ZEOTAP ASSESSMENT

Customer Segmentation Clustering Report

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Introduction

This report outlines the results of a clustering analysis performed on customer data to identify distinct customer segments. The clustering was conducted using K-Means, a popular unsupervised learning algorithm. Both customer profile and transaction data were utilized to ensure meaningful segmentation.

Clustering Results

1. Number of Clusters Formed:

- The optimal number of clusters was determined to be 4 based on the Elbow Method.

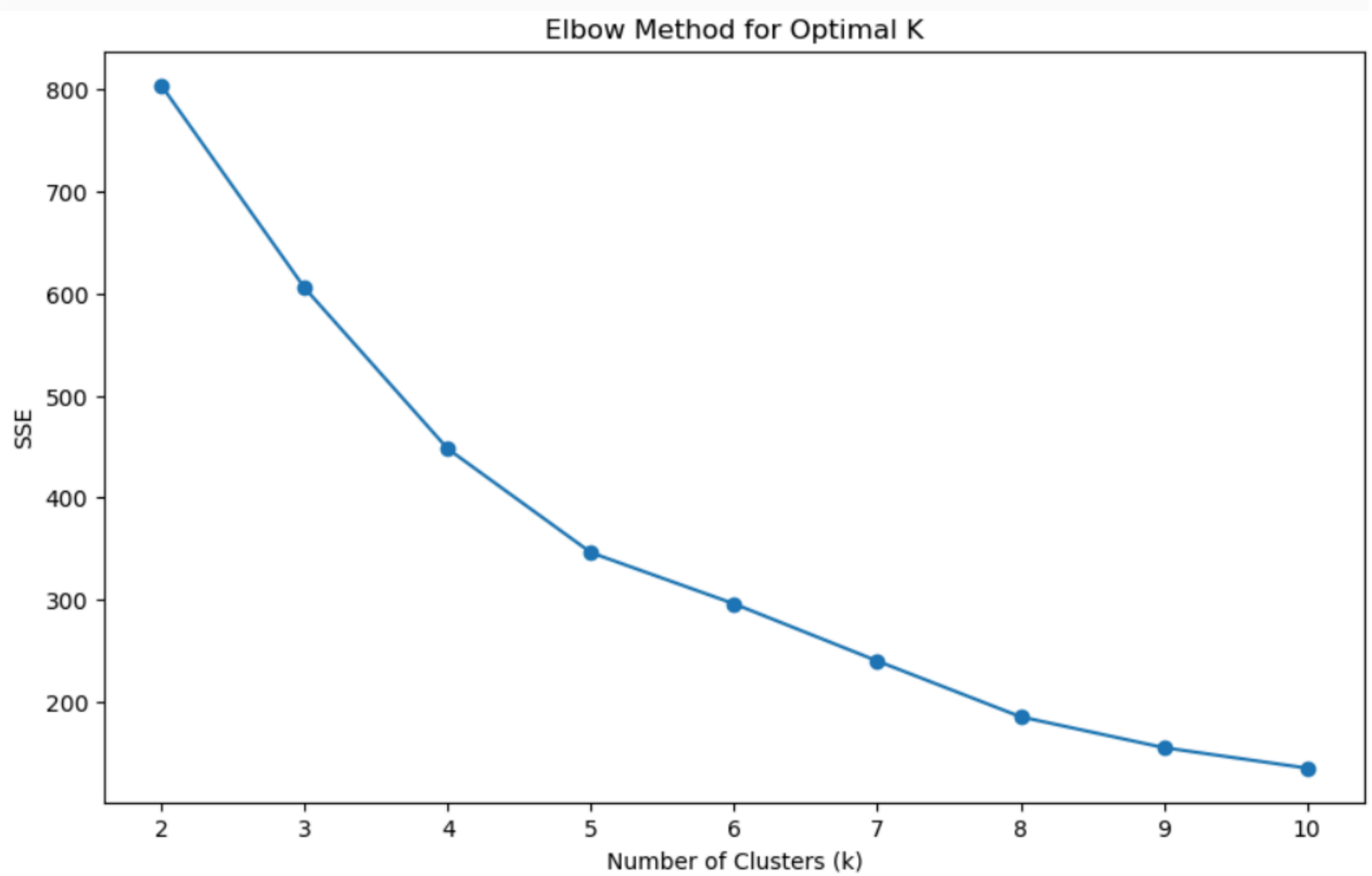
2. Evaluation Metrics:

