Customer Segmentation Report

Number of Clusters Formed: 10

The optimal number of clusters was determined using the **Davies-Bouldin Index (DB Index).**

Customers were segmented into **10 distinct groups** to capture their behavior patterns.

Davies-Bouldin Index (DB Index): 0.96

The DB Index value suggests that the clustering model has achieved reasonable compactness (clusters being tightly grouped) and separation (clusters being well-distinguished).

Lower values of DB Index are preferable, indicating a good cluster formation.

Clustering Metrics:

Clustering Algorithm: K-Means

Evaluation Metric: Davies-Bouldin Index (DB Index)

Optimal Number of Clusters: 10

Visualization:

The clusters were visualized using **Principal Component Analysis (PCA)** to reduce the feature dimensions to two components for better interpretability.

A scatterplot was generated to show the clear separation between clusters. Each cluster is represented with a unique color, as depicted in the plot below.

Cluster Insights:

Cluster analysis did not explicitly calculate insights such as spending habits, transaction frequency, or region dominance. These can be derived through further analysis of aggregated cluster-level statistics.

Sample Cluster Assignments:

Below is a snapshot of customers and their assigned clusters:

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	CustomerID	Cluster
35	C0036	4
146	C0147	3
16	C0017	0
166	C0167	5
78	C0079	4
39	C0040	1
30	C0031	3