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:

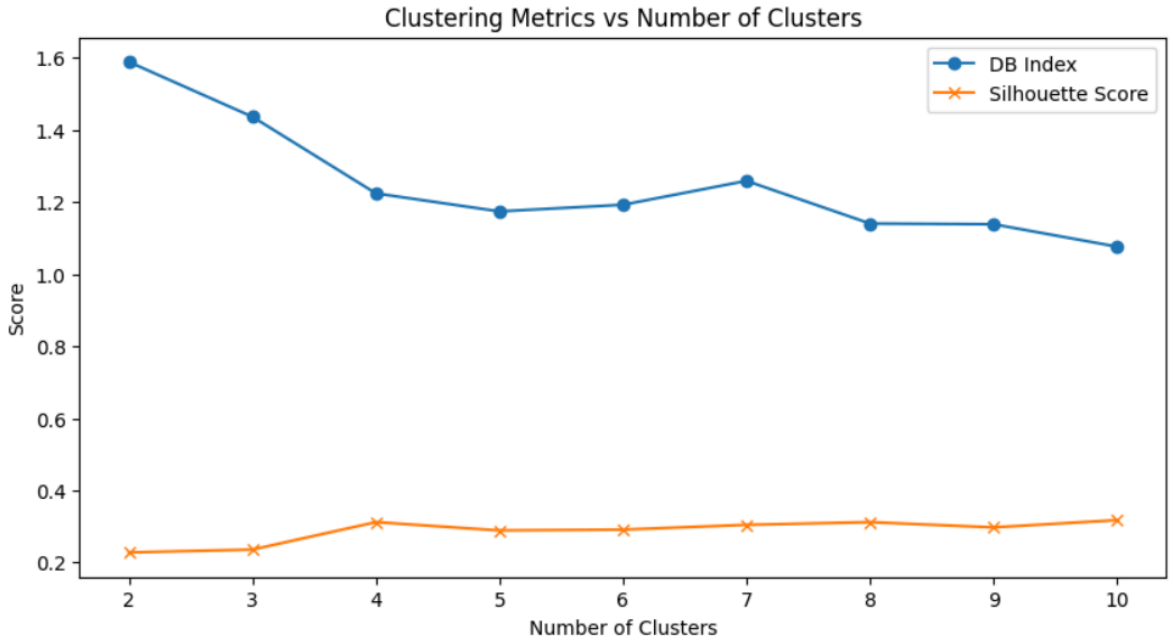
Optimal Number of Clusters: 10

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 **[Insert Value]** 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.