Clustering Results Report

1. Number of Clusters Formed

The optimal number of clusters was determined using the Elbow Method, which indicated **3 clusters** as the ideal choice.

2. Davies-Bouldin Index (DB Index)

The Davies-Bouldin Index (DB Index) is a metric used to evaluate the quality of clusters. A lower DB Index indicates better clustering.

- **DB Index**: **0.9932**

3. Silhouette Score

The Silhouette Score measures how similar each point is to its own cluster compared to other clusters. A higher value indicates well-defined clusters.

- **Silhouette Score**: **0.3531** (This score suggests that the clusters are moderately well-separated, but there is room for improvement.)

4. Additional Visualizations

The customer segments were visualized using PCA to reduce the feature space to two dimensions, and the clusters were color-coded to show their distribution.

- The PCA visualization (scatter plot) of the clusters can be found in the chart above, which demonstrates how customers are grouped based on the selected features.

5. Conclusion

The clustering process yielded 3 distinct segments of customers. While the clustering results show moderate quality based on the DB Index and Silhouette Score, further fine-tuning of the clustering algorithm or feature selection could improve the results. The visualizations provide an insight into how customers are grouped and can be leveraged for targeted strategies.