Experiment -39

Scenario: You work as a data scientist for a marketing agency, and one of your clients is a large e-commerce company. The company wants to understand the purchasing behavior of its customers and segment them into different groups based on their buying patterns. The e-commerce company has provided you with transaction data, including customer IDs, the total amount spent in each transaction, and the number of items purchased.

Question: Build a clustering model using the K-Means algorithm to group customers based on their spending and purchase behavior and visualize the clusters using scatter plots or other appropriate visualizations to gain insights into customer distribution and distinguish different segments.

Code

```
import pandas as pd
from sklearn.cluster import KMeans
import matplotlib.pyplot as plt
data = {
   "CustomerID": [1, 2, 3, 4, 5],
   "AmountSpent": [200, 450, 150, 700, 300],
   "ItemsPurchased": [5, 10, 3, 15, 7]
}
df = pd.DataFrame(data)
X = df[["AmountSpent", "ItemsPurchased"]]
kmeans = KMeans(n_clusters=3, random_state=42)
df["Cluster"] = kmeans.fit_predict(X)
print("Customer Segmentation Output:")
print(df)
plt.scatter(df["AmountSpent"], df["ItemsPurchased"], c=df["Cluster"])
plt.xlabel("Amount Spent")
plt.ylabel("Items Purchased")
plt.title("Customer Segments using K-Means")
plt.show()
```

Output:

```
Customer Segmentation Output:
   CustomerID  AmountSpent  ItemsPurchased  Cluster
0           1          200               5        1
1           2          450              10        0
2           3          150               3        1
3           4          700              15        2
4           5          300               7        0
```