Customer Segmentation Clustering Report

The K-Means clustering algorithm was employed to segment customers. The following steps were taken:

1. **Data Preparation**: Merged customer and transaction datasets to create a comprehensive customer profile.
2. **Feature Engineering**: Created features such as Total Spending and Transaction Count for clustering.
3. **Standardization**: Standardized the features to ensure equal contribution to the clustering process.
4. **Clustering**: Applied K-Means clustering and determined the optimal number of clusters using the Elbow method and Davies-Bouldin Index.

Clustering Results

Number of Clusters Formed

- **Clusters Identified**: **4**
    - The K-Means algorithm identified 4 distinct clusters based on customer spending and transaction behavior.

Davies-Bouldin Index

- **DB Index Value**: **0.8595**
    - The Davies-Bouldin Index value of 0.8595 indicates a reasonable separation between the clusters. Lower values suggest better clustering quality, and this value reflects a moderate level of cluster separation.
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    The distribution of customers across the clusters is as follows:
    - **Cluster 0**: 50 customers
    - **Cluster 1**: 75 customers
    - **Cluster 2**: 100 customers
    - **Cluster 3**: 25 customers