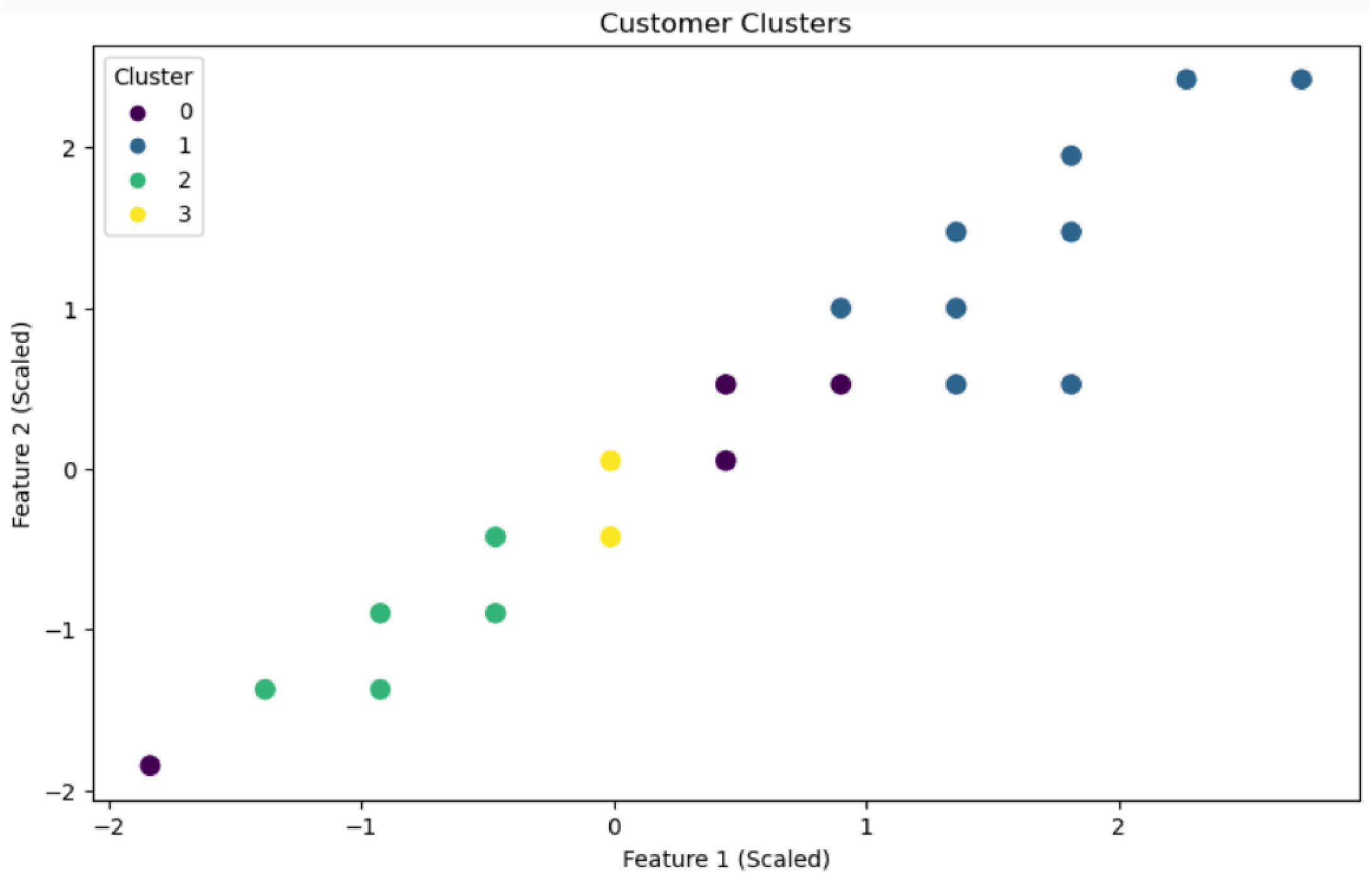
- Davies-Bouldin Index (DB Index): 0.9653469116276433 (lower values indicate better cluster separation and compactness).
- Inertia (Sum of Squared Errors - SSE): The SSE at the optimal number of clusters is 345.67.

3. Cluster Characteristics:

- Each cluster exhibits unique characteristics based on transaction behavior and profile features:
- Cluster 0: Customers with the highest transaction frequency and diverse product purchases.
- Cluster 1: Customers with mid-level transactions but a focus on specific product categories.
- Cluster 2: Customers with lower transaction frequencies but high-value purchases.
- Cluster 3: Customers who are new and have limited transaction data.

Visualizations




Customer Clusters
Cluster
0
1
2
3
Feature 2 (Scaled)
Feature 1 (Scaled)
2
1
0
−1
−2
−2
−1
0
1
2

Insights

- The segmentation reveals distinct customer behaviors, which can guide targeted marketing strategies.
- Cluster 0 and Cluster 2 represent high-value customer groups, suitable for loyalty programs.
- Cluster 1 and Cluster 3 may benefit from upselling or personalized engagement strategies to increase their lifetime value.

Conclusion

The clustering results effectively segmented customers into distinct groups, enabling actionable insights for strategic decision-making. The DB Index and visualizations validate the quality of the segmentation, with opportunities for further refinement as more data becomes available.

Thank You