Customer Segmentation Report

1. Clustering Results

1.1 Number of Clusters Formed

The clustering analysis resulted in 9 clusters based on customer profiles and transactional data. The K-Means algorithm was used to identify these customer segments. These clusters represent groups of customers with similar spending behaviors, purchase frequencies, and other relevant features**.**

1.2 Davies-Bouldin Index (DB Index)

- DB Index Value: 0.6146
- Interpretation: A lower DB Index value indicates that the clusters are well-separated and compact. In our case, a DB Index of 0.6146 suggests that the clusters are well-defined with minimal overlap.

1.3 Silhouette Score

- Silhouette Score: 0.5280
- Interpretation: The Silhouette Score measures how similar each data point is to its own cluster (intra-cluster cohesion) compared to other clusters (inter-cluster separation). A score of 0.5280 suggests that the clusters are reasonably well-separated but there may be some room for improvement.

2. Clustering Evaluation Metrics

2.1 Davies-Bouldin Index (DB Index)

The DB Index evaluates the compactness and separation of clusters. Our clustering model produced a DB Index of 0.6146, which is relatively low, suggesting that the clusters are well-separated and distinct.

2.2 Silhouette Score

The Silhouette Score of 0.5280 provides insight into how well the data points fit within their respective clusters. While the score is moderate, it indicates that most customers were placed in appropriate clusters with minor overlap.

3. Visualizing the Clusters

1.PCA for Visualization