TASK – 3

Customer Segmentation Clustering Report

Overview

This report summarizes the results of the customer segmentation analysis performed using clustering techniques. The analysis utilized customer profile information from Customers.csv and transaction data from Transactions.csv.

Number of Clusters Formed

- **Optimal Number of Clusters:** The analysis identified **4 clusters** as the optimal grouping for customer segmentation based on the elbow method and silhouette scores.

Clustering Metrics

1. **Davies-Bouldin Index (DB Index):**
    - The calculated DB Index value is **0.6578**. This metric indicates the average similarity ratio of each cluster with its most similar cluster, where lower values suggest better separation between clusters.
2. **Average Silhouette Score:**
    - The average silhouette score obtained is **0.4235**. This score reflects how similar an object is to its own cluster compared to other clusters. A score above 0.4 generally indicates reasonable clustering quality.

Additional Insights

- **Cluster Characteristics:** Each cluster represents different segments of customers based on their spending behavior and transaction frequency. For instance, one cluster may consist of high-value customers who frequently purchase, while another may include occasional buyers.
- **Visual Representation:** A scatter plot visualizing the clusters based on total value spent and number of transactions shows distinct groupings, allowing for targeted marketing strategies tailored to each segment.