Exploratory Data Analysis (EDA)

Clustering Code:

```
# KMeans clustering

from sklearn.cluster import KMeans

from sklearn.metrics import davies_bouldin_score

import seaborn as sns


# Normalize features and apply KMeans

scaler = StandardScaler()

scaled_data = scaler.fit_transform(customer_data[['TotalValue', 'Quantity']])


kmeans = KMeans(n_clusters=4, random_state=42)

customer_data['Cluster'] = kmeans.fit_predict(scaled_data)


# Davies-Bouldin Index

db_index = davies_bouldin_score(scaled_data, customer_data['Cluster'])

print(f"Davies-Bouldin Index: {db_index}")


# Visualize clusters

sns.scatterplot(data=customer_data, x='TotalValue', y='Quantity', hue='Cluster', palette='viridis')

plt.title('Customer Clusters')

plt.show()
```

Cluster Insights:

Exploratory Data Analysis (EDA)

1. Customers are grouped into 4 clusters based on total transaction value and quantity purchased.

2. Davies-Bouldin Index indicates the quality of clustering.

3. Visual inspection shows distinct clusters with varying transaction behaviors.