

# Customer Clustering Report

The customer segmentation analysis grouped customers into **4 distinct clusters** based on their transaction behavior and profiles. The clustering used **KMeans** with features such as total transaction amount, transaction count, average transaction value, unique product categories, and regions. Features were normalized to ensure equal contribution to the clustering process. The **Davies-Bouldin Index (DB Index)**, a metric to evaluate cluster compactness and separation, was calculated as **0.865**, indicating well-formed clusters.

**1) Cluster 0:** Customers with low transaction amounts and low frequency, representing occasional shoppers.

**2) Cluster 1:** High-spending, frequent shoppers who purchase a variety of products, likely loyal customers.

**3) Cluster 2:** Medium-spending customers with moderate frequency and diversity, representing average buyers.

**4) Cluster 3:** Customers with high frequency but relatively lower transaction values, indicating bargain-seekers.

The cluster summary highlights differences in spending habits and product preferred by customers which provides actionable insights for marketing strategies. The segmentation enables the business to optimize strategies and tailor customer experiences effectively.

Cluster assignments and summaries have been saved as CSV files for further analysis.