

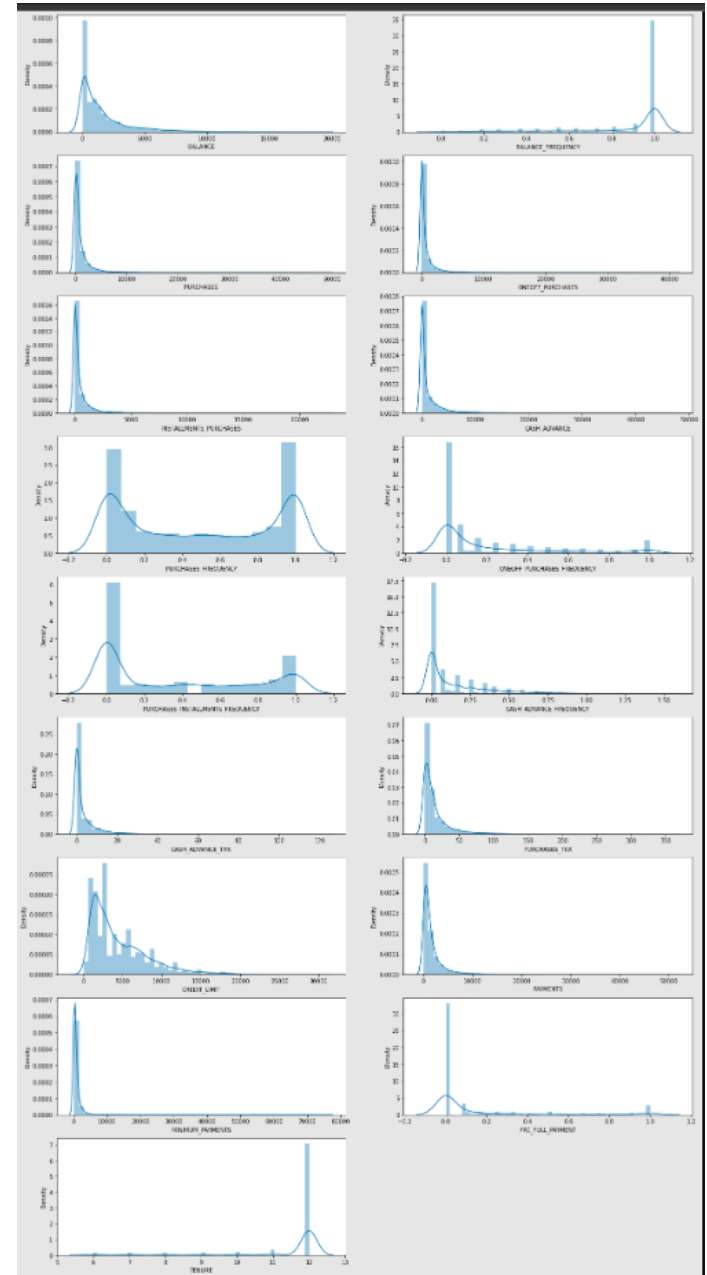
Credit Card Dataset for Clustering Using K-Means

İlke DERCAN

```
df.isnull().sum().sort_values(ascending=False)
```

```
MINIMUM_PAYMENTS      313
CREDIT_LIMIT           1
BALANCE                0
CASH_ADVANCE_FREQUENCY 0
PRC_FULL_PAYMENT       0
PAYMENTS              0
PURCHASES_TRX          0
CASH_ADVANCE_TRX       0
PURCHASES_INSTALLMENTS_FREQUENCY 0
BALANCE_FREQUENCY      0
ONEOFF_PURCHASES_FREQUENCY 0
PURCHASES_FREQUENCY    0
CASH_ADVANCE           0
INSTALLMENTS_PURCHASES 0
ONEOFF_PURCHASES       0
