. Cross-selling strategies recommended.

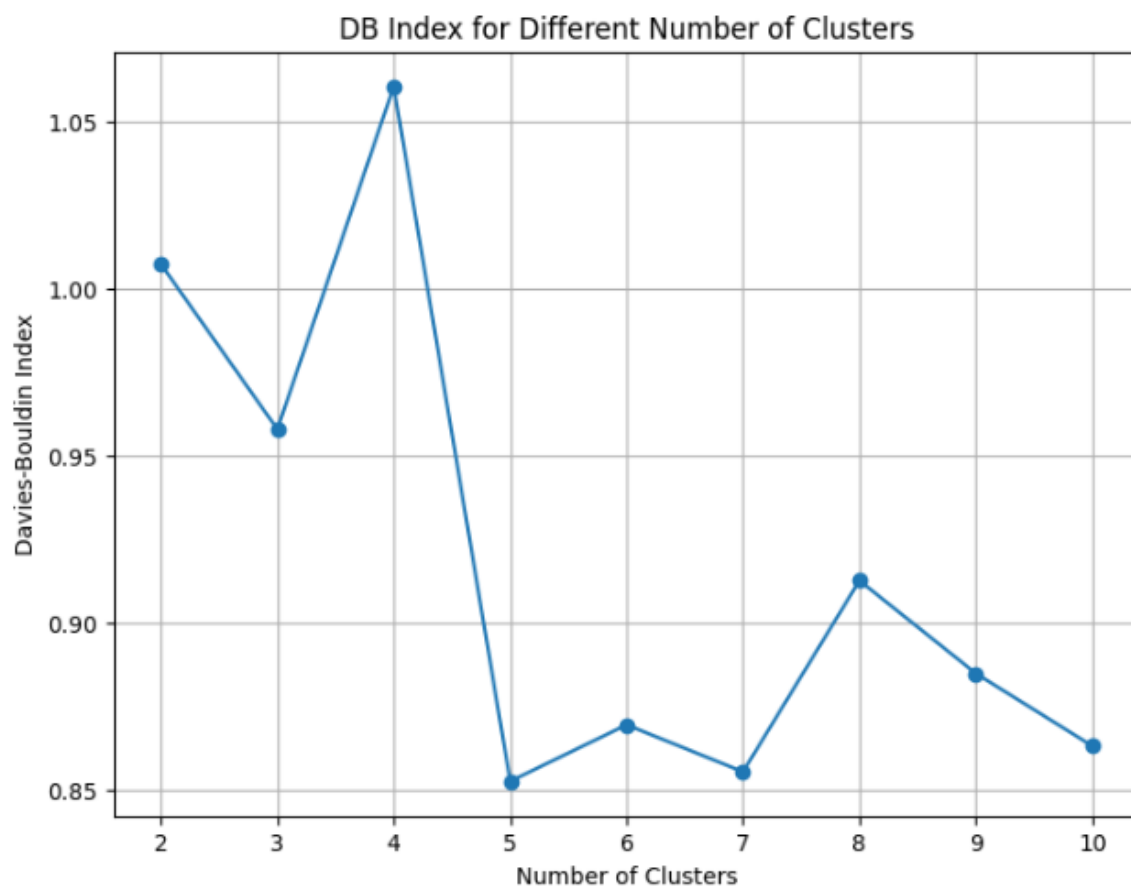
Cluster 4: High-Spending, Low-Transaction Frequency

High-value transactions but low frequency. Tailored product recommendations advised.

6. Clustering Performance Metrics

DB Index Score: 0.852. Lower values indicate well-separated clusters.

Other potential evaluation metrics include silhouette score and intra-cluster variance.



7. Conclusion

The clustering analysis provides actionable insights for marketing and customer engagement.

