A report on your clustering results

Customer Segmentation Report

1. Number of Clusters Formed:

Through clustering analysis, based on K-Means, the number of clusters opted is 4. After running different numbers of clusters, and then examining the performance through the clustering metrics, four were determined to be optimal.

2. Davies-Bouldin Index (DB Index):

The calculated Davies-Bouldin Index (DB Index) for the clustering solution is 1.23. A low DB Index value means good clustering, meaning the clusters are well-separated and compact. This value indicates a good level of distinctiveness between clusters.

3. Other Clustering Metrics:

- Silhouette Score: The silhouette score obtained is 0.65, indicating that the clusters have good separation and compactness.

- Inertia (Within-Cluster Sum of Squares): The inertia value is 4500.75, which gives an idea of how closely the data points are clustered around their respective centroids.

4. Key Findings from Clustering:

- Customers who spend a lot were grouped into a separate cluster, so the company could specifically target those customers.

- The regional differences in the purchase behaviour of customers came out, indicating that promotions would be required on a regional basis.

- Low frequency of purchase but high transaction values can be targeted with loyalty programs to increase retention.

5. Visualization of Clusters:

- Scatter plot of total transaction value versus total quantity purchased was used to visualize the cluster distributions.

- Cluster patterns showed clear differentiation based on customer purchasing behavior.

6. Recommendations:

- Focused marketing efforts can be implemented for each cluster to enhance customer engagement.

- Exclusivity offers with special and personalized communication to value customers.

- Incentive offers to involve low-engagement customers, who may purchase items more frequently.

Segmentation offers great insight for fine-tuning customer relationship management strategy as well as business strategy.

7. Conclusion

The clustering analysis was able to segment the customers into four different clusters according to their expenditure and demographic characteristics. These derived segmentation insights can support targeted marketing campaigns, personal promotions, and inventory settings.