

Customer Segmentation Report

Number of Clusters

- The optimal number of clusters was determined using the **Elbow Method**, identifying **2 clusters** as the most suitable configuration based on the analysis of Within-Cluster Sum of Squares (WCSS).
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Clustering Metrics

- Davies-Bouldin Index (DB Index):**
The DB Index for the clustering solution is **0.6267**, indicating well-separated and compact clusters. A lower DB Index suggests better clustering performance.
 - Silhouette Score:**
The Silhouette Score for the clustering solution is **0.5501**, which suggests moderately defined clusters. Values closer to 1 indicate better-defined clusters.
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Cluster Profiles

- Cluster 0** represents high-value customers who tend to spend significantly more and purchase higher quantities of items.
 - Cluster 1** includes customers with lower total spending and fewer items purchased.
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Visual Observations

- Elbow Method Graph:** Demonstrates the optimal number of clusters using the WCSS metric.
 - Scatter Plot of Clusters:** Visualizes the customer clusters based on their total value spent and total quantity purchased, providing clear differentiation between the two clusters.
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Key Observations

- Customers in **Cluster 0** could be prioritized for loyalty programs, as they are the high-value segment.
- Cluster 1** customers might benefit from targeted promotions to increase spending and purchase frequency.
- The segmentation shows clear differentiation based on transaction data, which can help tailor marketing strategies.