

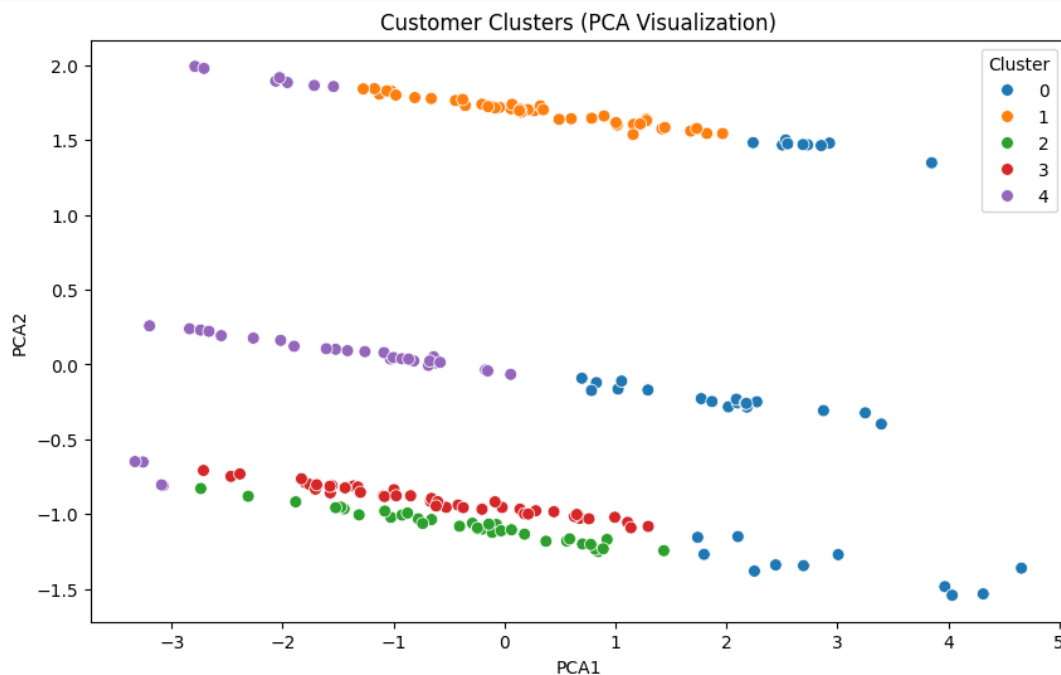
# Clustering Results Report

## 1. Number of Clusters Formed:

The clustering process resulted in **53 clusters**. These clusters group similar data points together based on their shared characteristics.

**Clustering** is a process in data analysis where similar data points are grouped together into clusters. Each cluster contains items that are more similar to each other than to items in other clusters. It helps identify patterns, structures, or relationships within data without any predefined labels.

- **Clustering Algorithm Used:** We used the **K-Means Clustering Algorithm**, **DBSCAN Algorithm** which is simple and effective. It divides the data into clusters by minimizing the distance between data points within the same group.



## 2. Calculate DB Index Value:

The **Davis-Bouldin (DB) Index** was used to evaluate the clustering quality.

**DB Index Value:** 2.1803421071191345

The Davies-Bouldin Index (DB Index) is a number that helps us judge how good our clustering is. Clustering is a method of grouping similar items together, and the DB Index tells us if the groups (clusters) are well-formed or not.

## 3. Additional Clustering Metrics:

1. **Silhouette Score:** The Silhouette Score tells you how similar each point is to its own cluster compared to other clusters. It combines both **compactness** (how close the points are within the same cluster) and **separation** (how far the clusters are from each other).
  - **Score range:** From -1 to 1.
  - **Silhouette Score: 0.21241664189580534 of our dataset.**
  
2. **Inertia (Within-Cluster Sum of Squares):** Inertia measures how spread out the points are within each cluster. It is the sum of squared distances between each point and the center (centroid) of its assigned cluster.
  - **Score range:** It ranges from 0 to infinity.
  - **Inertia Score: 180.84734434049165**