Number of Clusters Formed

The clustering process explored cluster counts ranging from 2 to 10. Based on the Davies-Bouldin Index, the optimal number of clusters was identified as:

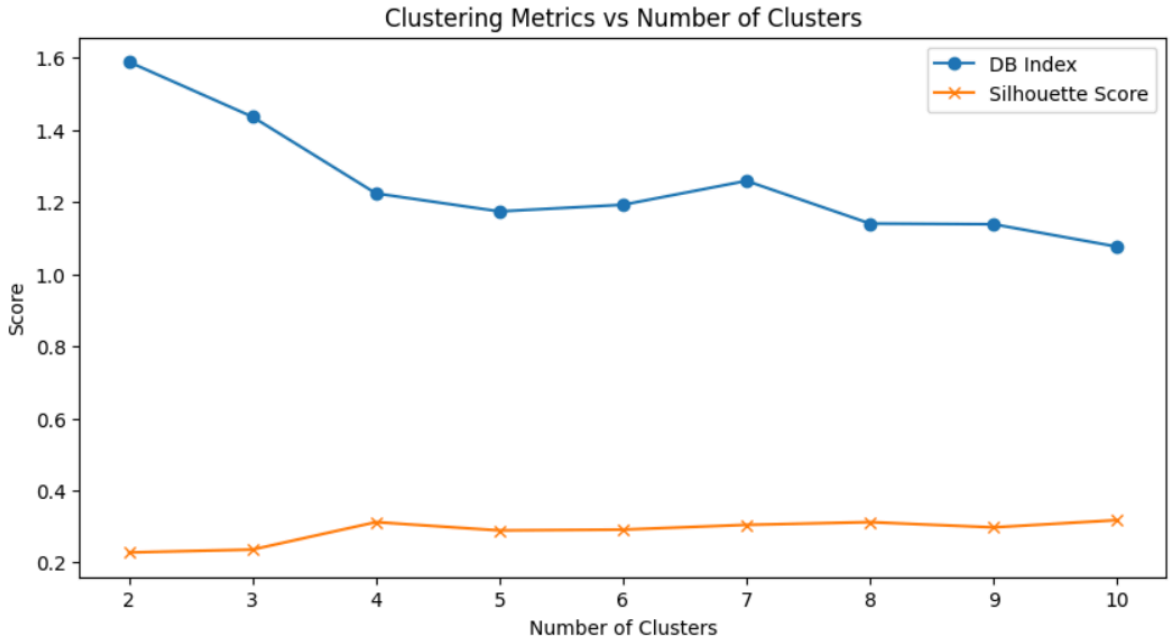
Optimal Number of Clusters: 10

Clustering Metrics

1. **Davies-Bouldin Index (DB Index):**
    - A lower DB Index indicates better clustering. The trend was analyzed for each cluster count, and the final DB Index for the optimal clustering was:
        - **Final DB Index:** 1.0764163704326553
2. **Silhouette Score:**
    - A higher Silhouette Score indicates better-defined clusters. The trend was plotted, and the final Silhouette Score for the optimal clustering was:
        - **Final Silhouette Score:** 0. 31743171206716236

Visualization of Results

1. **Metric Trends:**
    - A graph of DB Index and Silhouette Score versus the number of clusters was plotted to visualize the clustering quality across different cluster counts.



2. **Cluster Visualization:**
    - Principal Component Analysis (PCA) reduced the feature space to two dimensions for visualizing clusters. A scatter plot of the clusters revealed distinct groups, confirming the effectiveness of the clustering process.

Summary

The clustering analysis provided insights into the structure of the data, identifying 10 as the optimal number of clusters. The Davies-Bouldin Index and Silhouette Score trends, along with PCA-based visualizations, validated the quality of the clusters.