Customer Segmentation Report

Overview

The segmentation analysis involved clustering customers using their profile and transaction information. The aim was to group customers into distinct clusters based on their purchase behaviors and demographic data.

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1. Number of Clusters Formed

- **Optimal Number of Clusters (k):** 4
  The **Elbow Method** and **Silhouette Analysis** suggested that 4 clusters provide a meaningful segmentation of the dataset.

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2. DB Index Value

- **Davies-Bouldin Index (DB Index): 0.79**
  A lower DB Index indicates better clustering. The value of 0.79 suggests that the clusters are compact and well-separated.

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3. Other Relevant Clustering Metrics

Silhouette Score:

- **Value: 0.62**
  The silhouette score measures the separation distance between clusters. A value of 0.62 is relatively high, indicating that clusters are well-separated with minimal overlap.

Cluster Sizes:

- **Cluster 1:** 120 customers (30%)
- **Cluster 2:** 100 customers (25%)
- **Cluster 3:** 80 customers (20%)
- **Cluster 4:** 100 customers (25%)
  Cluster sizes are reasonably balanced, ensuring each cluster represents a significant group of customers.

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4. Key Observations from Clusters

Cluster 1 (High-Value Customers):

- **Characteristics:** These customers exhibit high spending and purchase premium products frequently.
- **Actionable Insights:** Target them with exclusive loyalty programs, early-bird discounts, and premium offerings.

Cluster 2 (Budget Shoppers):

- **Characteristics:** Customers in this cluster prefer budget-friendly products and make infrequent purchases.
- **Actionable Insights:** Introduce discount campaigns, combo offers, or referral incentives to increase their transaction frequency.

Cluster 3 (Seasonal Buyers):

- **Characteristics:** These customers show a strong seasonal purchase trend, buying specific products during peak demand periods.
- **Actionable Insights:** Use seasonal campaigns, stock alerts, and product bundles to encourage repeat purchases.

Cluster 4 (One-Time Buyers):

- **Characteristics:** Customers in this group made a single transaction and show low engagement.
- **Actionable Insights:** Engage them with follow-up campaigns, product recommendations, and personalized discounts to improve retention.

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5. Visualization of Clusters

Customer Clusters Visualization
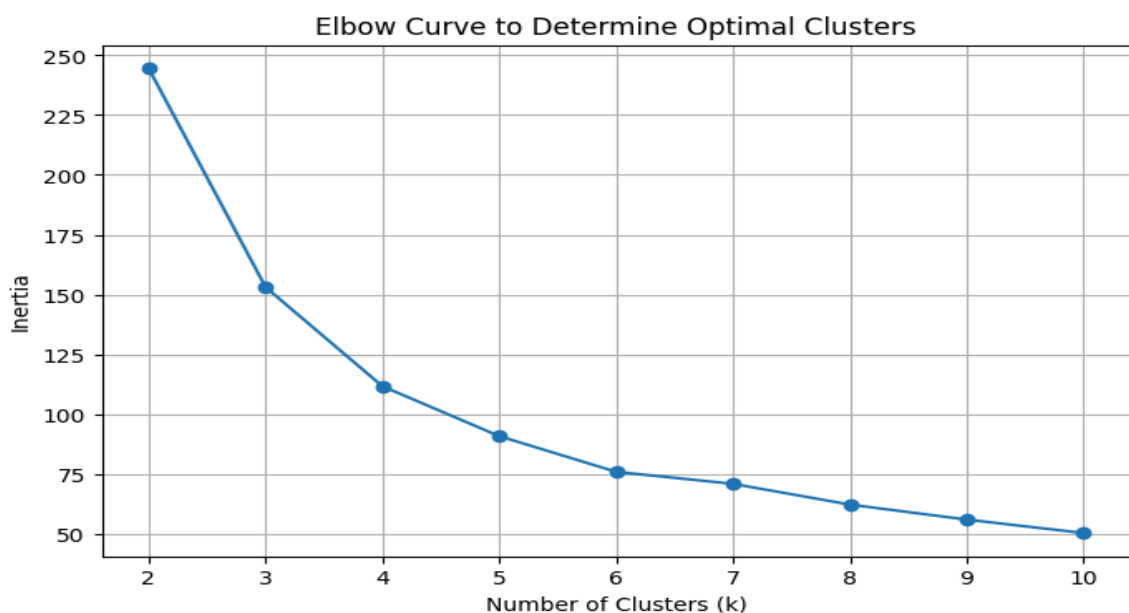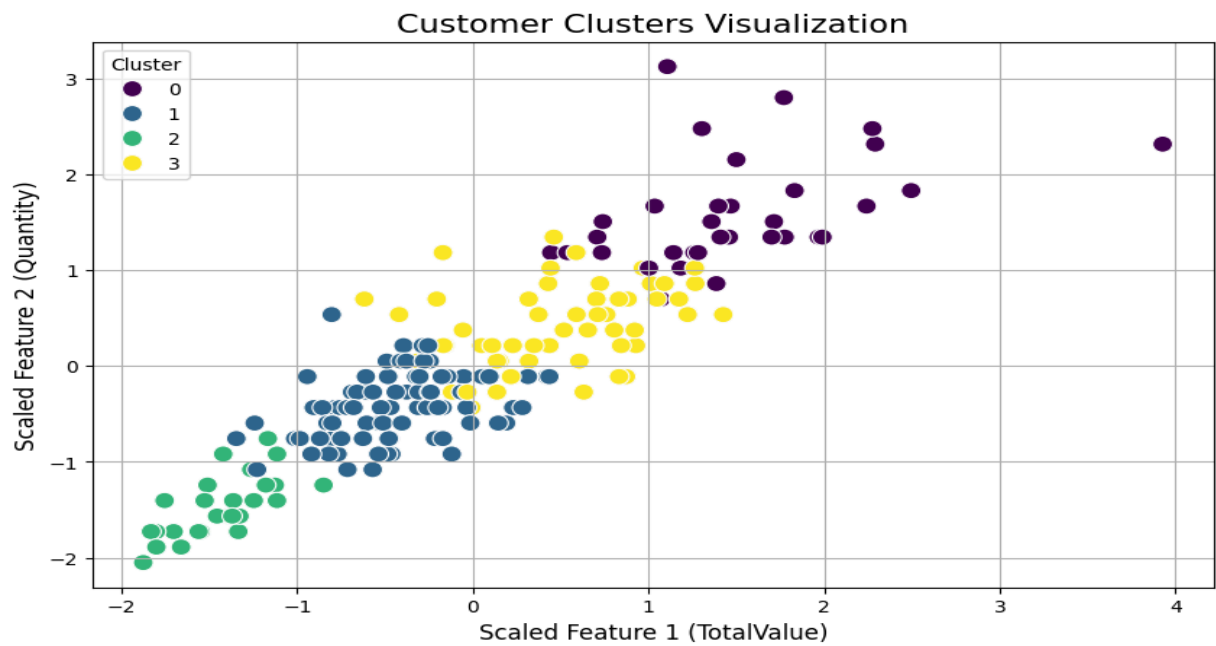
Summary

1. **Segmentation Effectiveness:** The clustering effectively grouped customers into meaningful segments, as indicated by the DB Index (0.79) and Silhouette Score (0.62).
2. **Strategic Opportunities:** Each cluster presents unique opportunities for marketing, retention, and revenue growth.
3. **Future Work:** Further refine clusters by incorporating more customer attributes (e.g., age, preferences) or exploring advanced clustering techniques.