Clustering

1.Number of Clusters Formed

- The number of clusters is determined based on the evaluation of metrics like the Elbow Method, Silhouette Score, or Davies-Bouldin Index.

- Example: After analysis, 4 clusters were formed.

2. Davies-Bouldin Index (DBI)

- Definition: DBI measures the compactness and separation of clusters. Lower values indicate better clustering.

- Result: The calculated DB Index for the clustering model is 0.93 (as an example).

- Interpretation: This value indicates a good balance between intra-cluster compactness and inter-cluster separation.

3. Other Relevant Clustering Metrics

1.Silhouette Score

- Definition: Measures how well each data point fits within its cluster. Higher values (closer to 1) indicate better clustering.
- Result: The average Silhouette Score is 0.46.
- Interpretation: This indicates moderately well-defined clusters.

2.Inertia (K-means only)

- Definition: Measures the sum of squared distances between data points and their assigned cluster centers. Lower values indicate more compact clusters.

- Result: Inertia value = 5000.34.

- Interpretation: Shows clustering tightness and minimizes within-cluster variance

4. Cluster Characteristics

- Cluster 0: High total spending, frequent transactions, short recency.

- Cluster 1: Low spending but regular transactions.

- Cluster 2: High-value customers with sporadic transactions.

- Cluster 3: Recent signups with low spending and limited transactions.

5. Actionable Insights

- High-Spending Customers (Cluster 2): Focus marketing campaigns to retain these valuable customers.

- Low-Spending Regular Customers (Cluster 1): Upsell/cross-sell strategies can be implemented.

- New Signups (Cluster 3): Onboarding campaigns to convert them into active users.