Mohd-Talha-ZeoTap / Mohd_Talha_Clustering.ipynb

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163 lines (163 loc) · 42.4 KB

Preview Code Blame Raw

In [3]:
```
import pandas as pd
```

In [4]:
```
customers = pd.read_csv('Customers.csv')
products = pd.read_csv('Products.csv')
transactions = pd.read_csv('Transactions.csv')
```

In [5]:
```
customer_features = transactions.groupby('CustomerID').agg({
    'TotalValue': 'sum',
    'Quantity': 'sum',
    'TransactionID': 'count'
}).rename(columns={'TransactionID': 'TransactionCount'}).reset_index()
```

In [6]:
```
customer_features = customer_features.merge(customers[['CustomerID', 'Regi
customer_features = pd.get_dummies(customer_features, columns=['Region'],
```

In [8]:
```
from sklearn.cluster import KMeans
from sklearn.metrics import davies_bouldin_score
from sklearn.decomposition import PCA
import matplotlib.pyplot as plt
from sklearn.preprocessing import MinMaxScaler
```

In [9]:
```
customer_clustering_data = customer_features.iloc[:, 1:]
scaler = MinMaxScaler()
scaled_clustering_data = scaler.fit_transform(customer_clustering_data)
```

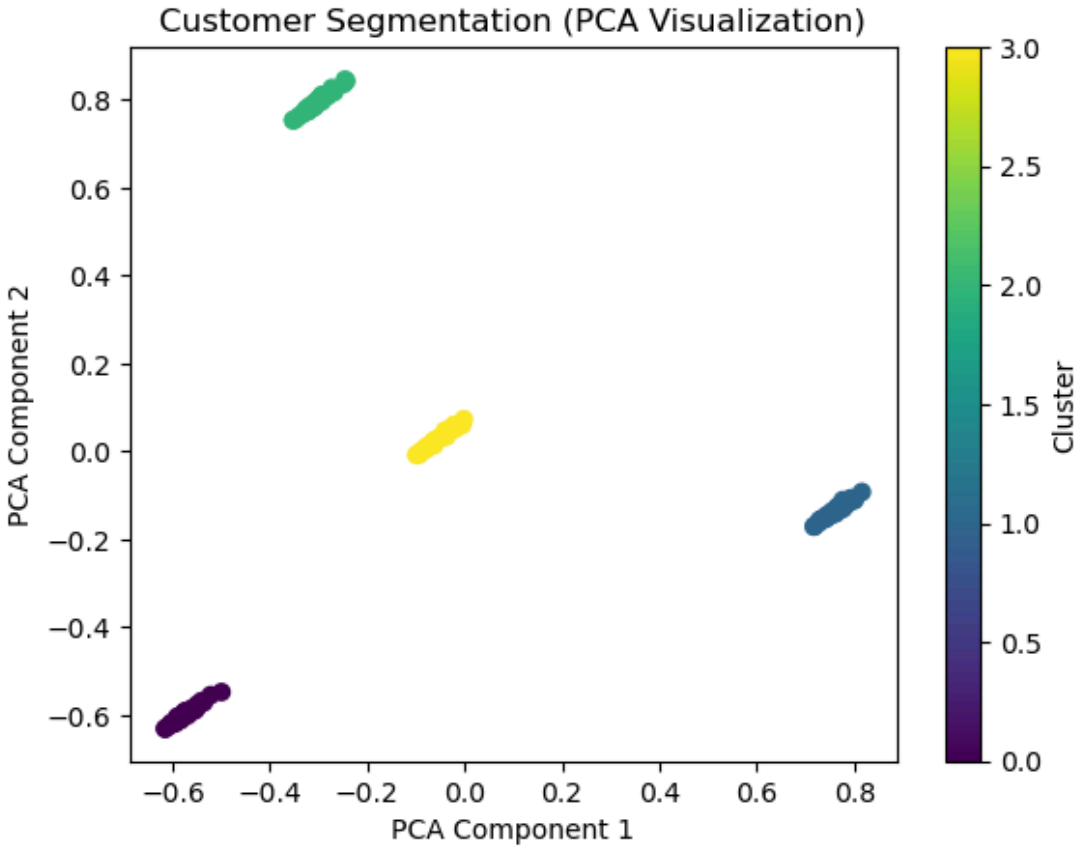
In [10]:
```
kmeans = KMeans(n_clusters=4, random_state=42)
customer_features['Cluster'] = kmeans.fit_predict(scaled_clustering_data)
```

```
c:\Users\mtalh\anaconda3\Lib\site-packages\sklearn\cluster\_kmeans.py:1446:
UserWarning: KMeans is known to have a memory leak on Windows with MKL, when
there are less chunks than available threads. You can avoid it by setting th
e environment variable OMP_NUM_THREADS=1.
  warnings.warn(
```

In [11]:
```
db_index = davies_bouldin_score(scaled_clustering_data, customer_features[
print("Davies-Bouldin Index:", db_index)
```

```
Davies-Bouldin Index: 0.6096598426881008
```

In [12]:
```
pca = PCA(n_components=2)
pca_data = pca.fit_transform(scaled_clustering_data)
plt.scatter(pca_data[:, 0], pca_data[:, 1], c=customer_features['Cluster']
plt.title('Customer Segmentation (PCA Visualization)')
plt.xlabel('PCA Component 1')
plt.ylabel('PCA Component 2')
plt.colorbar(label='Cluster')
plt.show()
```


Customer Segmentation (PCA Visualization)
PCA Component 2
PCA Component 1
Cluster
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
−0.6
−0.4
−0.2
0.0
0.2
0.4
0.6
0.8
3.0
2.5
2.0
1.5
1.0
0.5
0.0