

Clustering Analysis Summary

Number of Clusters: 4

Silhouette Score: 0.3422

Davies-Bouldin Index (DBI): 0.9594

1. Silhouette Score (0.3422)

- The silhouette score measures how well-separated the clusters are.
- A score of 0.3422 indicates moderately well-defined clusters with some overlap between them.
- While this score suggests that the clustering is reasonable, there is room for improvement to achieve more distinct groupings.

2. Davies-Bouldin Index (DBI = 0.9594)

- The DBI evaluates the ratio of intra-cluster compactness to inter-cluster separation.
- A lower DBI value indicates better clustering quality, with compact and well-separated clusters.
- A DBI of 0.9594 is relatively low, suggesting good clustering quality with well-separated and compact clusters.

Cluster Characteristics

Insights:

1. Cluster 0: Long-term Low-value Customers

- Customers in this cluster have been with the company for the longest time (~873 days on average).
- They have the lowest total spend (~₹2,757) and purchase fewer products (10 items on average).
- These customers could be targeted for re-engagement campaigns to increase their spending.

2. Cluster 1: High-value Loyal Customers

- These are long-term customers (~863 days) with the highest total spend (~₹5,505) and the largest basket size (20 items).
- They are frequent purchasers and buy a wide variety of products.
- These customers are highly valuable and should be prioritized for loyalty programs or premium services.

3. Cluster 2: New High-value Customers

- These are relatively new customers (~260 days) but have a high total spend (~₹4,392).
- They purchase frequently and have a moderately large basket size (16 items).
- These customers show potential for becoming loyal customers and should be nurtured through personalized offers.

4. Cluster 3: New Low-value Customers

- These are newer customers (~332 days) with the lowest total spend (~₹1,905) and minimal engagement (7 items purchased).
- They represent a low-value segment and could benefit from introductory offers or educational campaigns to increase engagement.