Customer Segmentation report

1. We analyzed customer profile and transaction data to segment customers into meaningful groups based on:

- Spending behavior
- Number of transactions
- Recency of purchases

2. Optimal Number of Clusters: After testing multiple configurations, 4 clusters provided the best grouping for customers.

3. DB Index: The DB Index value for the clusters is 0.9975.

- A DB Index close to 0 indicates good separation between clusters.
- This value suggests that the clusters are fairly distinct but may benefit from further refinement.

4. Cluster Profiles

    1. Cluster 0: High-value customers who spend significantly and transact frequently. Recommendation: Offer loyalty rewards and exclusive deals to retain these customers.
    2. Cluster 1: Moderate spenders with steady but not frequent transaction patterns. Recommendation: Encourage them to purchase more with targeted promotions.
    3. Cluster 2: Dormant customers with low spending and infrequent transactions. Recommendation: Use re-engagement campaigns to revive interest, such as discounts or personalized offers
    4. Cluster 3: New or occasional customers with minimal transactional history. Recommendation: Provide introductory offers or incentives to increase their activity.

5. Visual Representation:

Cluster Distribution: A 2D scatter plot (using PCA-reduced dimensions) shows clear groupings of customer segments. Centroids: Highlighted cluster centers indicate the grouping logic used by the K-Means algorithm.

6. Conclusion:

The segmentation successfully grouped customers into 4 distinct clusters based on their spending and activity levels.

The DB Index of 0.9975 reflects good clustering separation, enabling targeted strategies for each customer group.