PURCHASES              0
TENURE                 0
dtype: int64
```

	count	mean	std	min	25%	50%	75%	max
BALANCE	8950.0	1564.474828	2081.531879	0.000000	128.281915	873.385231	2054.140036	19043.13856
BALANCE_FREQUENCY	8950.0	0.877271	0.236904	0.000000	0.888889	1.000000	1.000000	1.000000
PURCHASES	8950.0	1003.204834	2136.634782	0.000000	39.635000	361.280000	1110.130000	49039.57000
ONEOFF_PURCHASES	8950.0	592.437371	1659.887917	0.000000	0.000000	38.000000	577.405000	40761.25000
INSTALLMENTS_PURCHASES	8950.0	411.067645	904.338115	0.000000	0.000000	89.000000	468.637500	22500.00000
CASH_ADVANCE	8950.0	978.871112	2097.163877	0.000000	0.000000	0.000000	1113.821139	47137.21176
PURCHASES_FREQUENCY	8950.0	0.490351	0.401371	0.000000	0.083333	0.500000	0.916667	1.000000
ONEOFF_PURCHASES_FREQUENCY	8950.0	0.202458	0.298336	0.000000	0.000000	0.083333	0.300000	1.000000
PURCHASES_INSTALLMENTS_FREQUENCY	8950.0	0.364437	0.397448	0.000000	0.000000	0.166667	0.750000	1.000000
CASH_ADVANCE_FREQUENCY	8950.0	0.135144	0.200121	0.000000	0.000000	0.000000	0.222222	1.500000
CASH_ADVANCE_TRX	8950.0	3.248827	6.824647	0.000000	0.000000	0.000000	4.000000	123.00000
