

Customer Segmentation

1. Introduction

Customer segmentation is performed to identify groups of customers with similar characteristics. This helps businesses design targeted marketing strategies.

2. Methodology

- **Data Preparation:**
 - Features selected: TotalValue, Quantity, and NumProductsPurchased.
 - Normalized features to ensure equal weightage.
- **Clustering:**
 - Applied **K-Means** clustering with cluster numbers ranging from 2 to 10.
 - Selected the optimal number of clusters based on the **Davies-Bouldin Index**.
- **Visualization:**
 - Reduced data to two dimensions using **PCA** for visual representation.

3. Results

- **Optimal Number of Clusters:** 4 (based on Davies-Bouldin Index).
- **Cluster Characteristics:**
 - **Cluster 1:** High spenders with diverse product purchases.
 - **Cluster 2:** Moderate spenders with medium diversity.
 - **Cluster 3:** Low spenders purchasing few products.
 - **Cluster 4:** Infrequent buyers with low spending.

Cluster Visualization:

