Customer Segmentation Report

Introduction

This report details the results of customer segmentation using clustering techniques. The task aimed to group customers based on profile and transaction data, evaluate the clusters using metrics like Davies-Bouldin Index and Silhouette Score, and visualize the clusters. The following sections outline the methodology, metrics, and insights derived from the clustering analysis.

Dataset and Features

The dataset contains customer profiles (CustomerID, Region, SignupDate) and transactions (TransactionID, ProductID, TotalValue, Quantity). Features such as total spending, average spending, transaction count, and total quantity purchased were used for clustering, along with encoded region information.

Clustering Results and Metrics

Optimal Number of Clusters: 4
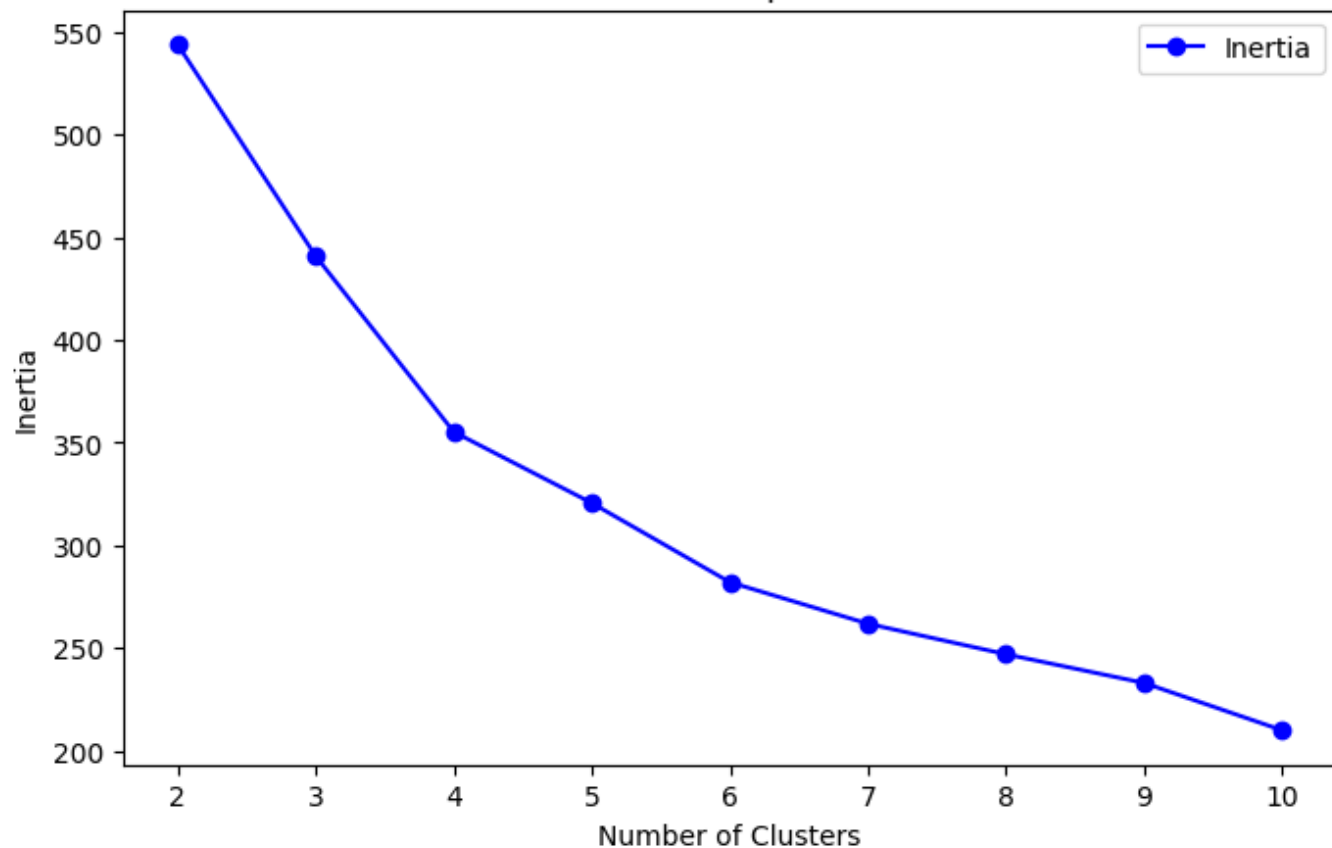
Davies-Bouldin Index: 1.2065