PURCHASES_TRX	8950.0	14.709832	24.857649	0.000000	1.000000	7.000000	17.000000	358.00000
CREDIT_LIMIT	8949.0	4494.449450	3638.815725	50.000000	1600.000000	3000.000000	6500.000000	30000.00000
PAYMENTS	8950.0	1733.143852	2895.063757	0.000000	383.276166	856.901546	1901.134317	50721.48336
MINIMUM_PAYMENTS	8637.0	864.206542	2372.446607	0.019163	169.123707	312.343947	825.485459	76406.20752
PRC_FULL_PAYMENT	8950.0	0.153715	0.292499	0.000000	0.000000	0.000000	0.142857	1.000000
TENURE	8950.0	11.517318	1.338331	6.000000	12.000000	12.000000	12.000000	12.000000

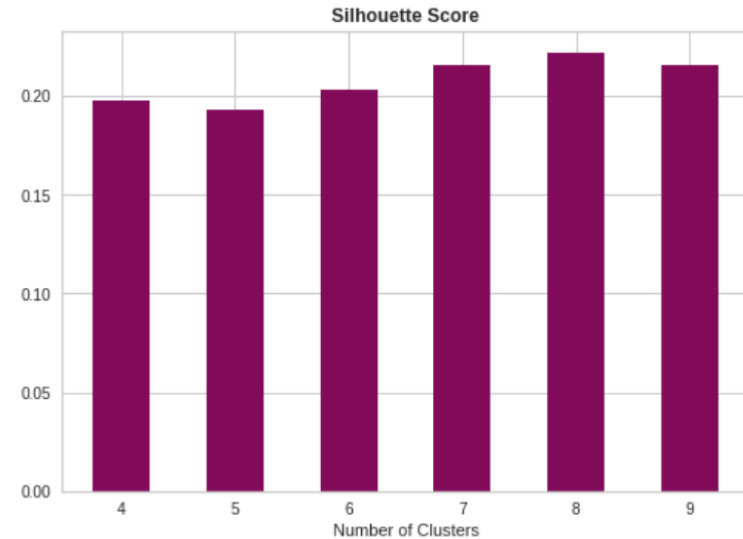


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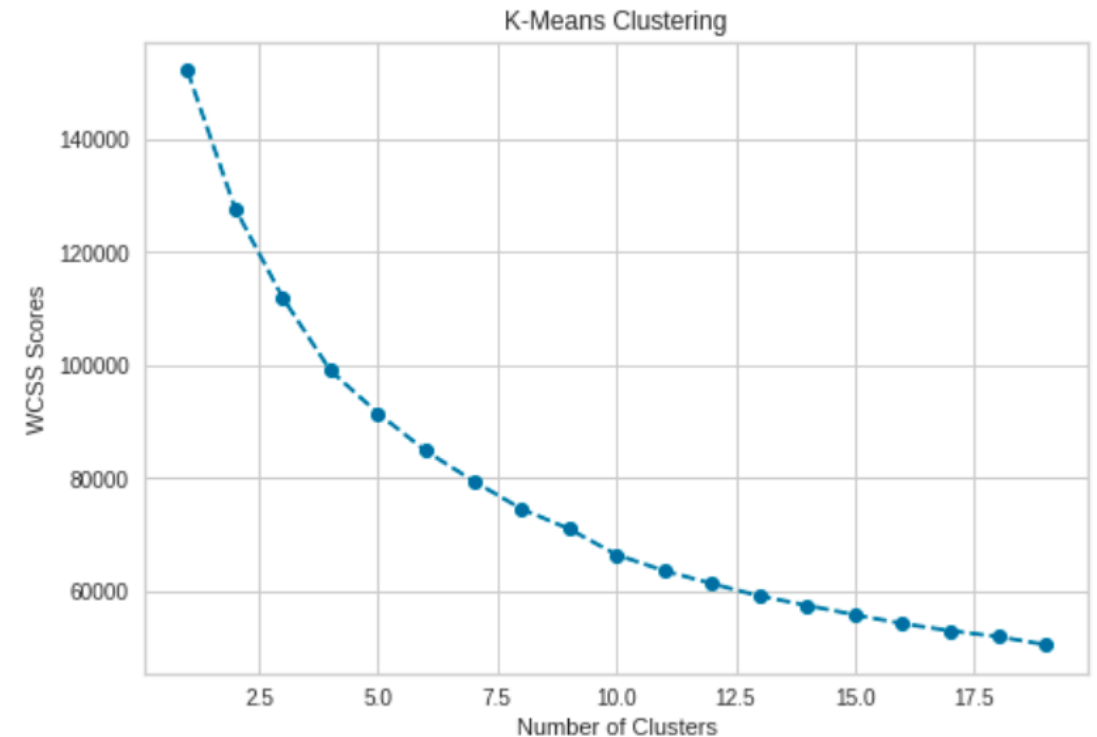


Modeling Using K-Means:

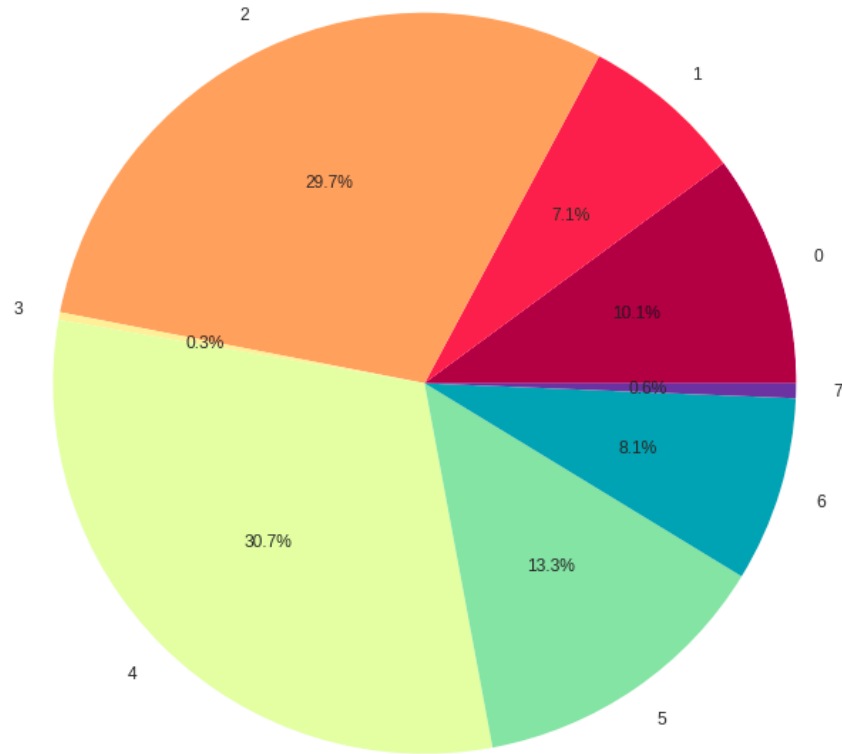
```
Parameter: {'n_clusters': 4} Score 0.1976911456779212  
Parameter: {'n_clusters': 5} Score 0.19327119581091734  
Parameter: {'n_clusters': 6} Score 0.20282740915525643  
Parameter: {'n_clusters': 7} Score 0.21529568691733653  
Parameter: {'n_clusters': 8} Score 0.22168115422528212  
