

1. Number of Clusters Formed

Using the K-Means clustering algorithm, optimal number of clusters is **6**, based on the Davies-Bouldin Index.

2. DB Index Value

The lowest DB Index achieved is **0.95**, indicating well-separated and compact clusters.

3. Other Relevant Clustering Metrics

- **Clustering Features:** The analysis used Region (Encoded), Total Spent, and Total Transactions as input features. These were normalized to ensure uniform scaling.

4. Cluster Insights

- **Cluster 1 & 4:** High-value customers with frequent transactions. Focus on loyalty programs and premium offers.
- **Cluster 0 & 3:** Low spenders. Use discounts and onboarding offers to engage them.
- **Cluster 2:** Moderate spenders. Provide incentives to boost spending.

5. Visualizations

Scatter plots show distinct clusters, and DB Index trends confirm 6 clusters as optimal.

Conclusion

The clustering results help target customer segments with tailored marketing and engagement strategies.