

```
In [19]: import PaqueteMineriaDeDatosBasica as pMD
```

```
In [20]: path = "../BankChurners.csv"
```

```
In [21]: ad = pMD.AnalisisDatosExploratorio(path,1)
```

```
In [22]: ad.analisisNumerico()
```

```
In [23]: ad.analisis()
```

Dimensiones: (810, 10)

		Customer_Age	Dependent_count	Months_on_book	\
ID					
714073983	0.079485	-0.215317	0.018825		
718076733	-0.427469	-0.973605	-0.616504		
710511858	1.473611	-1.731894	0.018825		
766273533	0.839918	-0.215317	1.289481		
779249583	1.220134	-0.973605	0.272956		
...	
719821908	-1.061163	-0.215317	-2.522488		
772712658	1.980566	-1.731894	1.797744		
709827933	-0.300731	-0.215317	0.018825		
719584608	-0.807685	1.301261	-0.489438		
714127383	0.206224	0.542972	0.018825		
	Total_Relationship_Count	Months_Inactive_12_mon	\		
ID					
714073983	1.447127	0.696316			
718076733	0.135238	0.696316			
710511858	-0.520706	0.696316			
766273533	-0.520706	3.800990			
779249583	0.135238	0.696316			
...	
719821908	-1.176651	-1.373467			
772712658	0.791182	-1.373467			
709827933	-0.520706	0.696316			
719584608	-0.520706	-1.373467			
714127383	-0.520706	0.696316			
	Contacts_Count_12_mon	Credit_Limit	Total_Revolving_Bal	\	
ID					
714073983	0.547728	-0.092082	-1.448109		
718076733	0.547728	2.046917	0.015927		
710511858	0.547728	-0.496245	0.352530		
766273533	0.547728	1.048479	0.724170		
779249583	0.547728	-0.641258	1.632623		
...	
719821908	-0.416749	-0.626803	-1.448109		
772712658	-0.416749	-0.500986	0.614055		
709827933	-0.416749	0.474903	0.048461		
719584608	-1.381226	-0.773053	-1.448109		
714127383	-0.416749	-0.426976	1.701445		
	Total_Trans_Amt	Total_Trans_Ct			
ID					
714073983	-0.745915	-0.779314			
718076733	-0.362911	0.370416			
710511858	0.115480	1.009155			
766273533	3.124089	2.244051			
779249583	-0.865513	-1.503219			
...	
719821908	-0.464715	-0.907062			
772712658	-0.667156	-1.290306			
709827933	-0.200141	0.498164			
719584608	-0.037955	0.625912			
714127383	-0.630109	-0.694149			

[810 rows x 10 columns]>

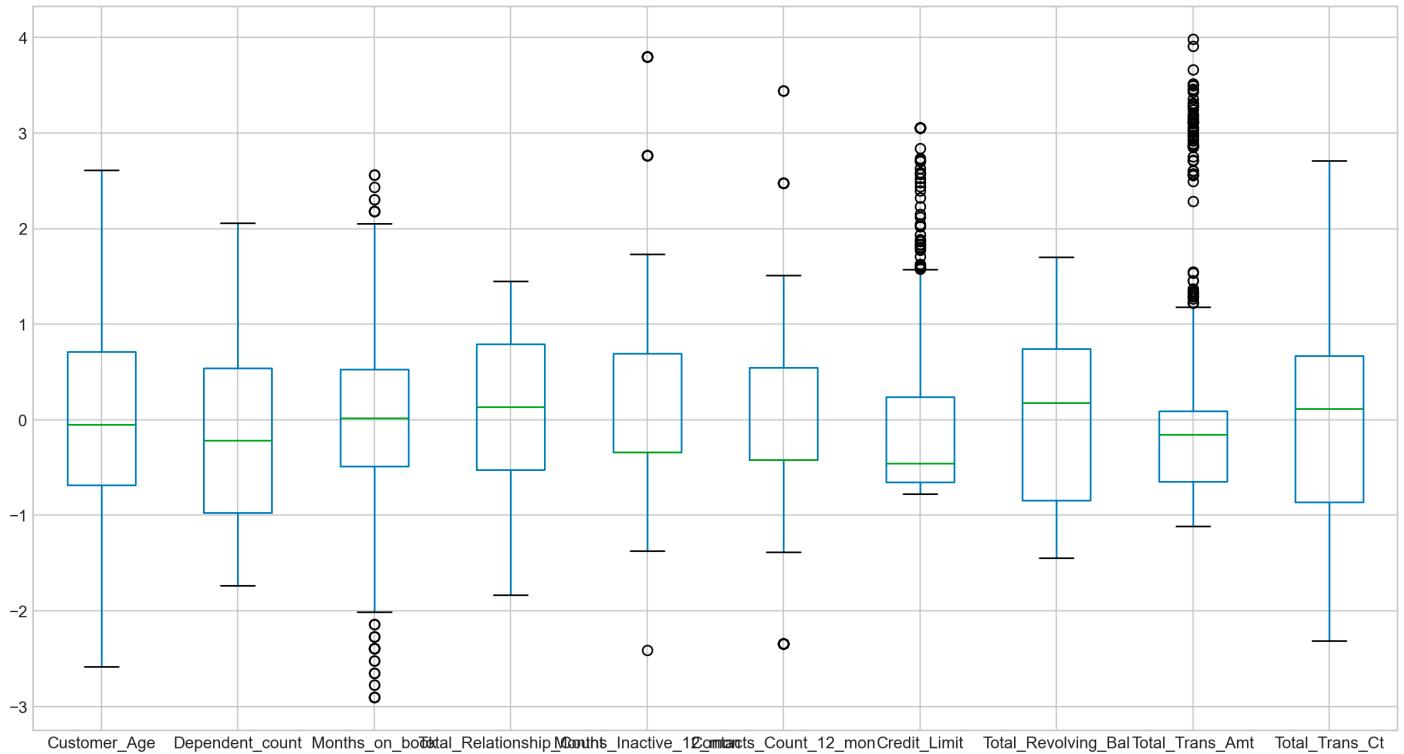
	Customer_Age	Dependent_count	Months_on_book	\
count	8.100000e+02	8.100000e+02	8.100000e+02	
mean	2.203998e-16	1.151342e-16	-3.684296e-16	
std	1.000618e+00	1.000618e+00	1.000618e+00	

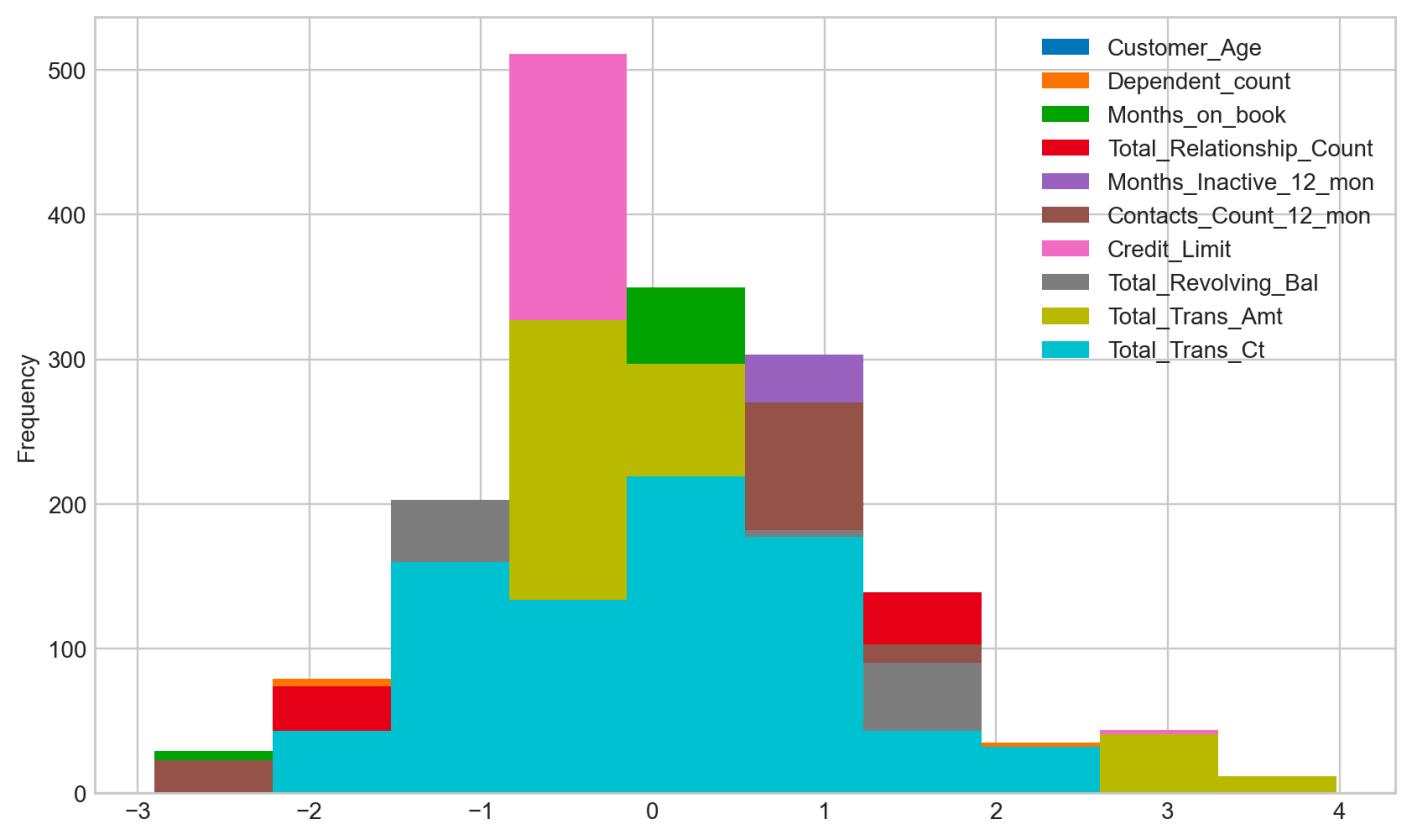
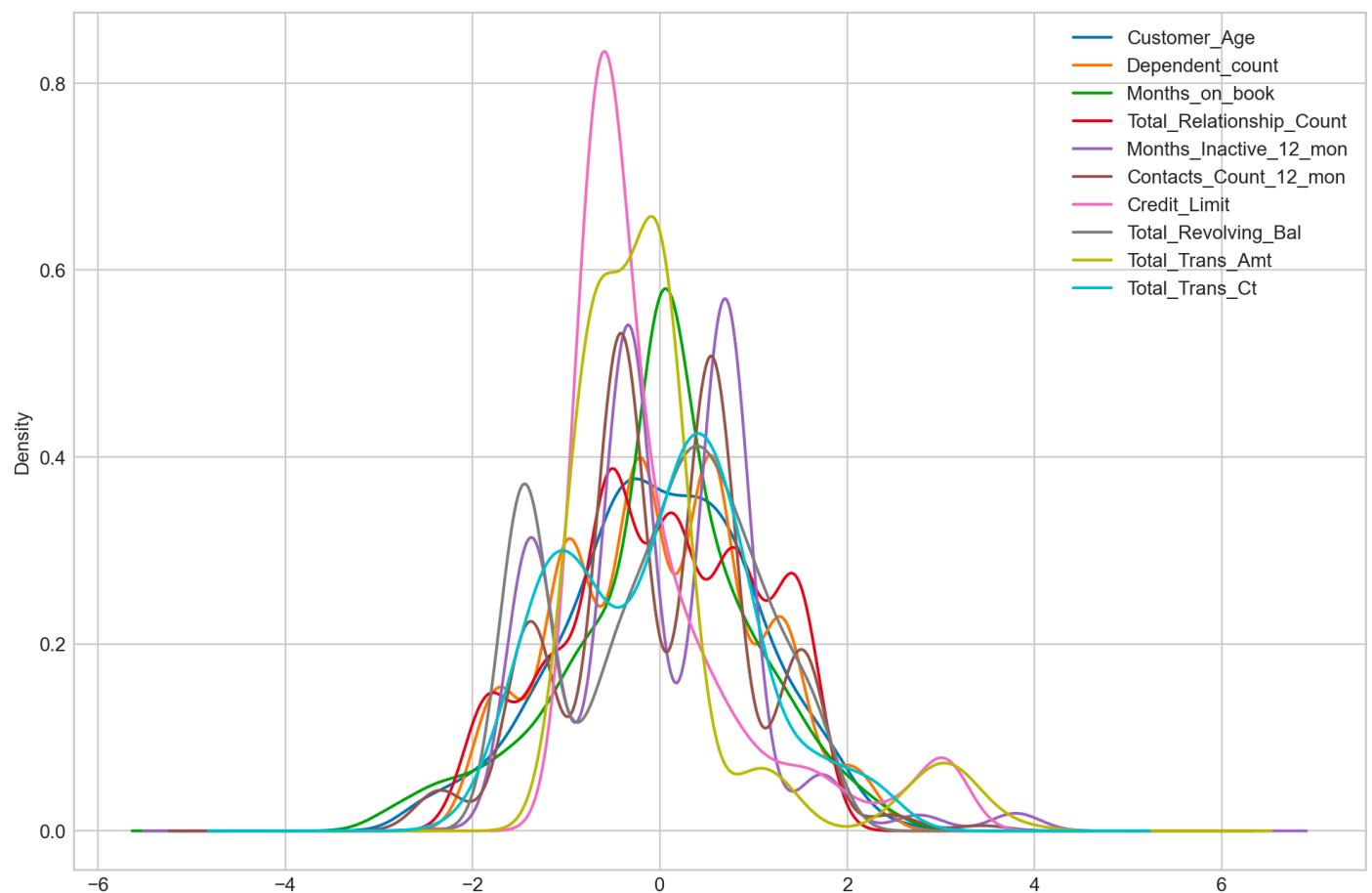
min	-2.582027e+00	-1.731894e+00	-2.903685e+00
25%	-6.809466e-01	-9.736052e-01	-4.894380e-01
50%	-4.725319e-02	-2.153165e-01	1.882454e-02
75%	7.131789e-01	5.429722e-01	5.270871e-01
max	2.614259e+00	2.059550e+00	2.560137e+00

