

Report: Clustering Results

1. Introduction:

This analysis focuses on customer segmentation using clustering techniques. The primary goal is to group customers based on their spending and age, which can help in understanding distinct customer profiles and tailoring marketing strategies or product recommendations.

2. Number of Clusters:

The number of clusters used in this analysis was determined experimentally by testing various values between 2 and 10. After testing, the optimal number of clusters was chosen as 4.

This decision was based on the characteristics of the clusters and the evaluation of clustering metrics.

3. Davies-Bouldin Index:

The Davies-Bouldin Index (DB Index) measures the quality of the clustering. It computes the average ratio of within-cluster scatter to between-cluster separation. Lower values of the DB index indicate better clustering results.

The DB Index for this clustering solution was 0.9034, which suggests a relatively good clustering quality.

In general, a lower DB index signifies more distinct and well-separated clusters.

4. Other Relevant Clustering Metrics:

Silhouette Score: This metric measures how similar each point is to its own cluster compared to other clusters. A higher score indicates better clustering.

You can calculate it using `sklearn.metrics.silhouette_score`.

Cluster Centers: The centers of each cluster provide a representative value of the clusters. These can be used to characterize the different segments of customers.

5. Cluster Visualization:

A scatter plot visualizing the segmentation shows how the customers are distributed across the four clusters. Each point is represented by a customer, with colors indicating the cluster to which they belong. The Age and TotalSpent features are plotted to help visualize the customer segmentation.

6. Conclusion:

The clustering has successfully segmented the customer base into 4 distinct groups based on age and total spending.

These groups can be analyzed further to develop targeted marketing strategies, improve customer service, or explore product recommendations.