Parameter: {'n_clusters': 9} Score 0.21544557892223296
```



`{'n_clusters': 8}`

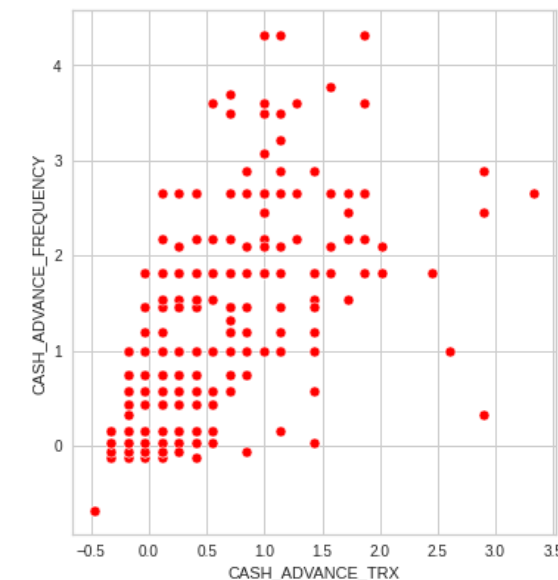
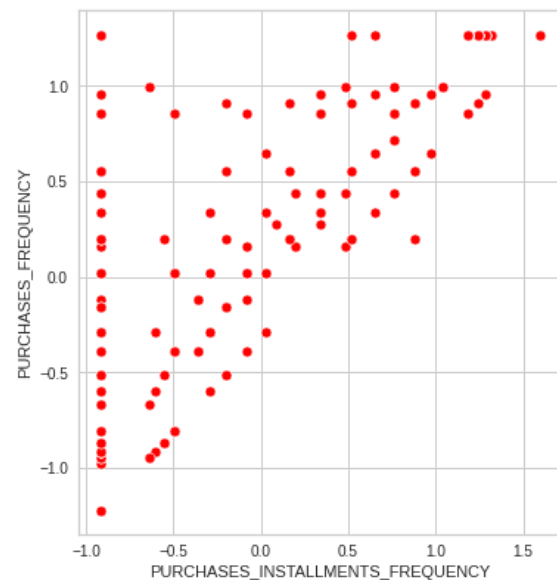
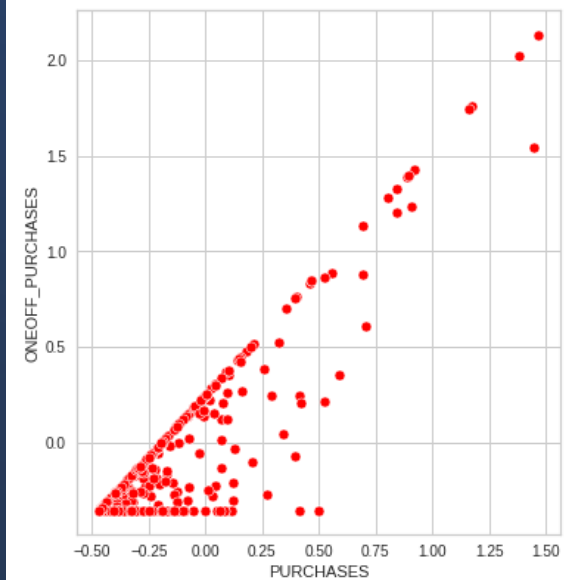
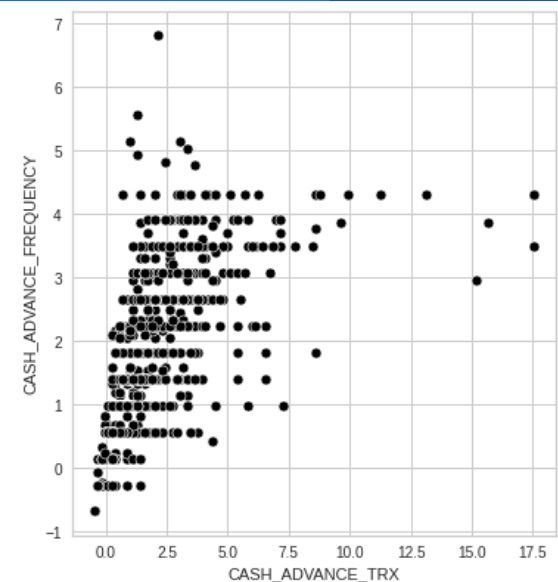
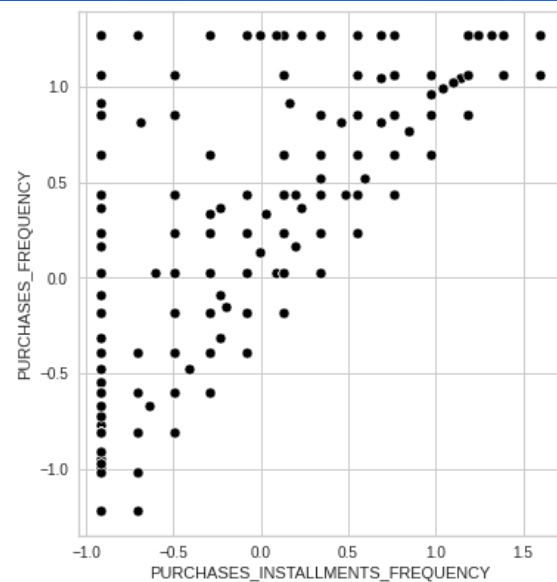
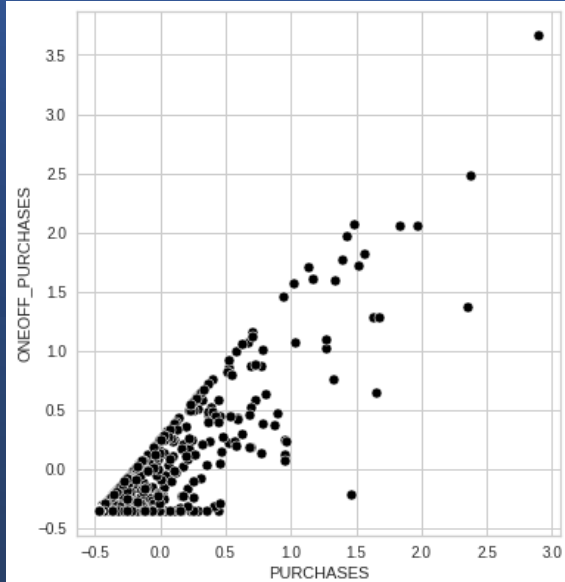


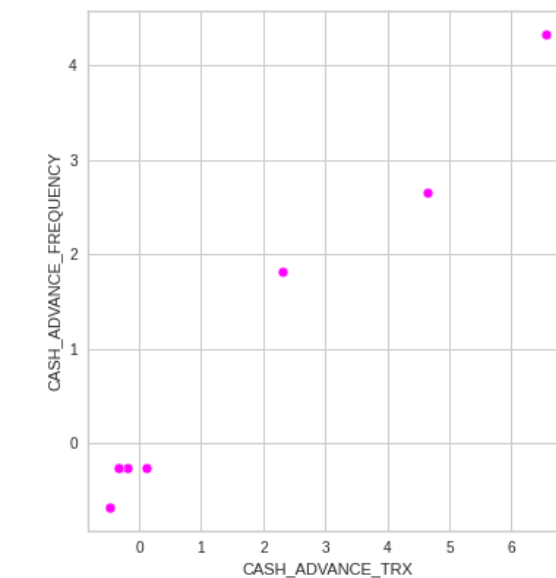
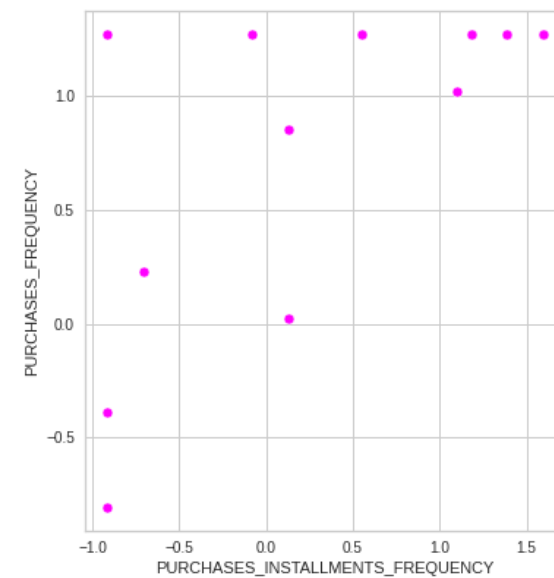
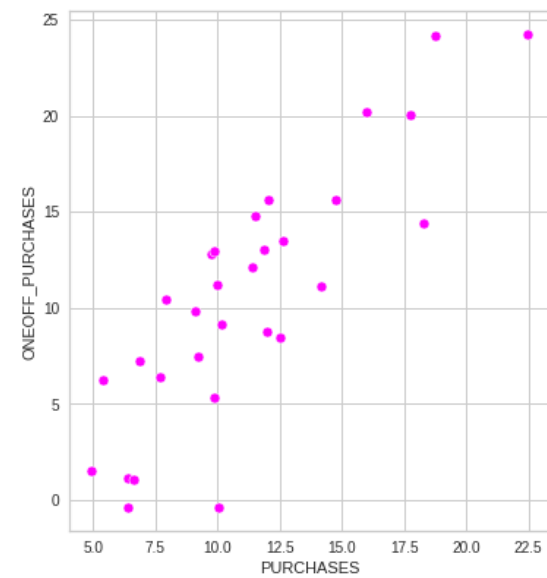
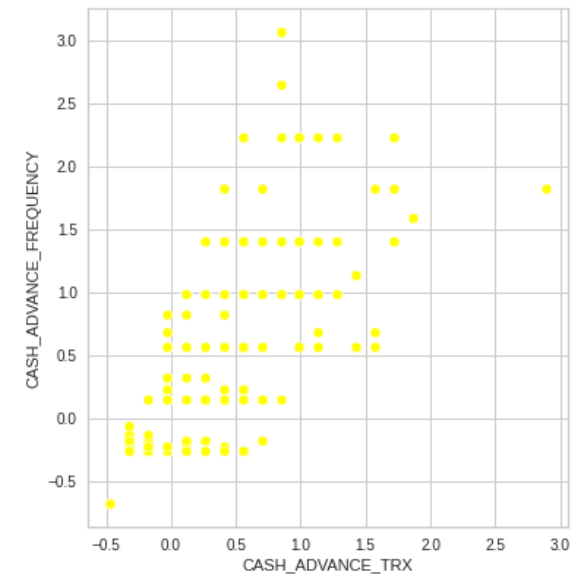
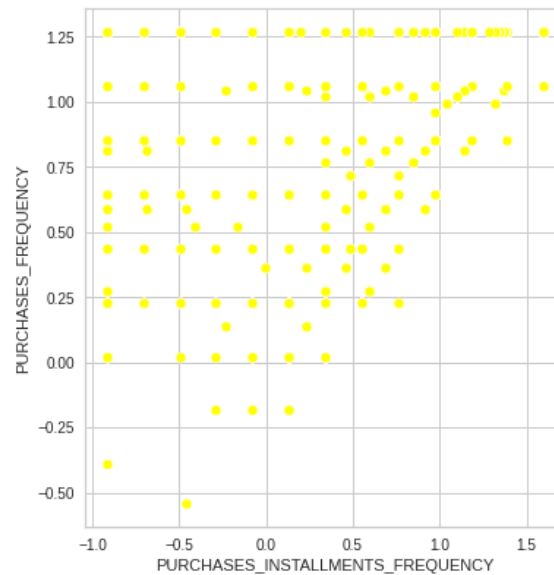
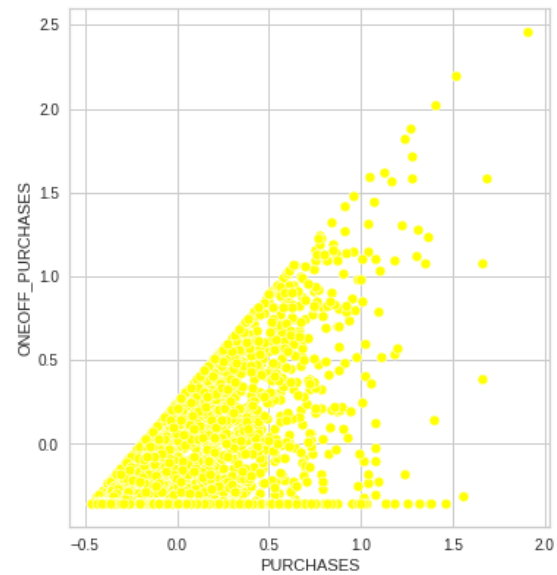