	Total_Relationship_Count	Months_Inactive_12_mon	\
count	8.100000e+02	8.100000e+02	
mean	1.260994e-16	-1.315820e-16	
std	1.000618e+00	1.000618e+00	
min	-1.832595e+00	-2.408358e+00	
25%	-5.207065e-01	-3.385756e-01	
50%	1.352379e-01	-3.385756e-01	
75%	7.911823e-01	6.963158e-01	
max	1.447127e+00	3.800990e+00	

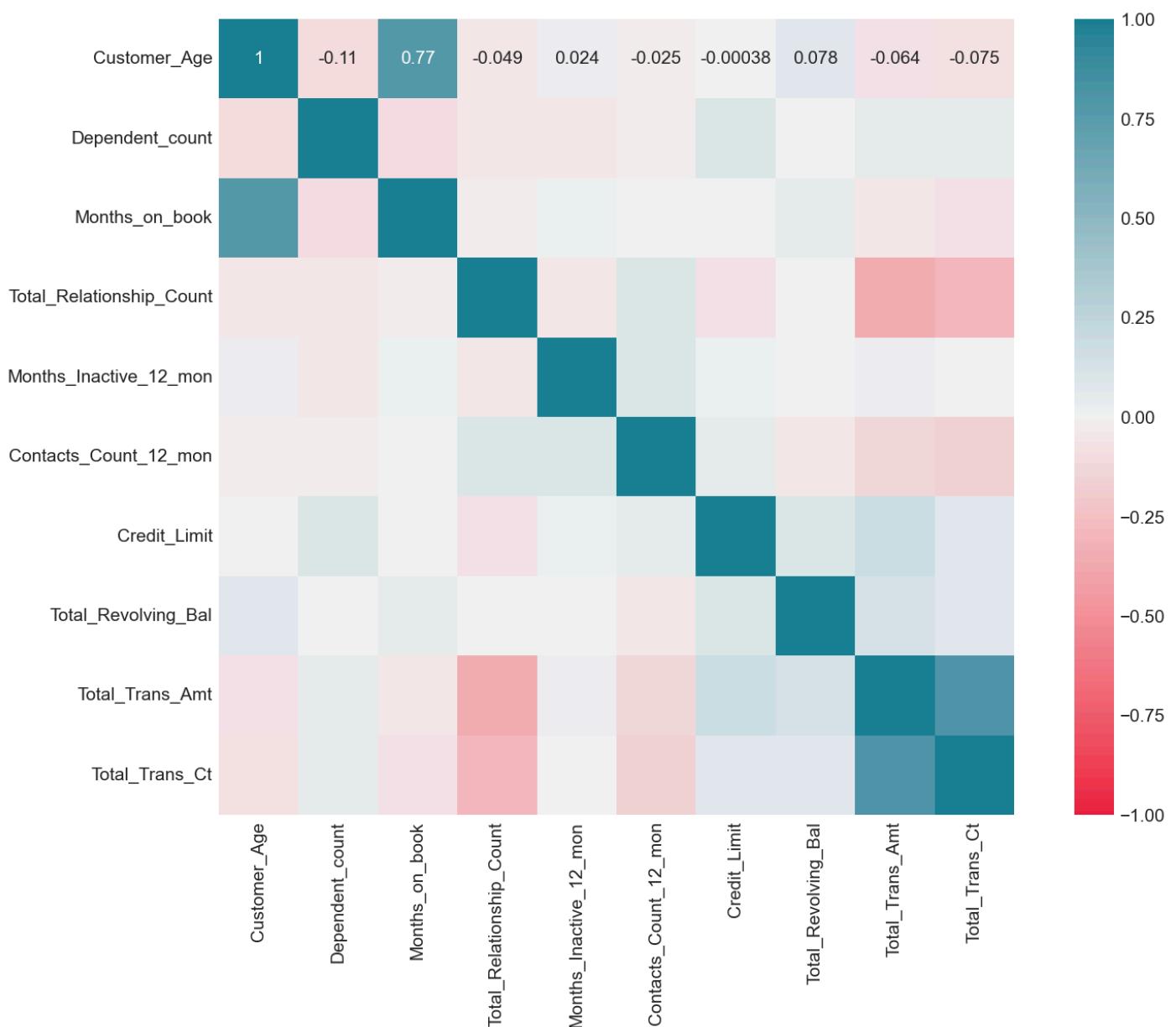
	Contacts_Count_12_mon	Credit_Limit	Total_Revolving_Bal	\
count	8.100000e+02	8.100000e+02	8.100000e+02	
mean	-7.894919e-17	5.592234e-17	2.193033e-17	
std	1.000618e+00	1.000618e+00	1.000618e+00	
min	-2.345704e+00	-7.730533e-01	-1.448109e+00	
25%	-4.167494e-01	-6.536605e-01	-8.421604e-01	
50%	-4.167494e-01	-4.534003e-01	1.760952e-01	
75%	5.477277e-01	2.377820e-01	7.429398e-01	
max	3.441159e+00	3.052063e+00	1.701445e+00	

	Total_Trans_Amt	Total_Trans_Ct	
count	8.100000e+02	8.100000e+02	
mean	3.508853e-17	6.579099e-17	
std	1.000618e+00	1.000618e+00	
min	-1.112875e+00	-2.312289e+00	
25%	-6.489242e-01	-8.644797e-01	
50%	-1.524482e-01	1.149205e-01	
75%	9.068495e-02	6.684945e-01	
max	3.981691e+00	2.712460e+00	



