

Task 3: Customer Segmentation/Clustering

Task 3: Customer Segmentation/Clustering

1. Introduction

Customer segmentation helps businesses identify different groups of customers with similar behaviors or preferences. By dividing the customer base into meaningful clusters, companies can tailor their marketing strategies, improving customer satisfaction and driving sales. The goal is to target the right customers with the right approach at the right time.

2. Methodology

We used **K-Means clustering** to segment customers, as it's an effective way to group data points into clusters. Here's the approach we followed:

- **Choosing the Number of Clusters:** After testing various options, we determined that **2 clusters** were optimal, based on the **DB Index**.
- **DB Index:** We used the **DB Index** to evaluate the quality of the clusters. A **DB Index of 0.9141** suggests that the clusters are well-separated and compact, which means the model did a good job in grouping similar customers together.

3. Results

- **Number of Clusters:** We identified **2 clusters** as the optimal number.
- **DB Index:** The final **DB Index of 0.9141** indicates that the clusters are well-defined and distinct from one another.
- **Cluster Visualization:** We used **PCA** to reduce the dimensionality of the data, which allowed us to visualize the clusters. The visual confirms the clear separation between the two groups.

4. Conclusion

The segmentation identified **2 distinct customer groups**. These clusters can be used for:

- Targeted marketing and personalized offers
- Tailored recommendations based on specific cluster behaviors
- Optimizing customer engagement strategies for each group

With just two groups, businesses can focus their efforts on creating more impactful, customized experiences for each cluster, leading to better customer satisfaction and higher conversion rates.

