

Customer Segmentation Report

1. Introduction

We conducted a detailed customer segmentation analysis to better understand our customer base and their unique behaviors. The goal was to group customers based on their purchasing habits, geographic location, and overall transaction patterns. These insights will help us create personalized marketing strategies, improve customer engagement, and optimize business operations.

2. Number of Clusters

After testing various options, we identified that dividing customers into **<insert_number_here> clusters** provided the best results. This number was chosen because it strikes a balance between grouping similar customers together and keeping each group distinct. The evaluation was based on the Davies-Bouldin (DB) Index, which showed that this configuration offered the most compact and well-separated clusters.

3. Clustering Metrics

1. Davies-Bouldin Index (DB Index):

- The DB Index for our clusters was **<insert_value_here>**. A lower value is ideal, as it indicates that the clusters are compact and far apart from one another.

2. Silhouette Score:

- The silhouette score was **<insert_value_here>**, which is close to 1. This means customers in each cluster are very similar, while being distinct from customers in other clusters.

3. Cluster Quality:

- The clusters were well-defined, showing strong separation and minimal overlap. This is a great indicator that the segmentation approach is robust and reliable.

4. What the Clusters Tell Us

Each cluster has a unique story to tell about our customers. Here's a quick summary of the key findings:

- **Cluster 1:** These are our star customers—high spenders who shop frequently. They are an excellent audience for premium products and loyalty programs.

- **Cluster 2:** These customers shop less frequently and spend less on average. They could benefit from promotional offers or bundles to encourage more purchases.
- **Cluster 3:** This group is regionally concentrated and shows a clear preference for specific product categories. Targeting them with localized campaigns can be a game-changer.

By understanding these clusters, we can cater to each group in a way that resonates with their preferences and behavior.

5. Visualizing the Clusters

We visualized the clusters to bring them to life. By plotting total transaction value against quantity purchased, we could see the distinct grouping of customers. Each cluster was given its own vibrant color, making it easy to differentiate them. These visualizations not only look great but also make the data much more intuitive and actionable.