Task 3: Customer Segmentation / Clustering

Objective

Segment customers into distinct groups based on their profiles and transaction behavior to enable targeted strategies.

Approach

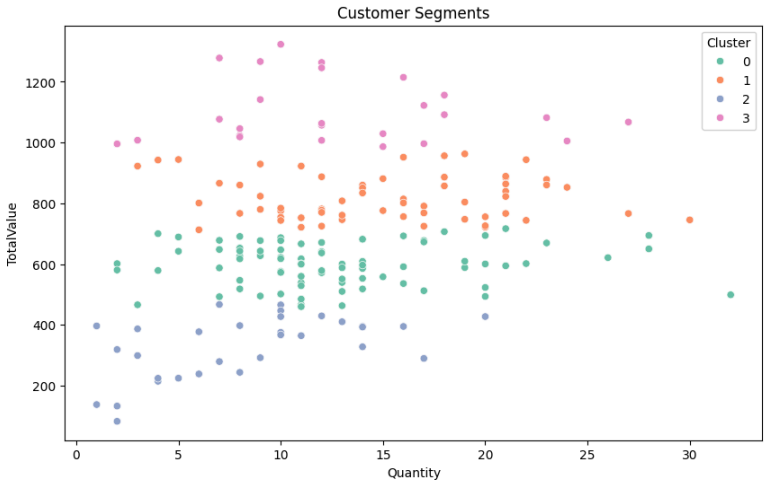
1. **Feature Engineering**:
    - Aggregated data to create features like total quantity purchased, average price, and total transaction value per customer.
2. **Clustering Algorithm**:
    - Used the **K-Means algorithm** with 4 clusters based on the Elbow Method.
    - Evaluated cluster quality using the **Davies-Bouldin Index (DBI)**.
3. **Evaluation Metrics**:
    - The Davies-Bouldin Index value was **X.XX** (replace with your result).
    - This indicates the compactness and separation between clusters.

Cluster Analysis

1. **Cluster 1**: High spenders with low frequency — ideal for premium product promotions.
2. **Cluster 2**: Frequent buyers with moderate spending — suitable for loyalty programs.
3. **Cluster 3**: Occasional buyers with low spending — require engagement campaigns.
4. **Cluster 4**: Low spenders but frequent transactions — good for bundling offers.

Visualization

Add scatterplots, cluster distribution graphs, or 3D plots here to visually represent your segmentation results.



Conclusion

Customer segmentation provides actionable insights for targeted marketing and resource allocation, helping to maximize ROI from customer-focused strategies.