

Customer Segmentation Report

Objective

The task is to cluster customers into meaningful groups using the customer profile information (Customers.csv) and transaction data (Transactions.csv). The output will help in deriving actionable insights on customer behaviour for strategic decision-making.

Clustering Results:

1. Number of Clusters Generated

According to the Elbow Method, the best number of clusters was found to be 4. This was selected by observing the distortion values for varying clusters from 2 to 10, where the elbow point was at 4 clusters.

2. Davies-Bouldin Index Value

The Davies-Bouldin (DB) Index was used to measure clustering performance. The lower the DB Index, the more defined the clusters are.

DB Index Value: 1.23

The value indicates well-separated and compact clusters, confirming the reliability of the segmentation.

Insights and Recommendations

1. Key Findings

- Cluster 1 is the highest-performing customers who generate the most revenue. They have high transaction values and are frequent buyers.
- Cluster 2 consists of low-spending customers. Special strategies will be needed to encourage them to spend more.
- Cluster 0 and Cluster 3 are moderate to mid-range customers who may be encouraged towards higher expenditure through incentives or rewards programs.

2. Business Recommendations

- Retention Strategy for Cluster 1:

Use loyalty schemes, special offers, or priority access to new releases to keep these valuable customers.

- Upselling for Cluster 3:

Provide cross-sell or bundled offers to increase their expenditure.

- Engagement for Cluster 2:

Focus on targeted promotions, discounts, or email campaigns to encourage more frequent purchases.

- Experiment with Region-Based Promotions:

Because customer segmentation also takes region into account, adapt campaigns to meet regional tastes.

Clustering Metrics

- 1) Number of Clusters: 4
- 2) DB Index: 1.23
- 3) Other Observations:

The clusters are clearly separated in the PCA plots, asserting good performance of clustering.

Cluster distribution showed that most customers fall into moderate and low-value segments (Clusters 0 and 2), indicating room for growth in customer engagement strategies.

Conclusion

The clustering procedure was able to split customers into four groups, each of which has different characteristics. The results offer real-world implications and can be used to drive revenue growth, enhance customer engagement, and maximize marketing strategies.