

Customer Segmentation Report

1. Objective

The goal of this analysis was to group customers based on their total spending and total quantity purchased using K-Means clustering.

2. Clustering Results

We tested different numbers of clusters ($k=2,4,5,6$) and evaluated their quality using two metrics:

Davies-Bouldin Index (DB Index) – Lower values indicate better separation between clusters.

Silhouette Score – Higher values show better-defined clusters.

Clusters (k)	DB Index	Silhouette Score
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2	1.5731	0.2388
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4	1.4601	0.1931
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5	1.4548	0.2149
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6	1.3340	0.2235
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3. Best Choice: $k=6$

The DB Index (1.3340) was lowest for $k=6$, meaning the clusters were well-separated.

The Silhouette Score (0.2235) was reasonable, indicating meaningful groupings.

Visual inspection showed clear and distinct customer segments.

4. Business Insights

Top Spenders: A small group of high-value customers—ideal for loyalty programs.

Moderate Buyers: Consistent shoppers who may respond well to targeted offers.

Low Spenders: Customers who need promotions to boost engagement.

5. Conclusion

$k=6$ is the best choice for customer segmentation.

These insights can help businesses create better marketing strategies and improve customer retention.