A Report on Customer Segmentation
for eCommerce Transactions

Clustering Report

1. **Number of Clusters Formed**:

   o **Optimal Clusters**: 3

   o This was determined by evaluating the Davies-Bouldin Index for clusters between 2 and 10.
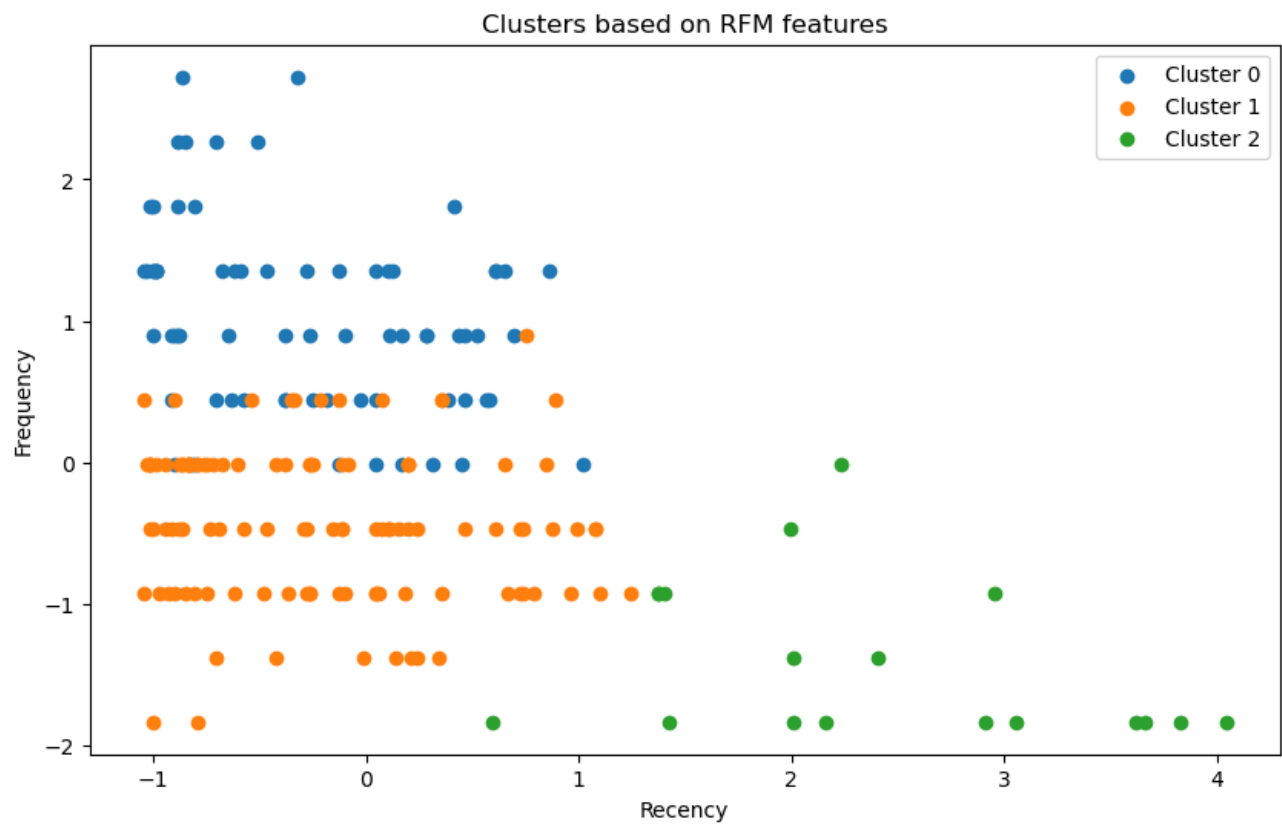
2. **Davies-Bouldin Index (DB Index)**:

   o **Value**: 0.880

   o A lower value indicates a well-separated and compact clustering structure.

3. **Other Metrics Considered**:

   o The model used RFM (Recency, Frequency, Monetary) features to segment customers into meaningful groups.

   o Clustering was performed using KMeans with StandardScaler to normalize the features.

4. **Visualization of Clusters**:
   The following scatter plot visualizes the clusters based on normalized Recency and Frequency values. Each cluster represents a unique customer segment.

Clusters based on RFM features

Optimal Number of Clusters: 3

Davies-Bouldin Index: 0.880

Cluster 0 (71 items):

	CustomerID	Recency	Frequency	Monetary	Cluster
3	C0004	4	8	5354.88	0
7	C0008	11	10	4271.61	0
11	C0012	3	7	5231.26	0
12	C0013	55	7	6000.56	0
16	C0017	26	8	4753.82	0
..	...	...	...	...	...
185	C0187	77	5	4612.44	0
186	C0188	1	8	7111.32	0
192	C0194	67	7	3869.17	0
193	C0195	33	6	4036.27	0
198	C0200	17	5	4758.60	0

[71 rows x 5 columns]

Cluster 1 (110 items):

	CustomerID	Recency	Frequency	Monetary	Cluster
0	C0001	55	5	3354.52	1
1	C0002	25	4	1862.74	1
2	C0003	125	4	2725.38	1
4	C0005	54	3	2034.24	1
5	C0006	82	4	4227.57	1
..	...	...	...	...	...
190	C0192	150	4	2072.72	1
194	C0196	13	4	4982.88	1
195	C0197	0	3	1928.65	1
196	C0198	84	2	931.83	1
197	C0199	63	4	1979.28	1

[110 rows x 5 columns]

Cluster 2 (18 items):

	CustomerID	Recency	Frequency	Monetary	Cluster
13	C0014	345	1	318.66	2
19	C0020	333	1	922.41	2
32	C0033	175	1	132.64	2
57	C0058	330	1	396.34	2
59	C0060	116	1	82.36	2
61	C0062	171	3	1639.54	2
72	C0073	283	3	2060.54	2
79	C0080	290	1	1007.52	2
96	C0097	280	1	137.54	2
109	C0110	360	1	942.32	2
111	C0112	171	3	1959.51	2
127	C0128	216	2	773.19	2
129	C0130	227	1	601.36	2
143	C0144	244	2	1304.68	2
149	C0150	216	1	580.34	2
175	C0176	173	3	2331.32	2
180	C0182	232	5	4980.77	2
191	C0193	215	4	3009.29	2

Optimal Number of Clusters: 3

Davies-Bouldin Index: 0.880