Kümelerin pie chart ile gösterimi

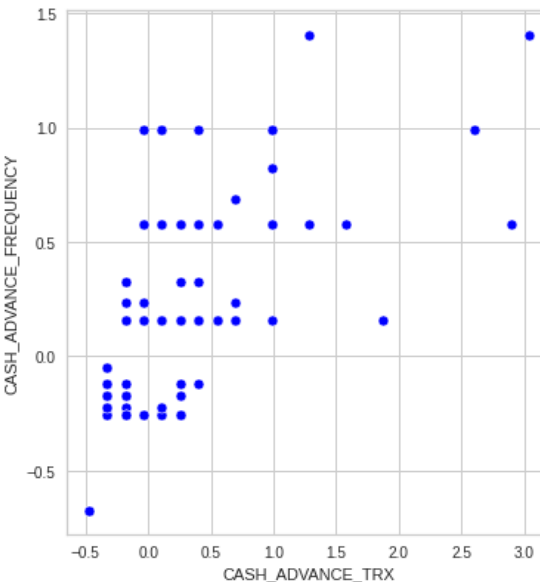
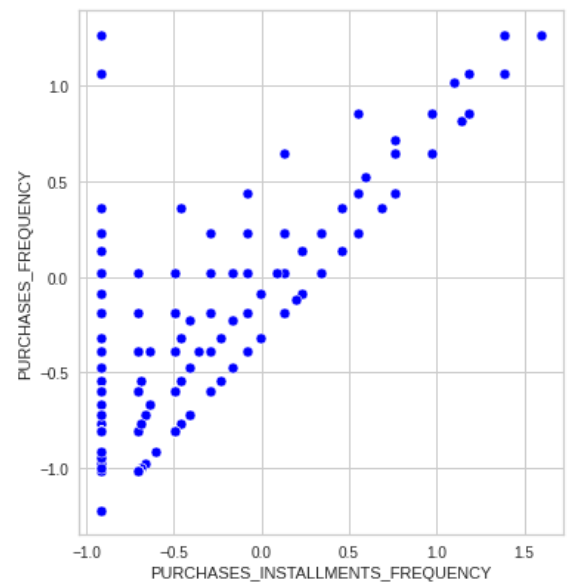
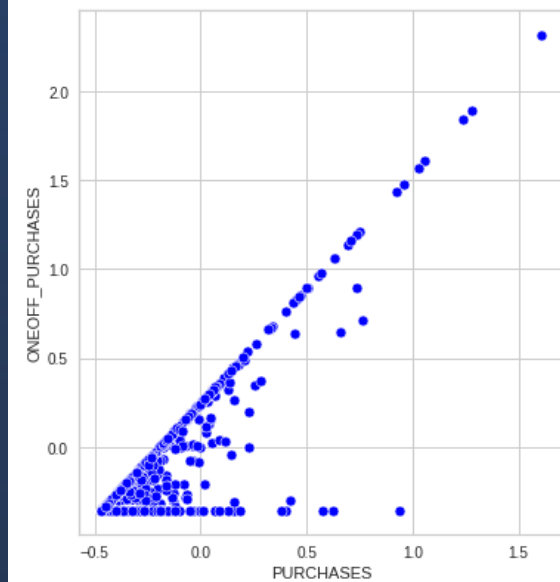
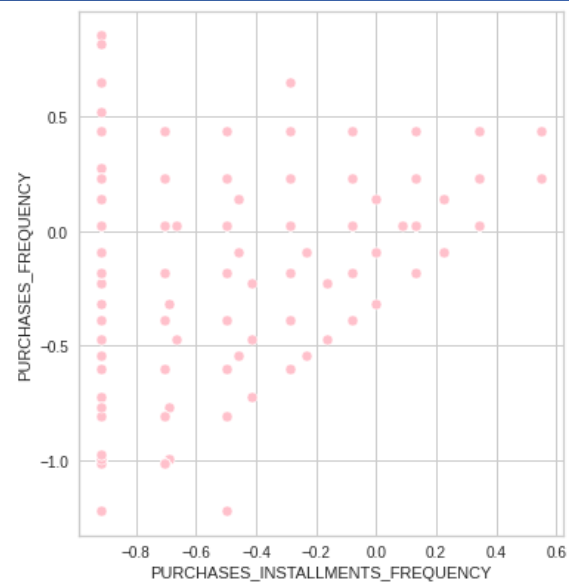
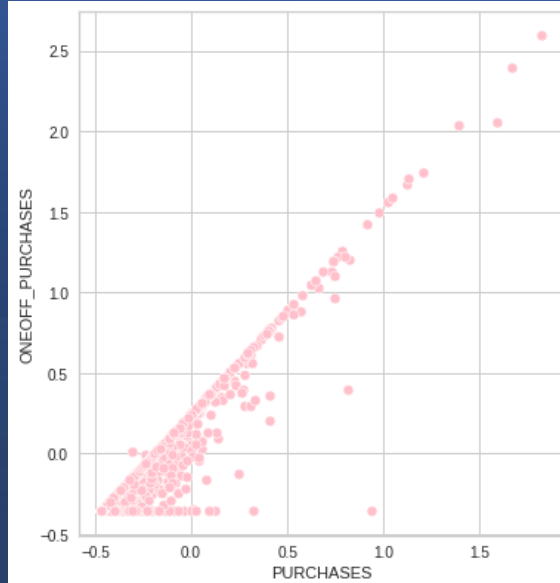


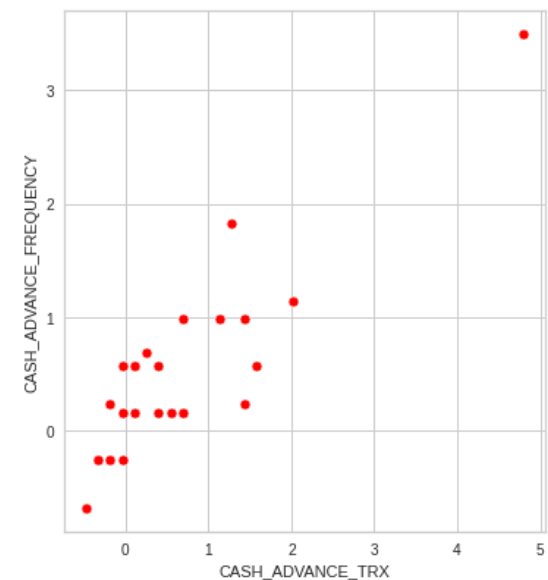
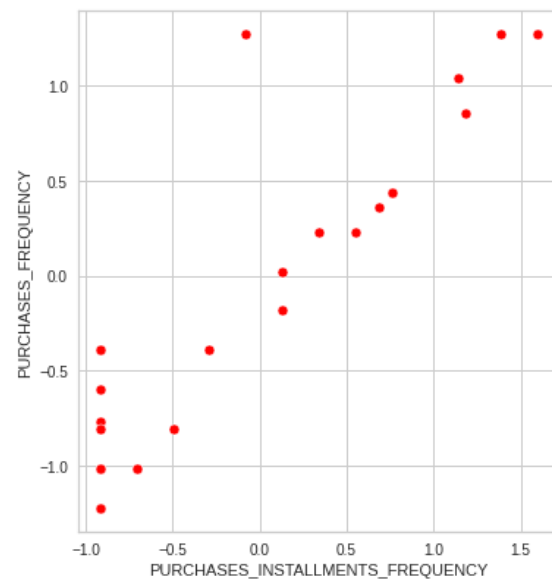
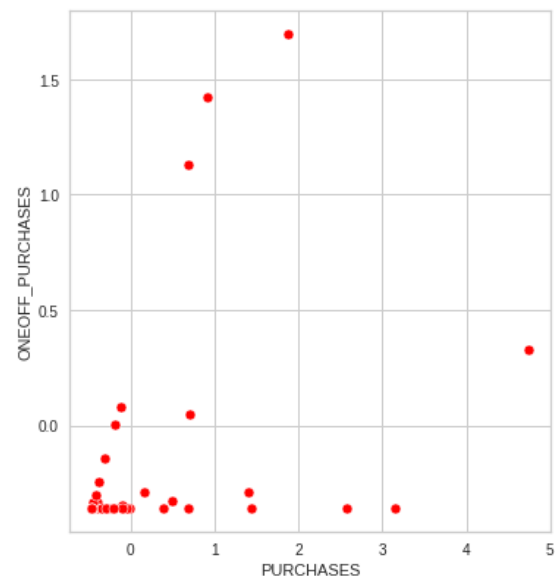
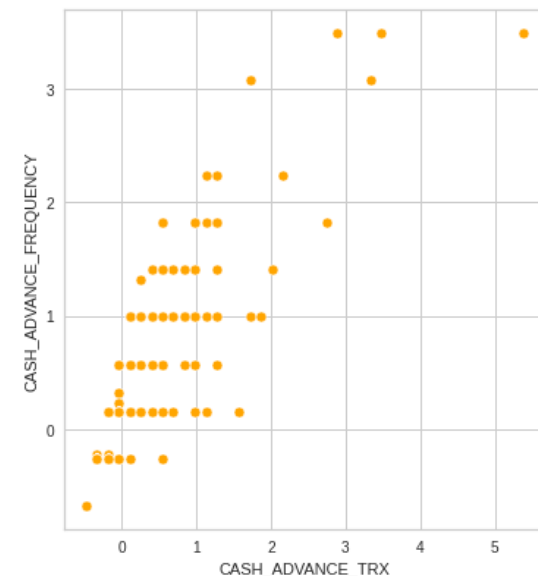
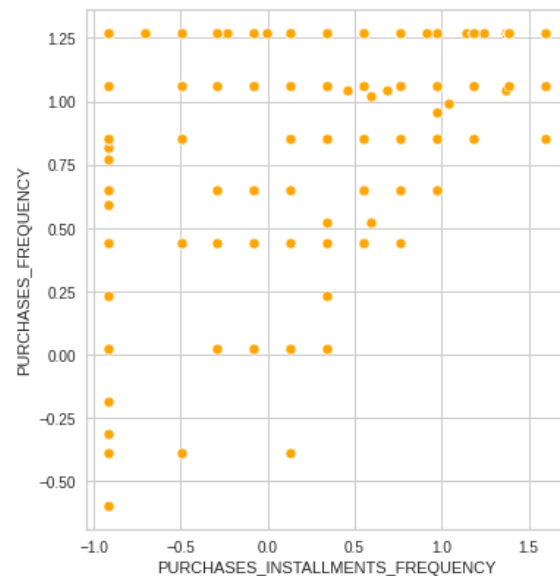
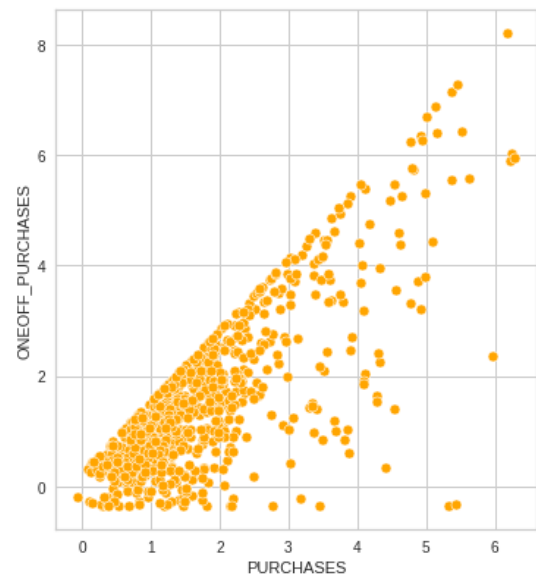
1.Kümede bulunan müşteri sayısı:905
2.Kümede bulunan müşteri sayısı:636
