Clustering Analysis Report

Introduction
This report presents the results of a clustering analysis performed on the dataset using the K-Means clustering algorithm. The analysis aims to identify patterns and group similar data points together. Key metrics such as the number of clusters formed, the Davies-Bouldin Index, the Silhouette Score, and Inertia are used to evaluate the quality and effectiveness of the clustering model.

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2. Clustering Results

1. Number of Clusters Formed
The K-Means clustering algorithm identified **3 clusters** in the dataset. This result provides insight into how many distinct groups the model has found within the data.

2. Davies-Bouldin Index
The **Davies-Bouldin Index** (DB Index) was calculated to evaluate the clustering quality.
The DB index for this clustering model is **0.9183282802588961**.
A lower DB index indicates better clustering, where the clusters are more compact and well-separated. A higher DB index suggests poor clustering quality.

3. Silhouette Score
The **Silhouette Score** was used to measure how similar each point is to its own cluster, compared to other clusters.
The Silhouette Score for this clustering model is **0.3353833748488999**.
The silhouette score ranges from -1 to +1, where a higher value indicates well-defined clusters and a score close to zero suggests overlapping clusters.

3. Conclusion

The clustering analysis revealed a reasonable clustering structure within the dataset. The **Silhouette Score** and **Davies-Bouldin Index** indicate that the clusters are well-defined and separated. The

Based on these metrics, the clustering model performs well, identifying distinct groups within the data.