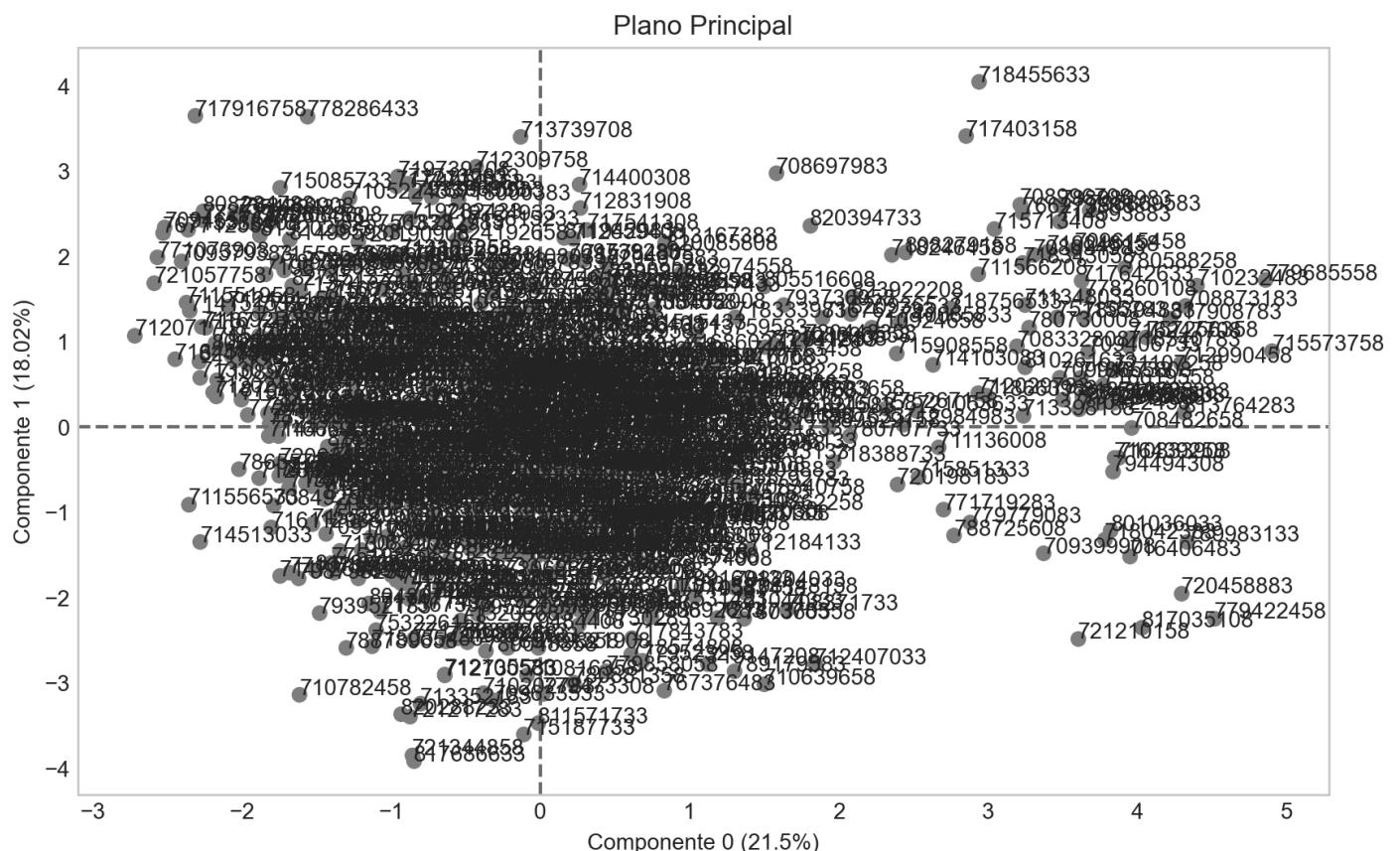


	Customer_Age	Dependent_count	Months_on_book	\
Customer_Age	1.000000	-0.112923	0.774902	
Dependent_count	-0.112923	1.000000	-0.094797	
Months_on_book	0.774902	-0.094797	1.000000	
Total_Relationship_Count	-0.049442	-0.053166	-0.031666	
Months_Inactive_12_mon	0.023673	-0.049649	0.017900	
Contacts_Count_12_mon	-0.024975	-0.015695	0.002247	
Credit_Limit	-0.000376	0.095306	0.004185	
Total_Revolving_Bal	0.077561	0.000094	0.047324	
Total_Trans_Amt	-0.064160	0.057098	-0.048689	
Total_Trans_Ct	-0.074903	0.043959	-0.070105	
	Total_Relationship_Count	Months_Inactive_12_mon	\	
Customer_Age	-0.049442	0.023673		
Dependent_count	-0.053166	-0.049649		
Months_on_book	-0.031666	0.017900		
Total_Relationship_Count	1.000000	-0.048075		
Months_Inactive_12_mon	-0.048075	1.000000		
Contacts_Count_12_mon	0.091507	0.100421		
Credit_Limit	-0.064573	0.018368		
Total_Revolving_Bal	-0.005282	-0.001864		
Total_Trans_Amt	-0.361146	0.030635		
Total_Trans_Ct	-0.282446	0.005341		
	Contacts_Count_12_mon	Credit_Limit	\	
Customer_Age	-0.024975	-0.000376		
Dependent_count	-0.015695	0.095306		
Months_on_book	0.002247	0.004185		
Total_Relationship_Count	0.091507	-0.064573		
Months_Inactive_12_mon	0.100421	0.018368		
Contacts_Count_12_mon	1.000000	0.051306		
Credit_Limit	0.051306	1.000000		
Total_Revolving_Bal	-0.056310	0.088918		
Total_Trans_Amt	-0.134906	0.177747		
Total_Trans_Ct	-0.161260	0.084419		
	Total_Revolving_Bal	Total_Trans_Amt	Total_Trans_Ct	
Customer_Age	0.077561	-0.064160	-0.074903	
Dependent_count	0.000094	0.057098	0.043959	
Months_on_book	0.047324	-0.048689	-0.070105	
Total_Relationship_Count	-0.005282	-0.361146	-0.282446	
Months_Inactive_12_mon	-0.001864	0.030635	0.005341	
Contacts_Count_12_mon	-0.056310	-0.134906	-0.161260	
Credit_Limit	0.088918	0.177747	0.084419	
Total_Revolving_Bal	1.000000	0.133351	0.079678	
Total_Trans_Amt	0.133351	1.000000	0.810894	
Total_Trans_Ct	0.079678	0.810894	1.000000	

