Clustering Report

1. Number of Clusters Formed:

8 Clusters were formed as the optimal number of clusters using the Davies-Bouldin Index (DBI) as the evaluation criterion.

2. Davies-Bouldin Index (DBI):

DB Index: 0.8060
The Davies-Bouldin Index evaluates the quality of clustering, where lower values indicate better-defined clusters. A DBI score of 0.8060 suggests that the clusters are reasonably well-separated.

3. Silhouette Score:

Silhouette Score: 0.3722
The Silhouette Score measures how similar a data point is to its cluster compared to other clusters. The score ranges between -1 and 1, where higher values indicate better-defined and more distinct clusters. A score of 0.3722 indicates moderate cluster quality but leaves room for improvement.

4. Clustering Algorithm:

The clustering was performed using the **K-Means Clustering Algorithm** with 8 clusters.

5. Features Used for Clustering:

The following features were used after normalization:

- **PurchaseFrequency**: The frequency of purchases made by a customer.
- **AvgSpend**: The average amount spent by a customer.
- **TotalSpend**: The total expenditure of a customer.

6. Visualization:

The clusters were visualized using PCA for dimensionality reduction to 2D space. Each cluster was distinctively colored to demonstrate separability.