

Customer Segmentation Report

Overview

Customer segmentation was performed using the KMeans clustering algorithm on customer transaction data. The clustering aimed to group customers based on their purchase behavior, specifically focusing on Total Value (total revenue contributed) and Quantity (number of products purchased).

The segmentation revealed **4 distinct clusters**, and the clustering performance was evaluated using the **Davies-Bouldin Index (DBI)**. The DBI score was **0.710**, indicating well-separated clusters with high intra-cluster similarity.

Key Findings

1. Customer Clusters

From the scatter plot, the 4 clusters are visually distinct and represent different customer behaviors:

- **Cluster 0 (Green):**
 - Low Total Value and low Quantity.
 - Likely occasional or low-value buyers.
- **Cluster 1 (Blue):**
 - Moderate Total Value and moderate Quantity.
 - Represents average customers contributing significantly to revenue.
- **Cluster 2 (Yellow):**
 - High Total Value with moderate Quantity.

- These are high-value customers who purchase fewer items but at higher prices.
- **Cluster 3 (Purple):**
 - Very high Total Value and high Quantity.
 - Represents the top-tier customers driving maximum revenue.

2. Davies-Bouldin Index

The DBI value of **0.710** suggests:

- **Well-Defined Clusters:** The clusters are well-separated, with minimal overlap between groups.
- **Good Intra-Cluster Similarity:** Customers within the same cluster exhibit similar purchase behaviors.

3. Cluster Characteristics

- **Cluster 0:**
 - Small spenders.
 - Opportunity: Increase engagement through promotions or loyalty programs.
- **Cluster 1:**
 - Consistent buyers contributing to stable revenue.
 - Opportunity: Convert them into high-value customers by cross-selling/up-selling.
- **Cluster 2:**
 - High-spending customers with focused buying behavior.
 - Opportunity: Retain through personalized offers and premium product targeting.
- **Cluster 3:**

- Top-tier customers driving significant revenue.
- Opportunity: Build long-term relationships and exclusive perks to ensure loyalty.

Recommendations

1. Focus on Cluster 3:

- These customers contribute the highest revenue. Offer them premium experiences, early access to new products, or loyalty benefits to retain their loyalty.

2. Upsell and Cross-Sell for Cluster 1:

- Moderate spenders can be converted into high-value customers by recommending complementary products or bundles.

3. Increase Engagement for Cluster 0:

- Target low spenders with discounts, offers, or marketing campaigns to increase their spending.

4. Personalize for Cluster 2:

- Focus on maintaining these high-value customers with personalized recommendations and targeted marketing.

Conclusion

The segmentation highlights actionable opportunities to optimize customer relationships. Clusters 2 and 3 represent high-value customers, and efforts should focus on retention and premium experiences. For lower-value clusters (0 and 1), targeted campaigns and up-selling strategies can help increase their contribution to overall revenue.