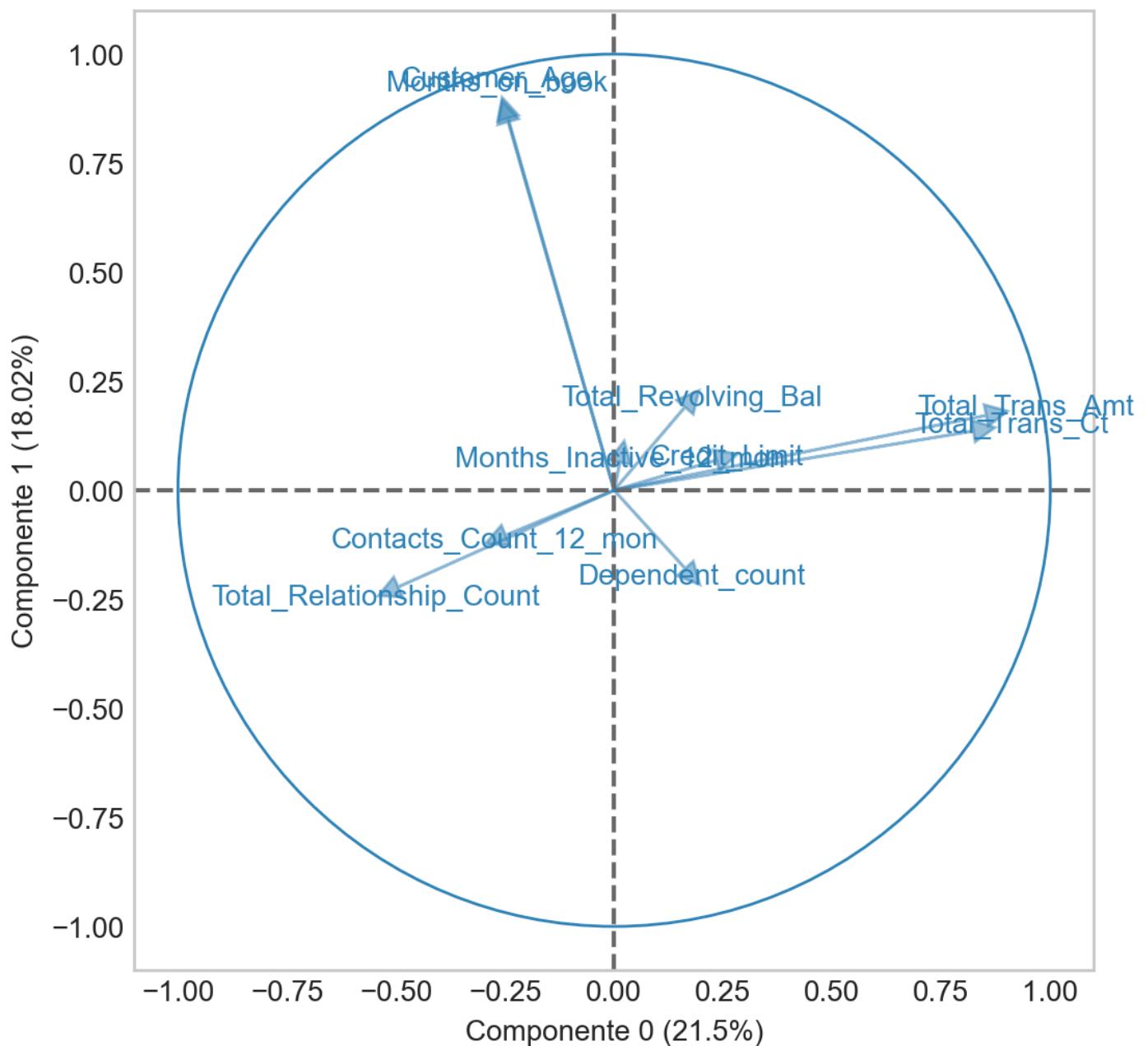


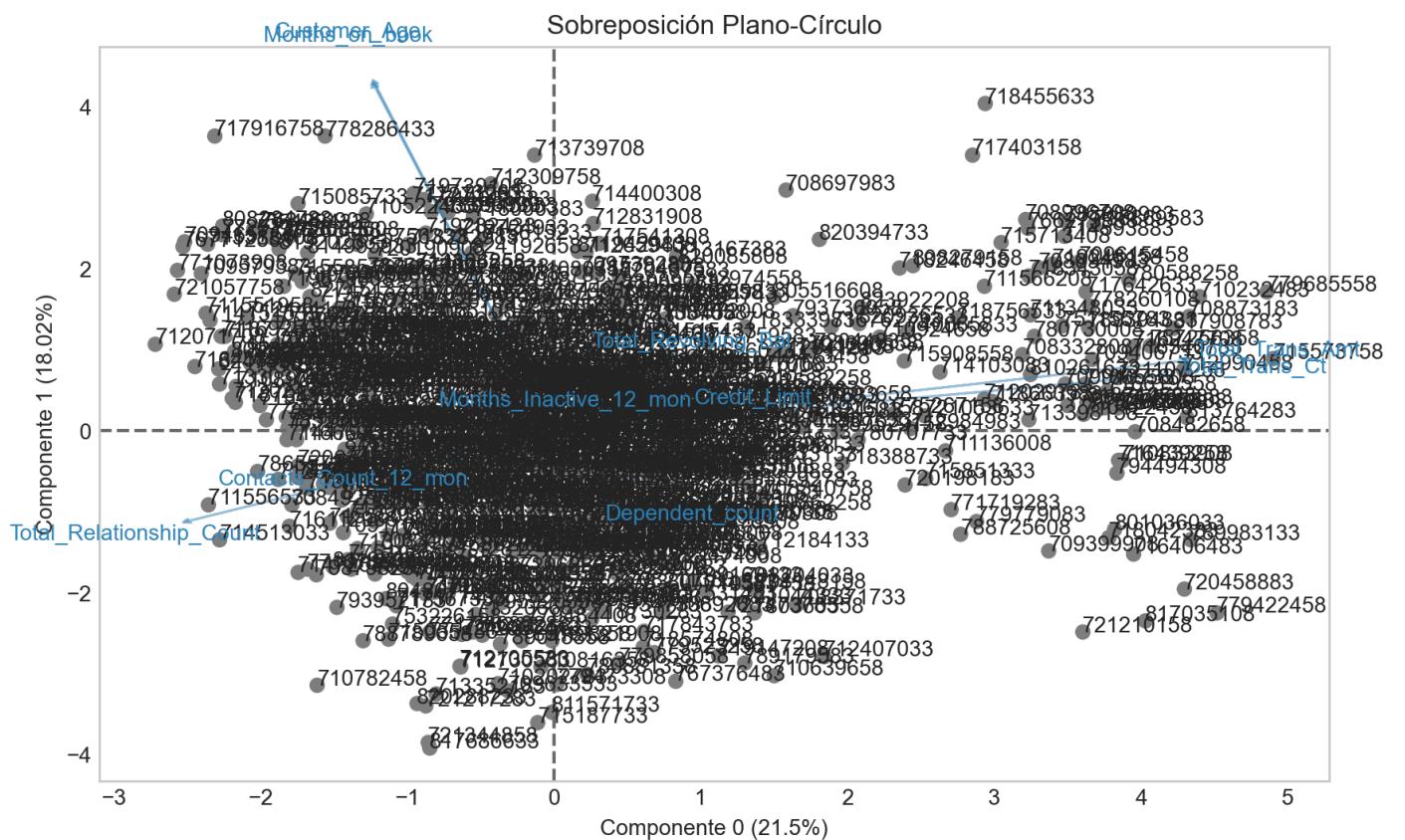
```
In [24]: Vacp = pMD.NoSupervisado(ad.df)
```

```
In [25]: Vacp.ACP(2)
```



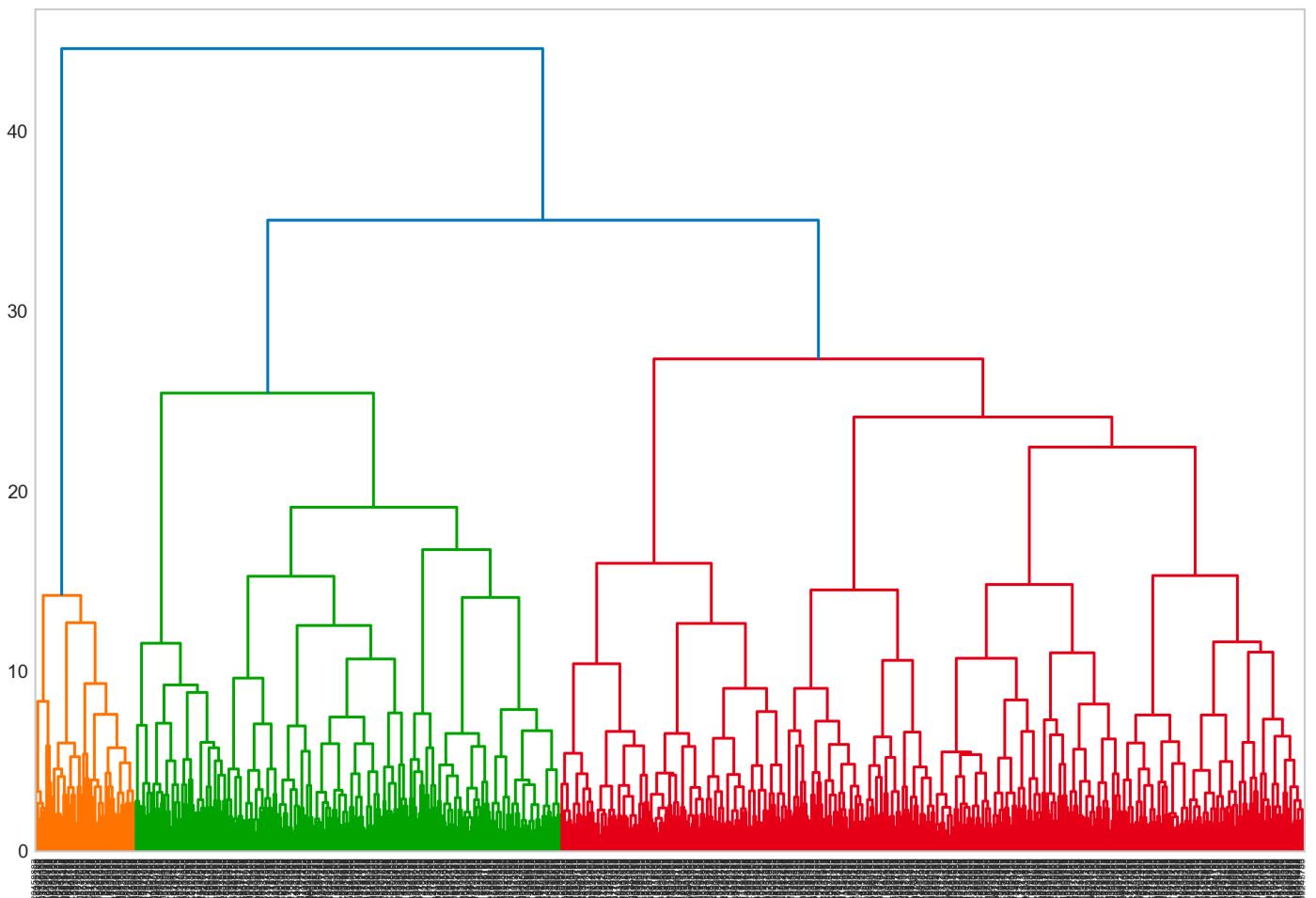
Círculo de Correlación



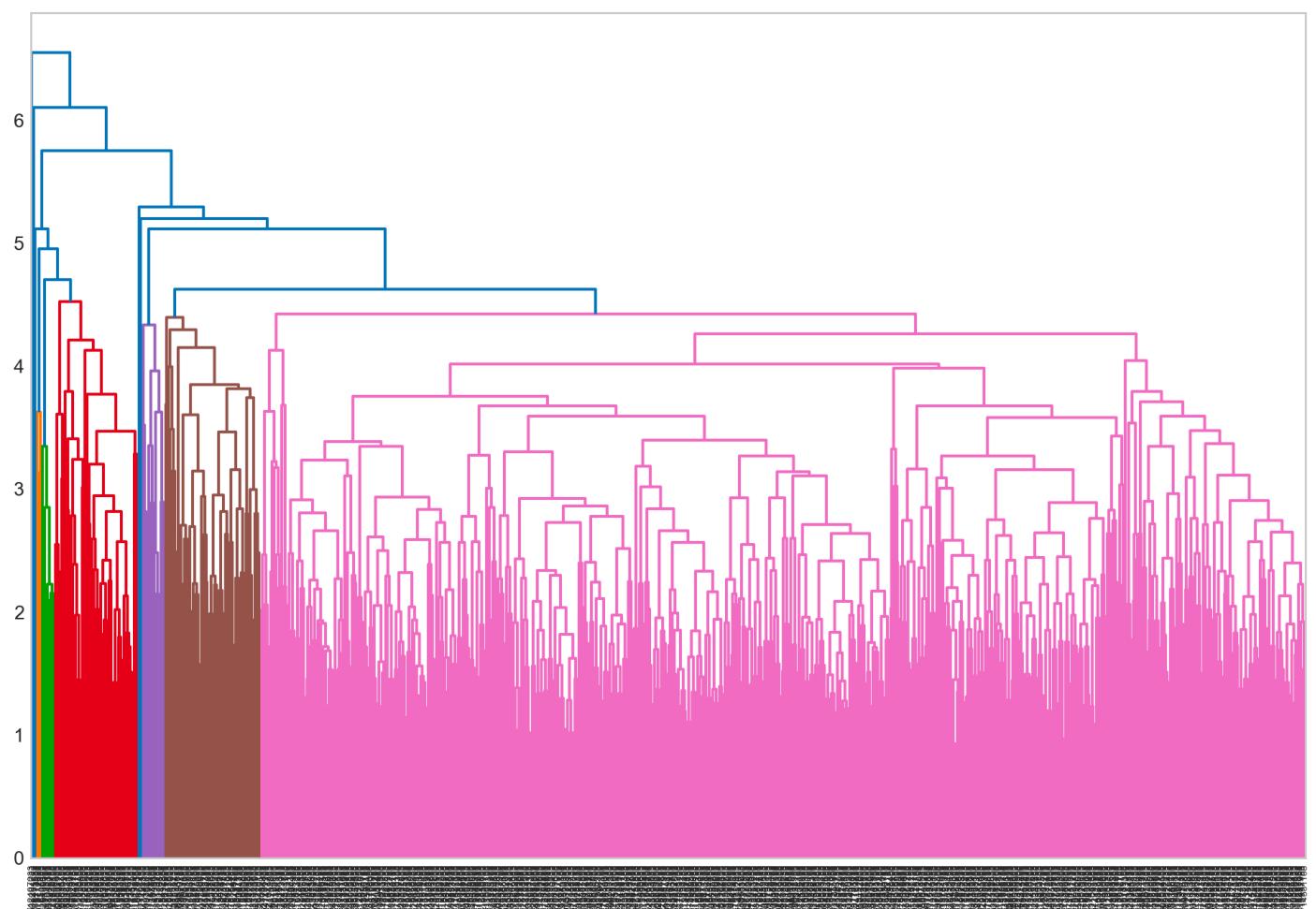


In [26]: `Vacf.HAC()`

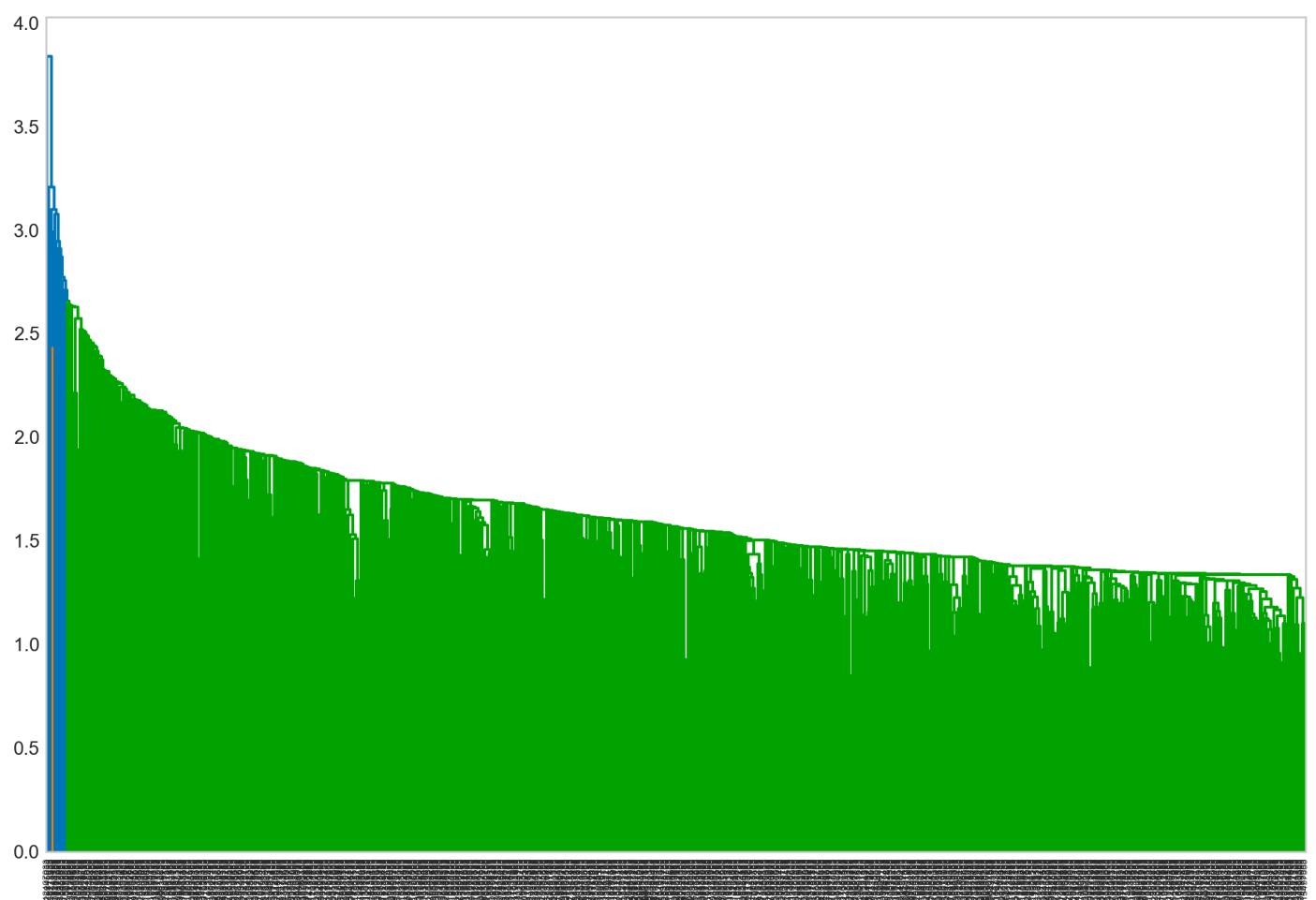
Agregación de Ward:



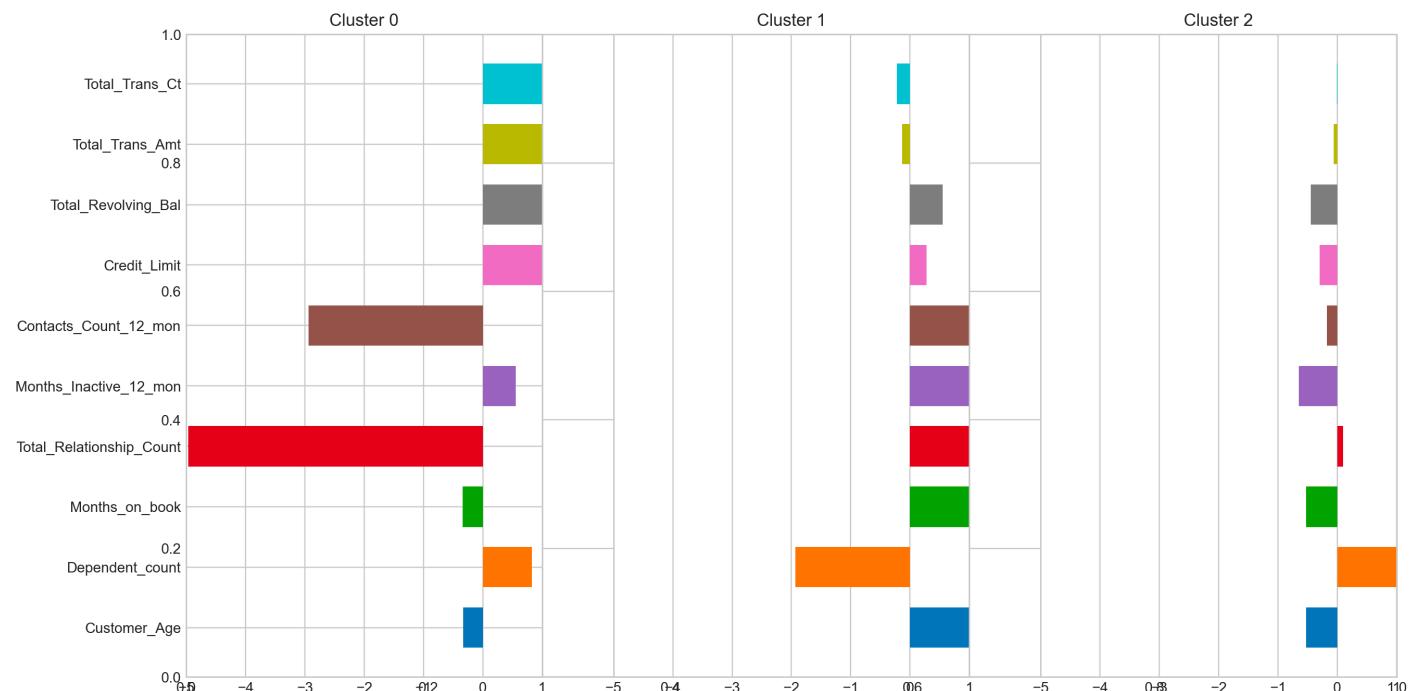
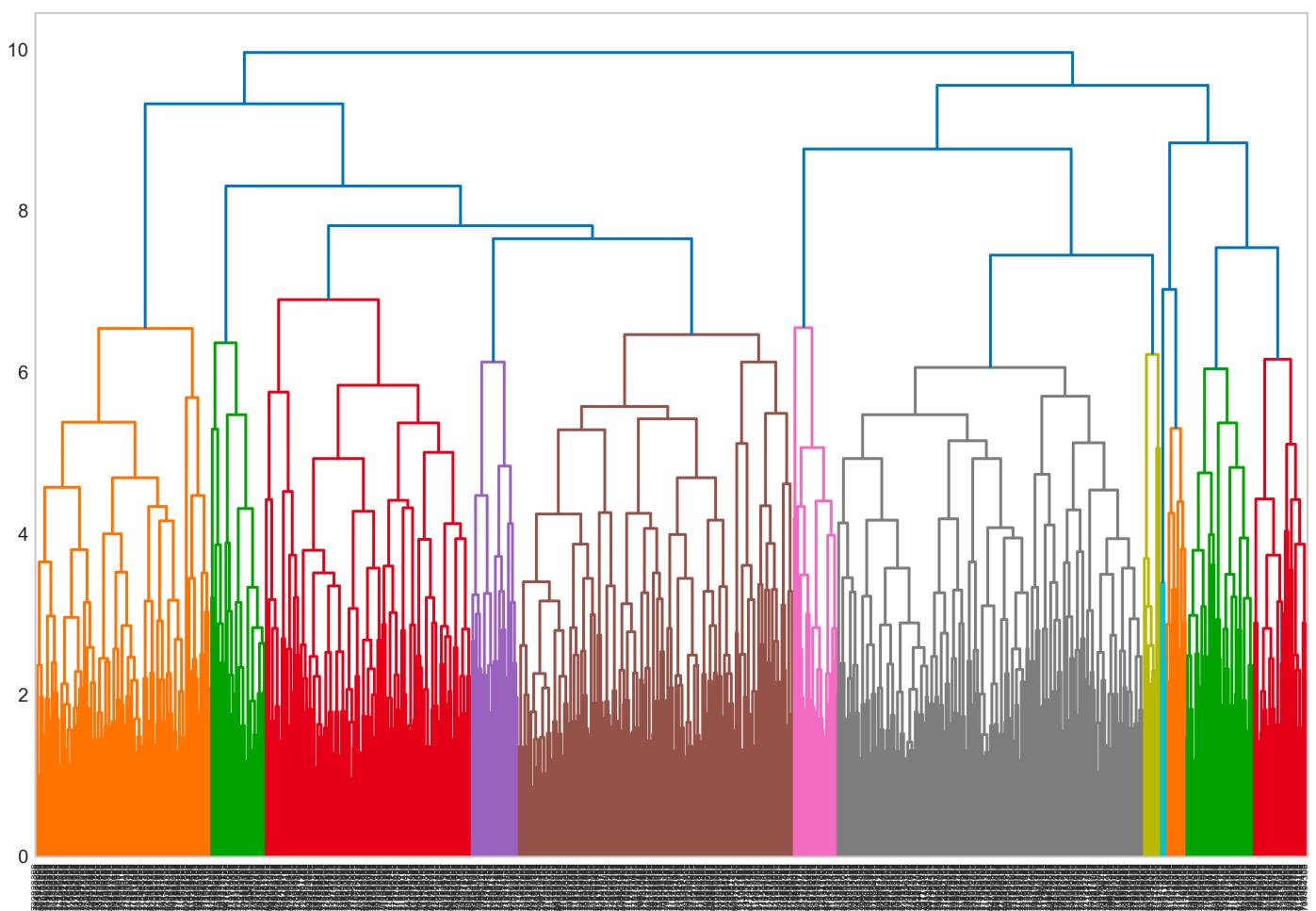
Salto promedio:

