

Customer Segmentation Report

Objective

This analysis's goal is to use clustering algorithms to divide up the customers based on their transaction history and profile. In order to improve company outcomes and guide targeted marketing initiatives, this segmentation offers actionable data into discrete customer groups.

Clustering Approach

1. Data Preparation

Customer segmentation was performed using features derived from transaction data:

- **Total Spending:** Total value of all transactions by the customer.
- **Average Transaction Value:** Average value per transaction.
- **Transaction Frequency:** Total number of transactions.

Features were scaled using StandardScaler to ensure uniformity across dimensions.

2. Clustering Algorithm

- **Algorithm Used:** K-Means Clustering.
- **Number of Clusters:** Based on the elbow method, **4 clusters** were identified as optimal.

Clustering Results

1. Number of Clusters:

- **Cluster 1 (High-Value Customers):** Customers with high spending, frequent transactions, and large average transaction values.
- **Cluster 2 (Low-Value Customers):** Customers with low spending and infrequent transactions.
- **Cluster 3 (Moderate Spenders):** Customers with moderate spending and transaction frequency.
- **Cluster 4 (Occasional High Spenders):** Customers with infrequent but high-value purchases.

2. Davies-Bouldin (DB) Index:

- **Value: 1.06**
The low DB Index indicates well-separated and compact clusters, validating the effectiveness of the segmentation.

Conclusion

The clustering results effectively differentiate customer behaviour into four actionable groups. With a DB Index of 1.06, the clusters are compact and well-separated, providing a strong foundation for targeted marketing strategies to maximize customer value and satisfaction.