

Customer Segmentation / Clustering Report

Features:

- **total_spend**: Total spending by the customer.
- **avg_spend**: Average spending per transaction.
- **total_quantity**: Total quantity of products purchased.
- **avg_quantity**: Average quantity purchased per transaction.
- **max_transaction_value**: Maximum value of a single transaction.
- **min_transaction_value**: Minimum value of a single transaction.
- **frequency**: Number of transactions made by the customer.
- **monetary**: Reflecting total monetary value (similar to RFM analysis).
- **Region**: Categorical feature indicating the continent of the customer.
- **SpendingCategory**: Binned spending categories (Low, Medium, High).
- **most_common_purchase_month**: Indicates the most frequent month of purchase for each customer.

Clustering Algorithms:

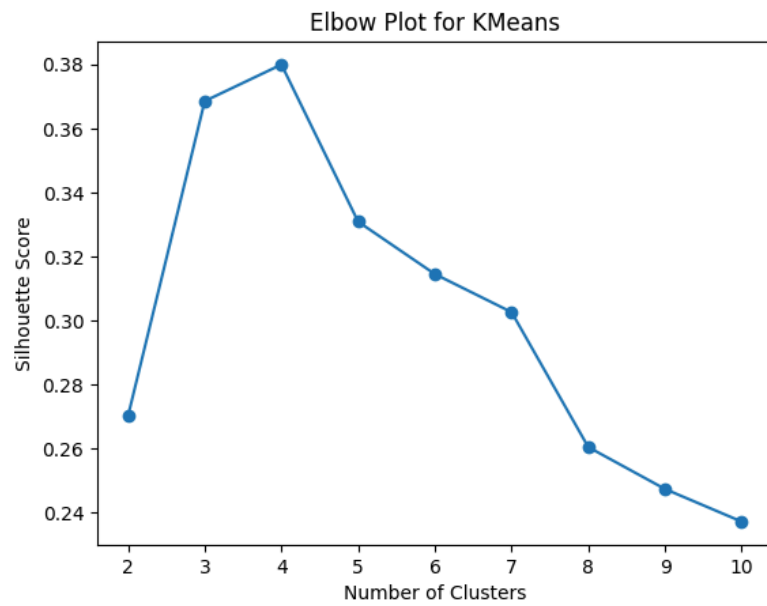
1. K Means
2. OPTICS
3. Agglomerative Clustering

Results:

Algorithm	Silhouette Score	DB Index
K Means	0.37991091571305846	1.176184514784793
OPTICS	0.03239482446750162	1.789966262542042
Agglomerative Clustering	0.27907558140336225	1.3155294967842055

No of Clusters formed: 4

Elbow Plot:



T SNE Dimensionality Reduction to visualise the clusters

