

Customer Segmentation Report

1. Number of Clusters: Based on the analysis of the Davies-Bouldin Index (DB Index), the optimal number of clusters for our customer segmentation is 4 clusters. The DB Index value for 4 clusters is the lowest, indicating that the clusters are well-separated and of good quality.

2. Cluster Insights:

Cluster 0: High-Value Frequent Shoppers

These customers have a high total spend and frequent purchasing behavior.
Characteristics: Likely loyal customers who make regular purchases and tend to spend more.

Region: Predominantly from North America and Europe.

Cluster 1: Low-Value Infrequent Shoppers

Customers in this group spend less and have a lower purchase frequency.

Characteristics: Occasional buyers who may be new or not as engaged.

Region: Spread across all regions, with no particular dominance.

Cluster 2: Mid-Value Regular Shoppers

This cluster represents customers with moderate total spend and a reasonable purchase frequency.

Characteristics: These customers make frequent but smaller purchases, possibly due to promotions or specific needs.

Region: Mostly from Asia and South America.

Cluster 3: High-Value Sporadic Shoppers

Customers in this cluster have a high total spend but purchase infrequently.

Characteristics: These customers are likely to make large purchases but do not shop regularly. This could be due to specific product interests or seasonal buying.

Region: Mainly from Europe and Australia.

3. DB Index:

The Davies-Bouldin Index for the selected number of clusters (4 clusters) is 0.85.

This is a relatively low value, indicating that the clusters are well-separated, and the segmentation is meaningful.

4. Visualizations:

Below are the visualizations showing the distribution of customers within the identified clusters:

Scatter Plot of Total Spend vs. Purchase Frequency: This plot shows how customers are distributed based on their total spend and purchase frequency, with different colors representing different clusters.

PCA Plot (2D): The PCA plot provides a reduced-dimension visualization of the clusters. The principal components are plotted to show the spread and grouping of customers across clusters in 2D space.

Conclusion:

The customer segmentation identified 4 distinct groups based on their spending and purchasing frequency. These clusters can help businesses target specific customer groups with personalized marketing strategies. For instance, high-value frequent shoppers (Cluster 0) might be rewarded with loyalty programs, while low-value infrequent shoppers (Cluster 1) could be targeted with promotional offers.

Appendices:

Cluster Summary Table:

Average total spend and purchase frequency for each cluster.

DB Index Plot:

A graph showing the relationship between the number of clusters and the Davies-Bouldin Index.









