

# Clustering Analysis Report

## Clustering Results Summary

- Optimal Number of Clusters: 8
- Davies-Bouldin Index (DB Index): 0.81
- Silhouette Score Range: 0.34 - 0.37

The clustering was performed using K-Means, and the clusters were analyzed for their distinct characteristics.

## Cluster Profiles

Cluster 0.0:

- Avg. Total Spending: 6547.71
- Avg. Transaction Value: 812.52
- Avg. Transaction Frequency: 8.11
- Customer Count: 27.0

Cluster 1.0:

- Avg. Total Spending: 1728.02
- Avg. Transaction Value: 740.44
- Avg. Transaction Frequency: 2.38
- Customer Count: 29.0

Cluster 2.0:

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- Avg. Total Spending: 4274.07
- Avg. Transaction Value: 1100.96
- Avg. Transaction Frequency: 3.91
- Customer Count: 22.0

### Cluster 3.0:

- Avg. Total Spending: 2910.12
- Avg. Transaction Value: 601.27
- Avg. Transaction Frequency: 4.91
- Customer Count: 47.0

### Cluster 4.0:

- Avg. Total Spending: 294.96
- Avg. Transaction Value: 239.73
- Avg. Transaction Frequency: 1.14
- Customer Count: 7.0

### Cluster 5.0:

- Avg. Total Spending: 4587.43
- Avg. Transaction Value: 797.30
- Avg. Transaction Frequency: 5.79
- Customer Count: 28.0

### Cluster 6.0:

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- Avg. Total Spending: 3960.72
- Avg. Transaction Value: 490.96
- Avg. Transaction Frequency: 8.11
- Customer Count: 18.0

### Cluster 7.0:

- Avg. Total Spending: 1451.62
- Avg. Transaction Value: 385.57
- Avg. Transaction Frequency: 3.76
- Customer Count: 21.0

## Conclusion

The analysis provided insights into customer behavior. For example:

- Cluster 0 represents high spenders with frequent transactions.
- Cluster 4 includes low spenders with minimal transactions.

These findings can guide targeted marketing strategies or customer retention plans.