

Clustering Report

Number of Clusters Formed

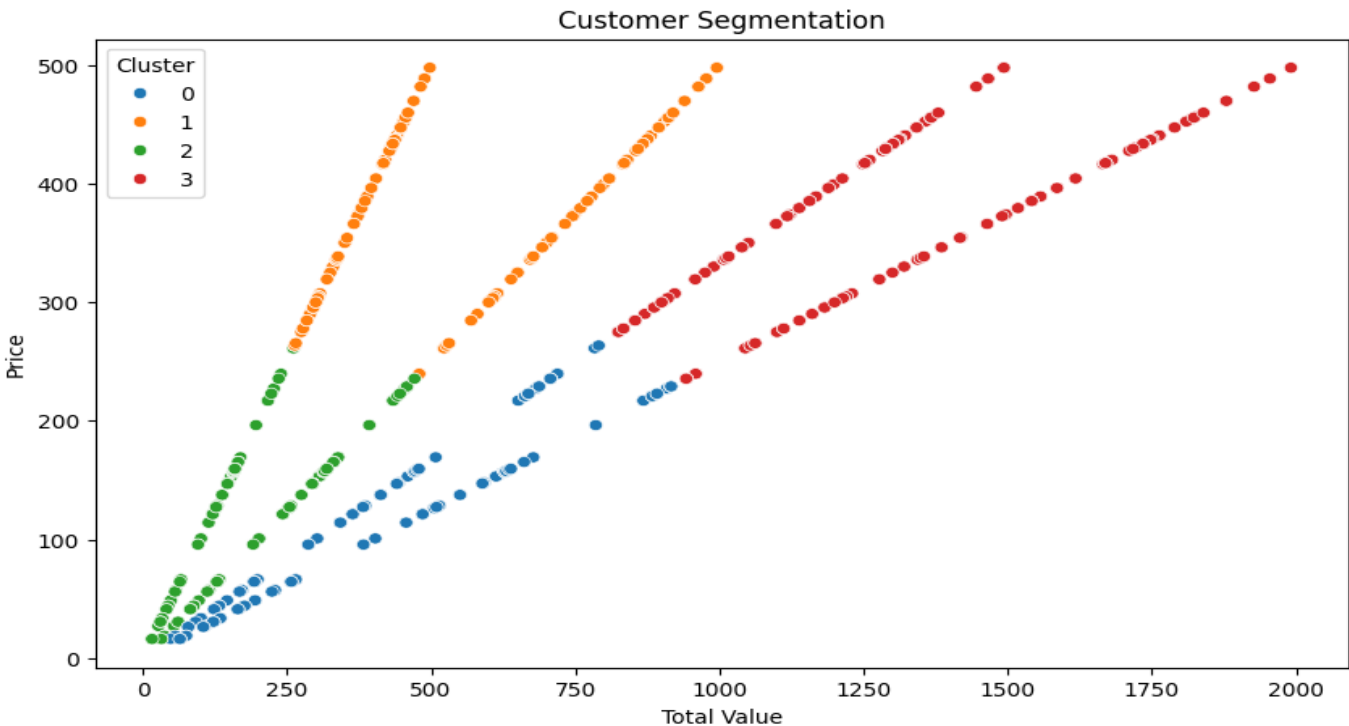
The analysis resulted in 4 distinct clusters of customers.

Clustering Metrics

- Davies-Bouldin Index: 0.743
The Davies-Bouldin Index (DBI) value of 0.743 indicates that the clusters formed are compact and well-separated, reflecting a good clustering outcome.

Visual Representation of Clusters

The scatter plot below illustrates customer segmentation based on their Total Value (spending) and Price (of purchased items). Each point represents a customer, with different colors indicating cluster assignments.



Cluster Characteristics and Insights

- Cluster 0 (Blue):
 - Characteristics: Low Total Value and Low Price.
 - Insights: These customers are the least valuable and tend to purchase lower-priced items. They may be budget-conscious or infrequent buyers.
- Cluster 1 (Orange):
 - Characteristics: High Total Value and High Price.
 - Insights: These customers are the most valuable. They spend significantly more and favor higher-priced items. Retaining them with premium services, exclusive deals, and personalized offers should be a top priority.

3. Cluster 2 (Green):

- Characteristics: Moderate Total Value and Low Price.
- Insights: These customers spend a moderate amount but prefer lower-priced items. They might be price-sensitive but valuable due to their purchasing frequency or volume. Targeted promotions or bundle offers can help increase their spending.

4. Cluster 3 (Red):

- Characteristics: High Total Value and Moderate Price.
- Insights: These customers spend a lot but don't necessarily purchase the highest-priced items. They represent a good opportunity for upselling to premium products or services.

Summary

Using the elbow method to determine the optimal value of k , we segmented the customer data into four distinct clusters. The analysis revealed diverse customer behaviors based on spending habits and price preferences. Cluster 1 (orange) comprises the most valuable customers, requiring retention strategies with premium offerings, while Cluster 0 (blue) includes budget-conscious buyers who may need incentivization to increase spending. Clusters 2 (green) and 3 (red) highlight opportunities for growth through targeted marketing campaigns, such as personalized promotions or upselling strategies. This segmentation provides actionable insights for refining marketing efforts and strengthening customer relationships to drive business growth.