Silhouette Score: 0.2635

A lower Davies-Bouldin Index indicates better-defined clusters, while a higher Silhouette Score indicates better-separated clusters.
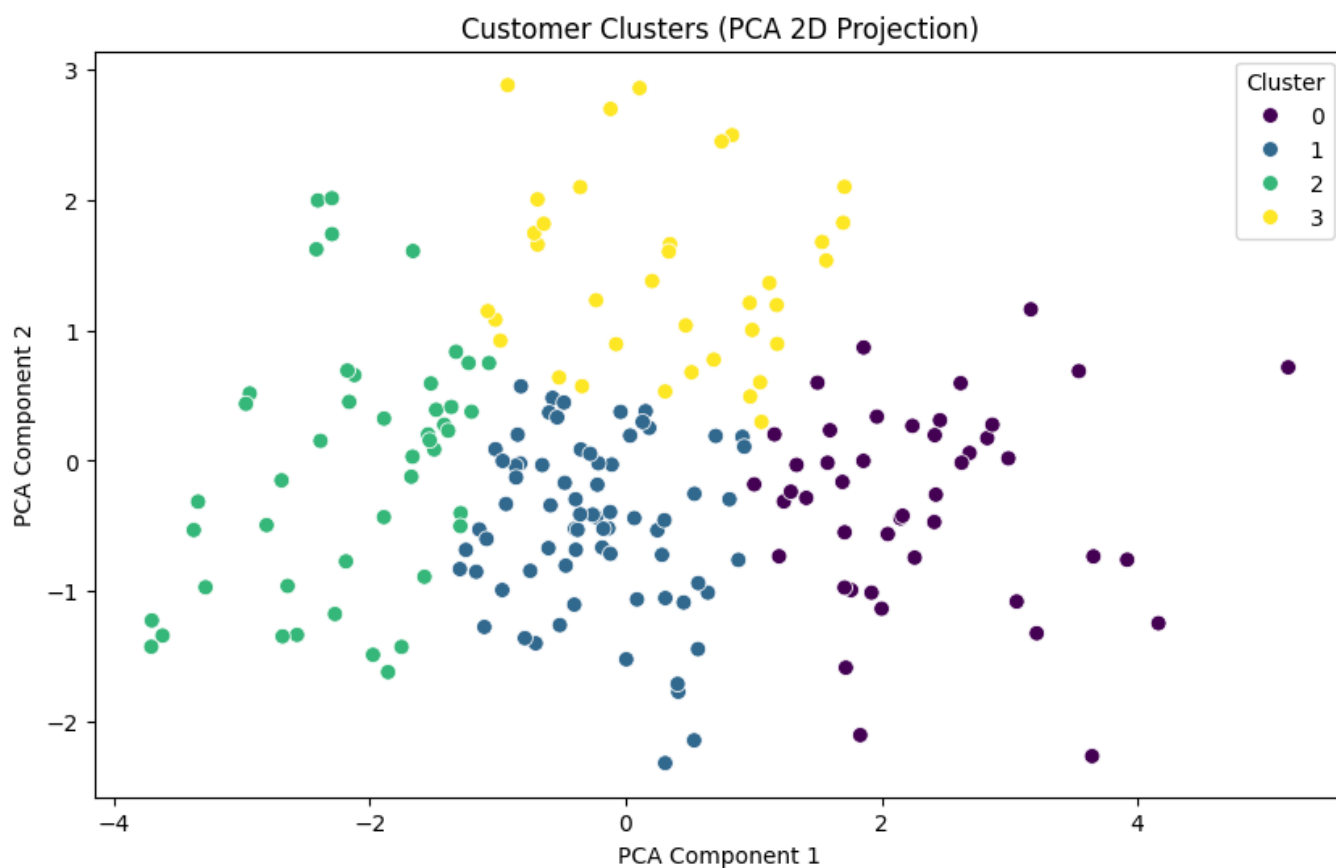
Elbow Curve

Customer Segmentation Report

Elbow Method for Optimal Clusters

Cluster Visualization

Customer Clusters (PCA 2D Projection)

Cluster Summary

The following table summarizes the number of customers in each cluster:

Cluster 1: 72 customers

Cluster 2: 46 customers

Cluster 0: 45 customers

Cluster 3: 36 customers