

Introduction

In this task, we split customers into groups using K-Means clustering. We wanted to put customers together based on how they buy things and what they're like. This helps us spot trends and get useful info for making business choices. We tried out a few different ways to group them, and in the end, we settled on 2 groups.

Key Clustering Results:

1. Number of Clusters Formed:

- Based on customer profiles and buying habits, we split customers into 2 groups. Each group shows different spending habits and how often they buy.

2. Davies-Bouldin Index (DBI) Value:

- The Davies-Bouldin Index (DBI) for our grouping is **0.654**. This number shows the groups are somewhat separate. A lower DBI means better grouping. While 0.654 isn't perfect (0 is best), it shows our groups are distinct.

3. Other Clustering Metrics:

- The **Silhouette Score** tells us how well each customer fits in their group compared to other groups. A score closer to 1 is better. Our 2 groups got a score of **0.55**, which means they're pretty well-defined. This score tells us we found two clear customer groups, but we could still make them clearer.

Business Insights:

1. Cluster Characteristics:

- **Cluster 0** (Group 1): Customers in this group spend more money overall, make more purchases, and have higher average order values. These customers shop often and stay loyal to the brand.
- **Cluster 1** (Group 2): Customers in this group spend less money and make fewer purchases. They might be new or occasional buyers who need special marketing to get them to buy more.

2. Customer Behavior Segmentation:

The results show two main types of customers: big spenders and small spenders.

- **Marketing Strategy for Cluster 0:** This group should get **loyalty rewards**, **special deals**, and **exclusive offers** to keep them coming back and to show appreciation for their loyalty.
- **Marketing Strategy for Cluster 1:** For this group, the focus should be on reminding them to come back, giving them discounts, or offering package deals to get them to spend more often.

3. Customer Retention & Growth:

- The clustering results also give us a chance to tailor **customer retention strategies**. For Cluster 0, it's key to keep high-value customers by rewarding their loyalty.
- For Cluster 1, we need to turn occasional buyers into repeat customers. Tactics like email marketing drives, offers to win them back, or reminder emails can help push this group to buy more often.

4. Improving Customer Experience:

- The insight from clustering helps in improving customer service and experience. By understanding the customer's segment, tailored **customer service experiences** can be offered. Cluster 0 customers can receive more **personalized support**, while Cluster 1 might benefit from **automated and streamlined support channels**.

Conclusion:

- **Clustering with K-Means** resulted in two distinct customer groups, which can be leveraged for targeted marketing, personalized offers, and better customer segmentation.
- While the **Davies-Bouldin Index** of **0.654** and **Silhouette Score** of **0.55** indicate that the clusters are moderately well-formed, further refinement through techniques like **DBSCAN** or **Agglomerative Clustering** can improve cluster separation. However, the insights generated from this clustering are still valuable for developing targeted business strategies.