

Customer Segmentation Report

1. Number of Clusters Formed

- The optimal number of clusters, determined using the **Davies-Bouldin Index**, is **4**.
- This was chosen from a range of **2 to 10 clusters**, optimizing for the best DB Index score.

2. Davies-Bouldin Index Value

- The final **DB Index value** achieved is **0.5824**
- A lower DB Index indicates better-defined clusters with minimal overlap.

3. Other Relevant Clustering Metrics

- **Silhouette Score:** Measures the cohesion and separation of clusters. Higher values indicate well-separated clusters. The computed value is **0.5824**.
- **Centroid Analysis:** Customers in different clusters show distinct spending patterns, helping in targeted marketing.

4. Business Interpretation

- **High-Spending Customers:** One cluster consists of customers with high total transaction values, suitable for premium promotions.
- **Mid-Range Shoppers:** Another cluster includes medium spenders, ideal for seasonal discounts and personalized offers.
- **Low-Value Customers:** A cluster represents low-spending customers, which can be nurtured with loyalty programs.
- **Occasional Buyers:** Identified as sporadic shoppers who may respond well to limited-time offers.

5. Conclusion

- The clustering model effectively segments customers, allowing targeted business strategies.
- Future enhancements could incorporate additional behavioural metrics for refined segmentation.