3.Kümede bulunan müşteri sayısı:2659
4.Kümede bulunan müşteri sayısı:30
5.Kümede bulunan müşteri sayısı:2745
6.Kümede bulunan müşteri sayısı:1194
7.Kümede bulunan müşteri sayısı:723
8.Kümede bulunan müşteri sayısı:58

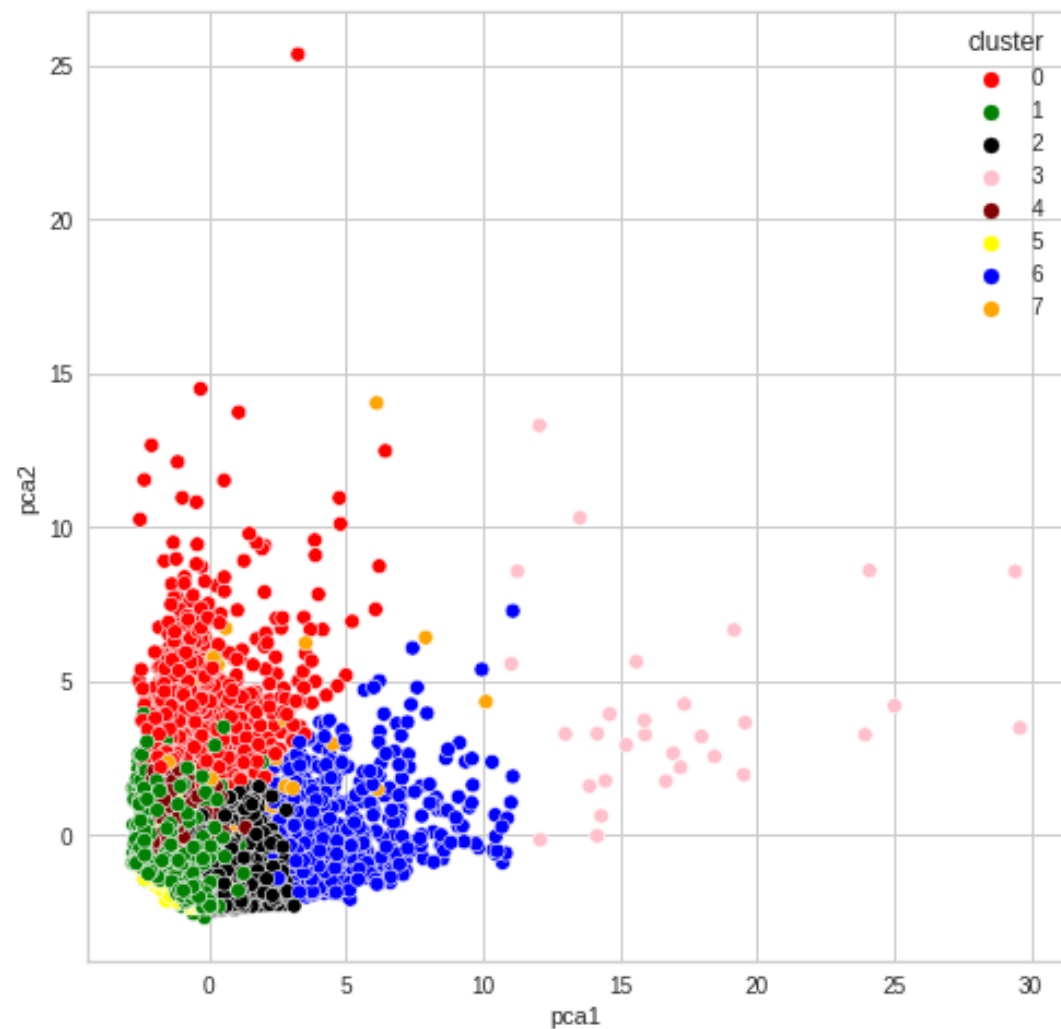
- Pie Chart











	pca1	pca2	cluster
0	-1.683653	-1.072263	1
1	-1.134088	2.509117	2
2	0.969387	-0.383607	0
3	-0.888213	0.004660	1
4	-1.600027	-0.683822	1
...
8945	-0.362575	-2.013451	7
8946	-0.580823	-1.675702	7
8947	-0.928990	-1.808068	7
8948	-2.337852	-0.653626	7
8949	-0.558028	-0.400626	7