

Customer Segmentation Report

1. Overview Customer segmentation was performed using K-Means clustering based on customers' total transaction value and quantity purchased. The goal was to identify distinct groups of customers for targeted marketing strategies.

2. Number of Clusters Formed The optimal number of clusters was determined to be 4, based on the Davies-Bouldin Index and silhouette score analysis.

3. Clustering Metrics

- **Davies-Bouldin Index:** [DB Index Value] (Lower values indicate better clustering)
- **Silhouette Score:** [Silhouette Score Value] (Higher values indicate better-defined clusters)

4. Cluster Characteristics Each cluster represents different customer behavior patterns:

- **Cluster 0:** High-value customers with frequent purchases.
- **Cluster 1:** Moderate spenders with average purchase frequency.
- **Cluster 2:** Low-value customers with infrequent purchases.
- **Cluster 3:** New or inactive customers with minimal transactions.

5. Visualization A scatter plot visualizing customer clusters based on total transaction value and purchase quantity was generated. The clusters were color-coded to distinguish between customer groups.

6. Business Insights & Recommendations

- **Cluster 0 (High-value customers):** Prioritize personalized offers and loyalty programs to maintain engagement.
- **Cluster 1 (Moderate spenders):** Encourage higher spending through targeted discounts and promotions.
- **Cluster 2 (Low-value customers):** Identify potential reasons for low engagement and offer incentives to increase activity.
- **Cluster 3 (New/inactive customers):** Implement re-engagement campaigns through email marketing and promotions.

7. Conclusion The clustering analysis successfully segmented customers into meaningful groups, providing actionable insights for improving customer engagement and business strategy.