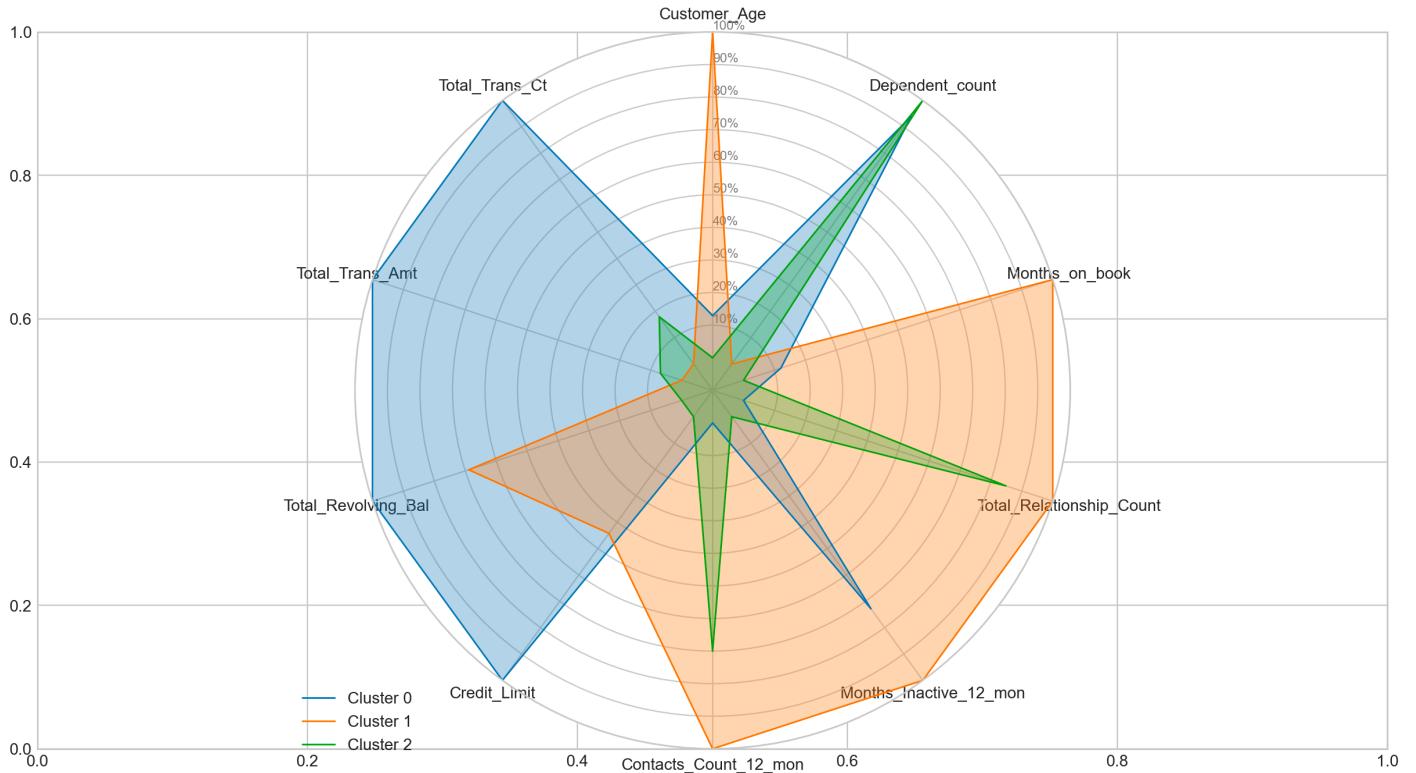
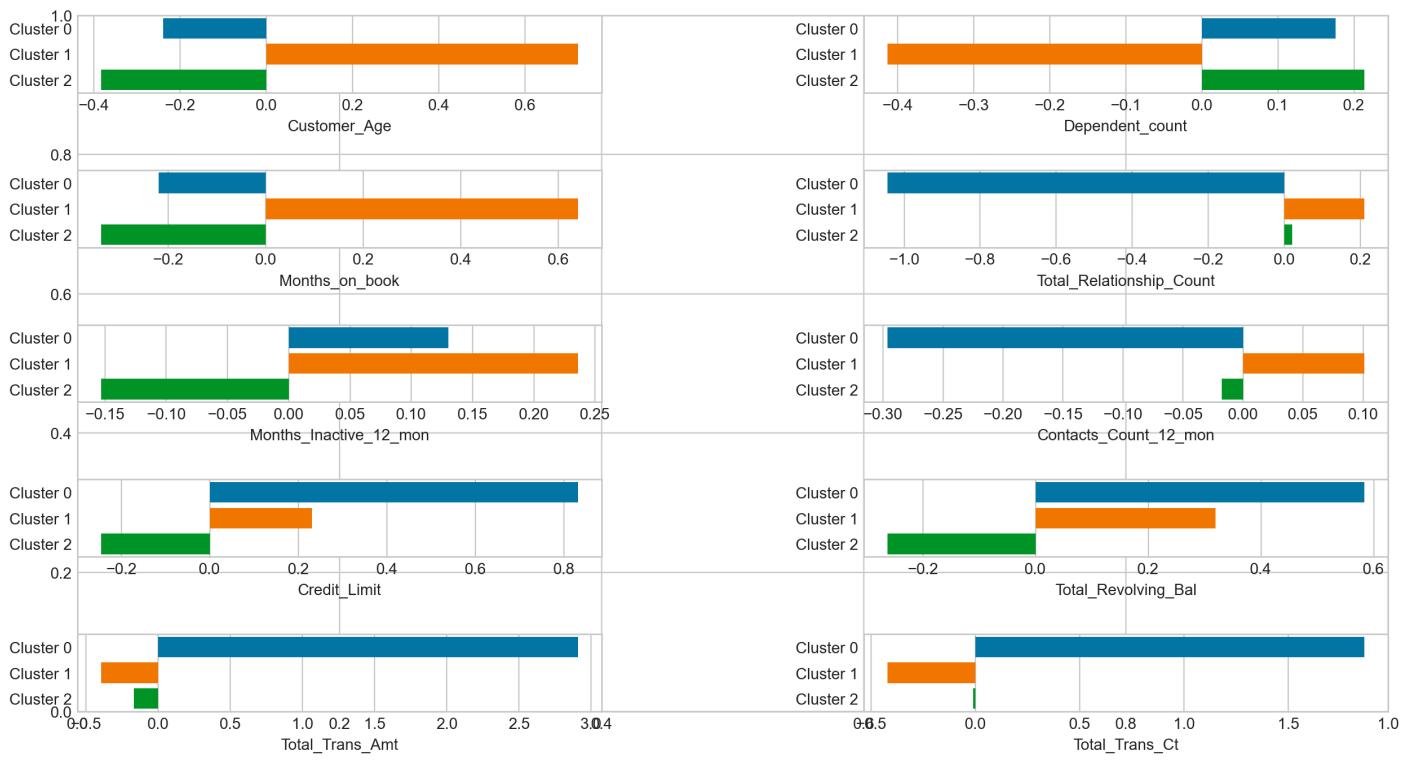


Salto mínimo:

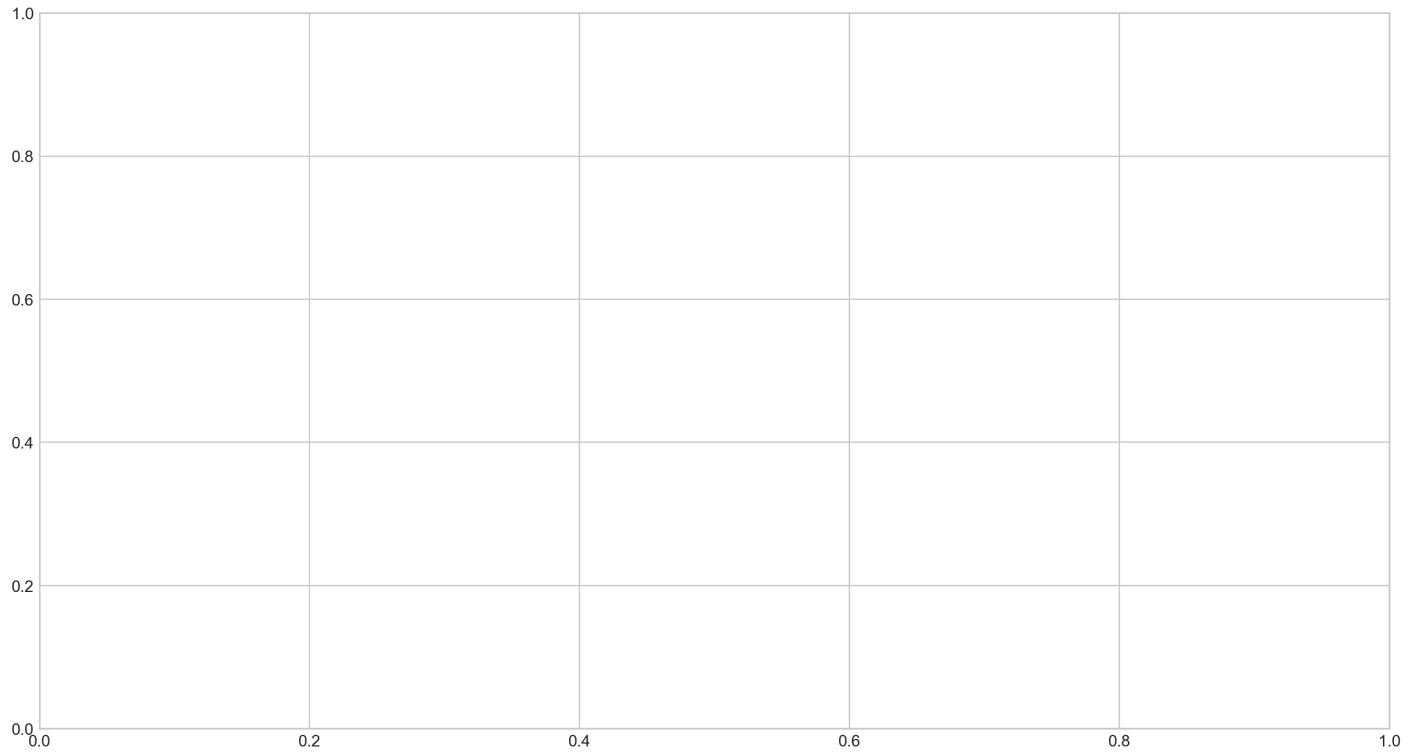
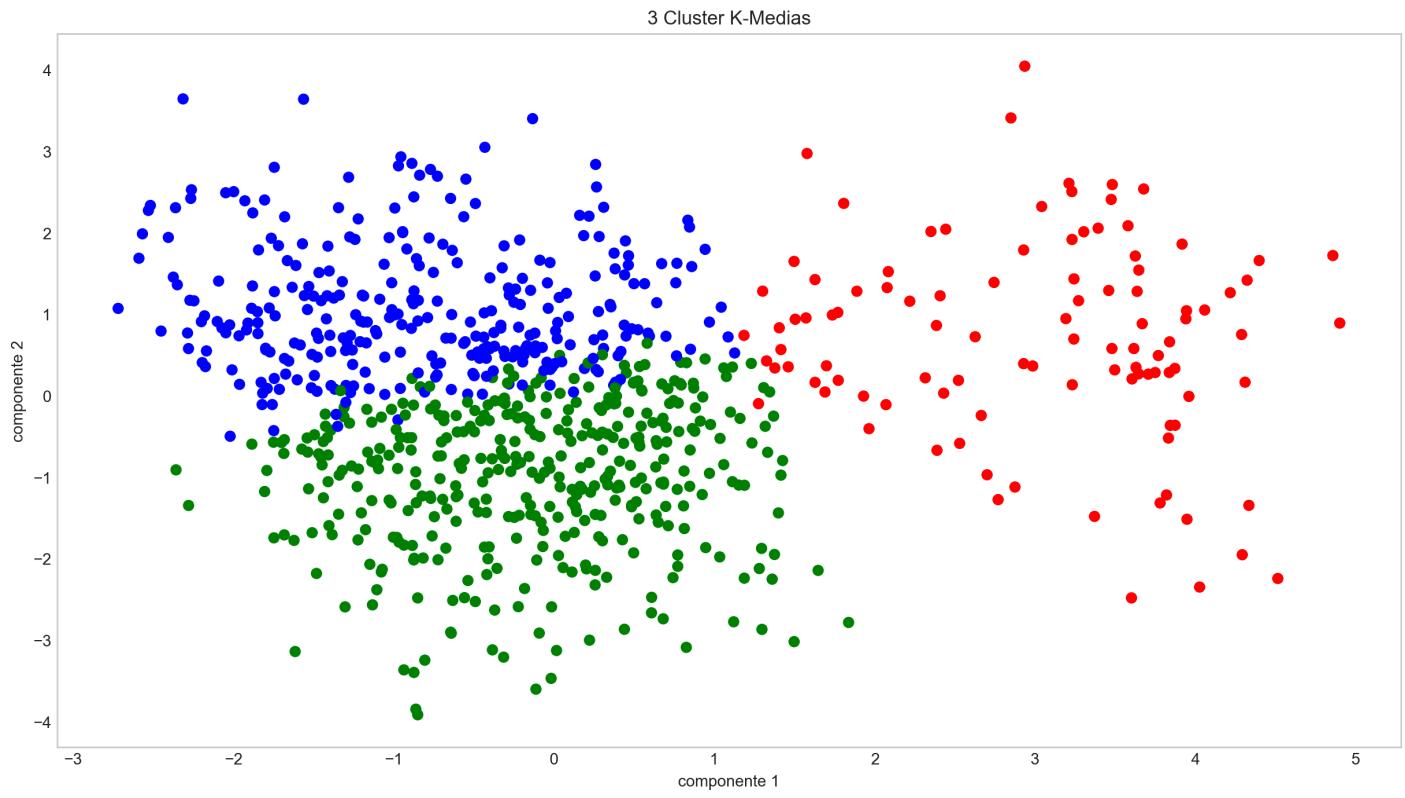


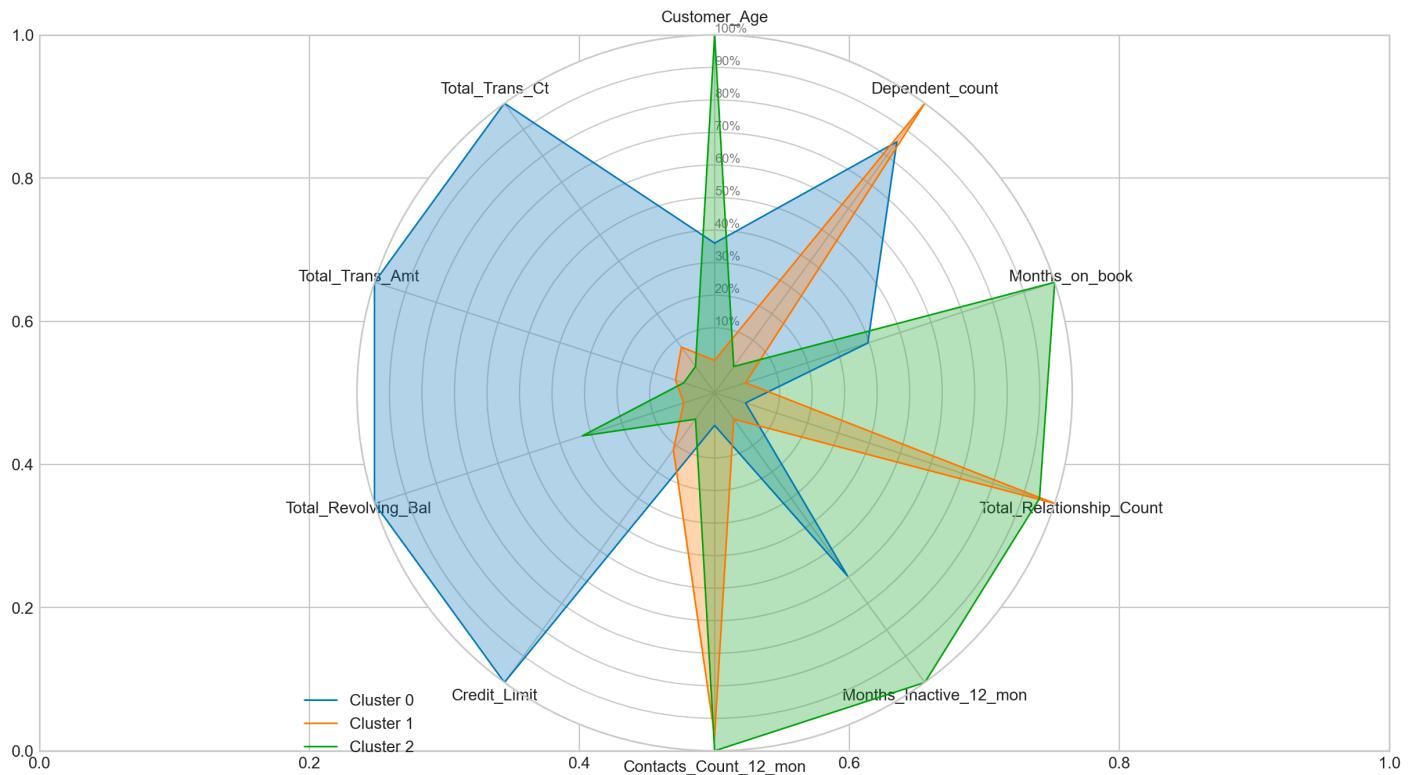
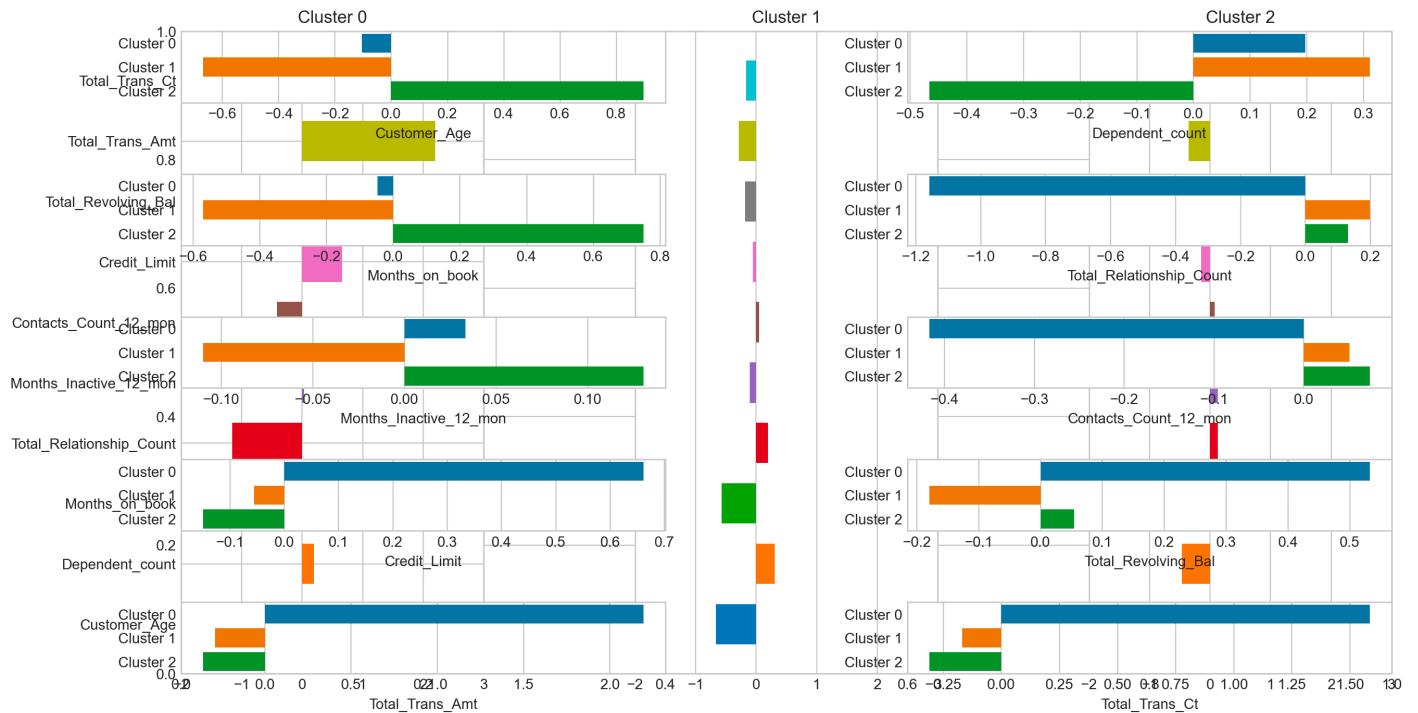
Salto máximo:

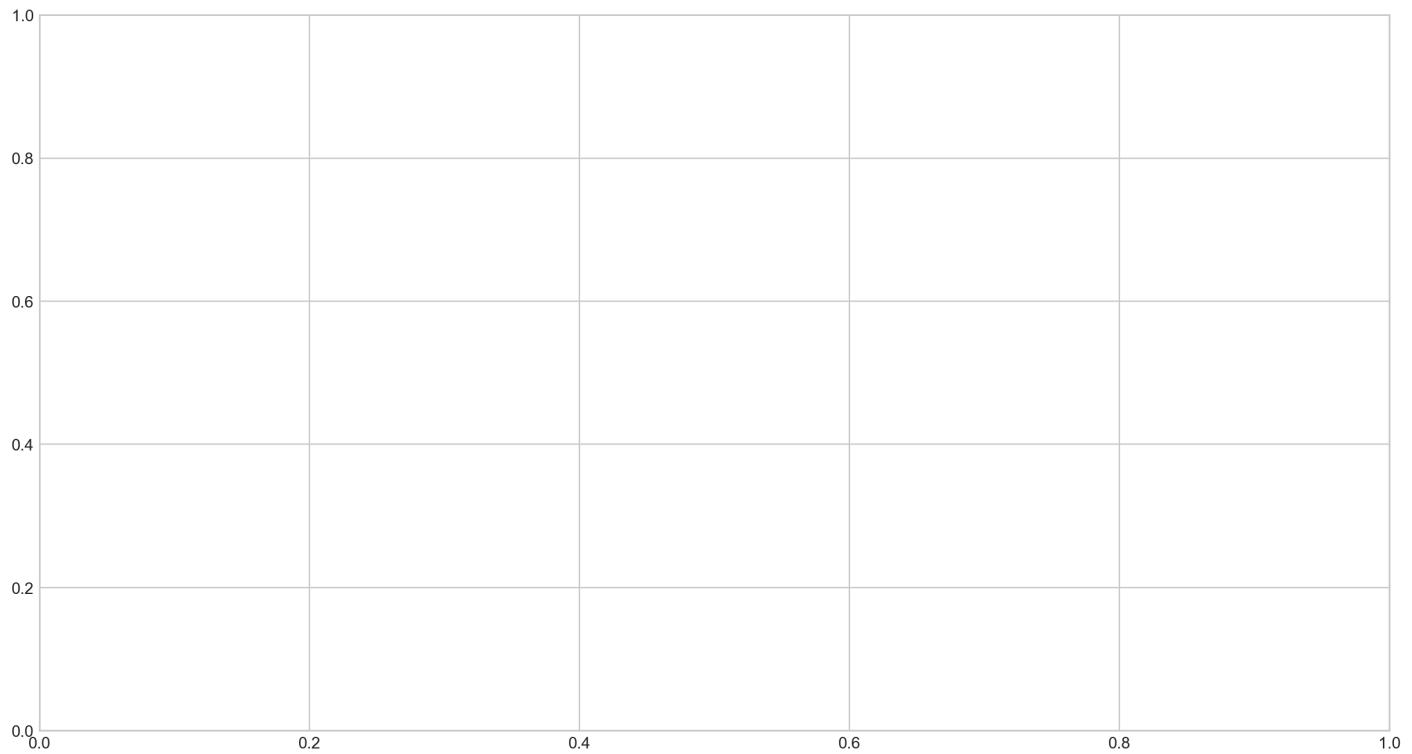
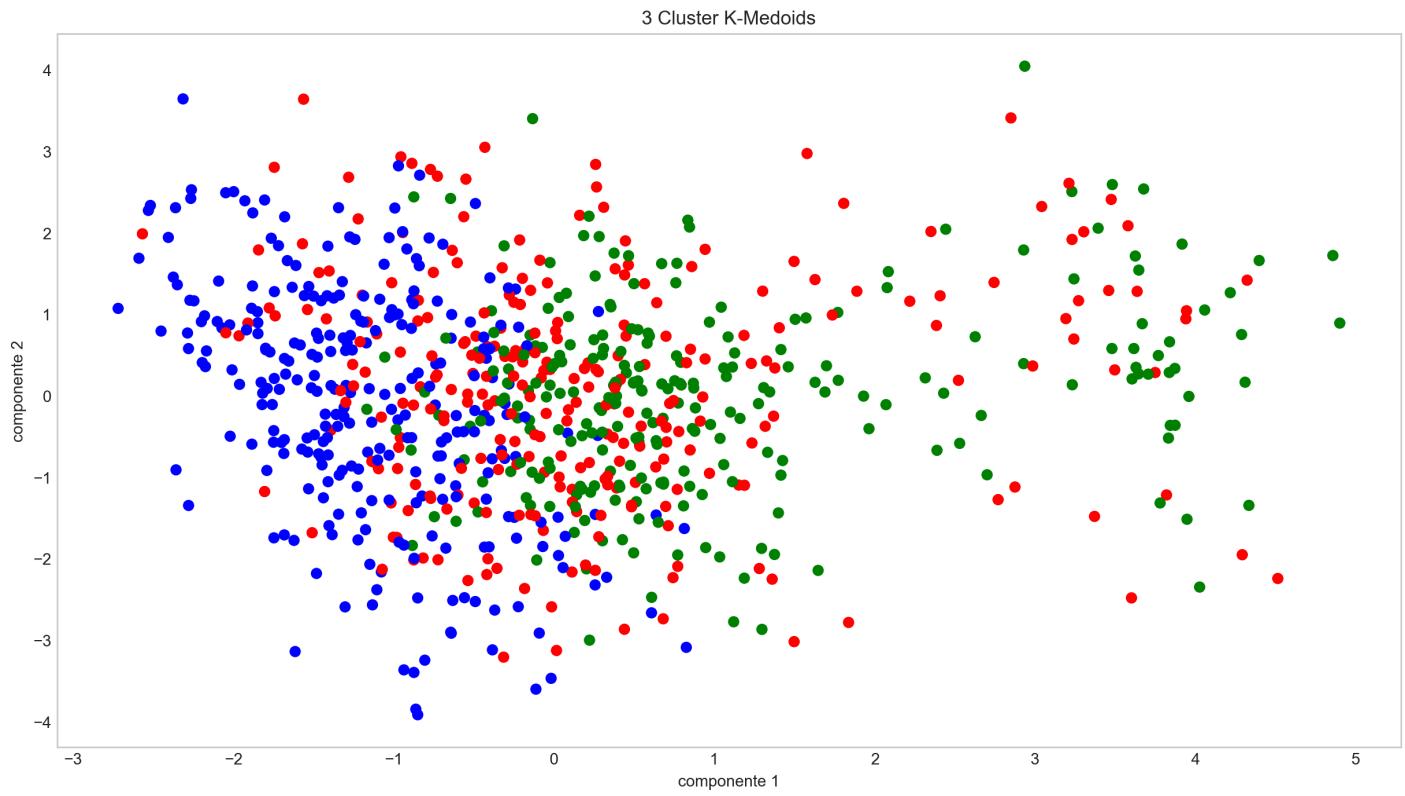


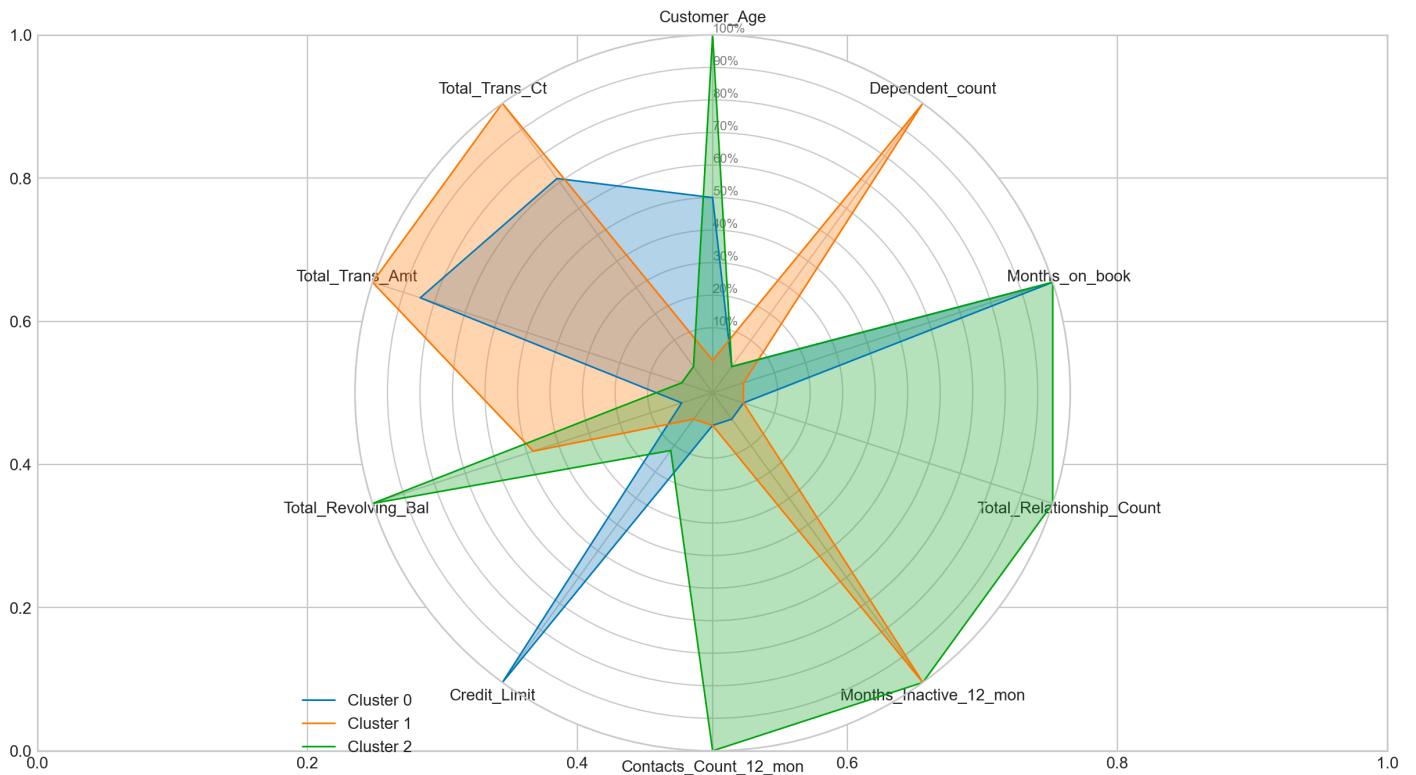
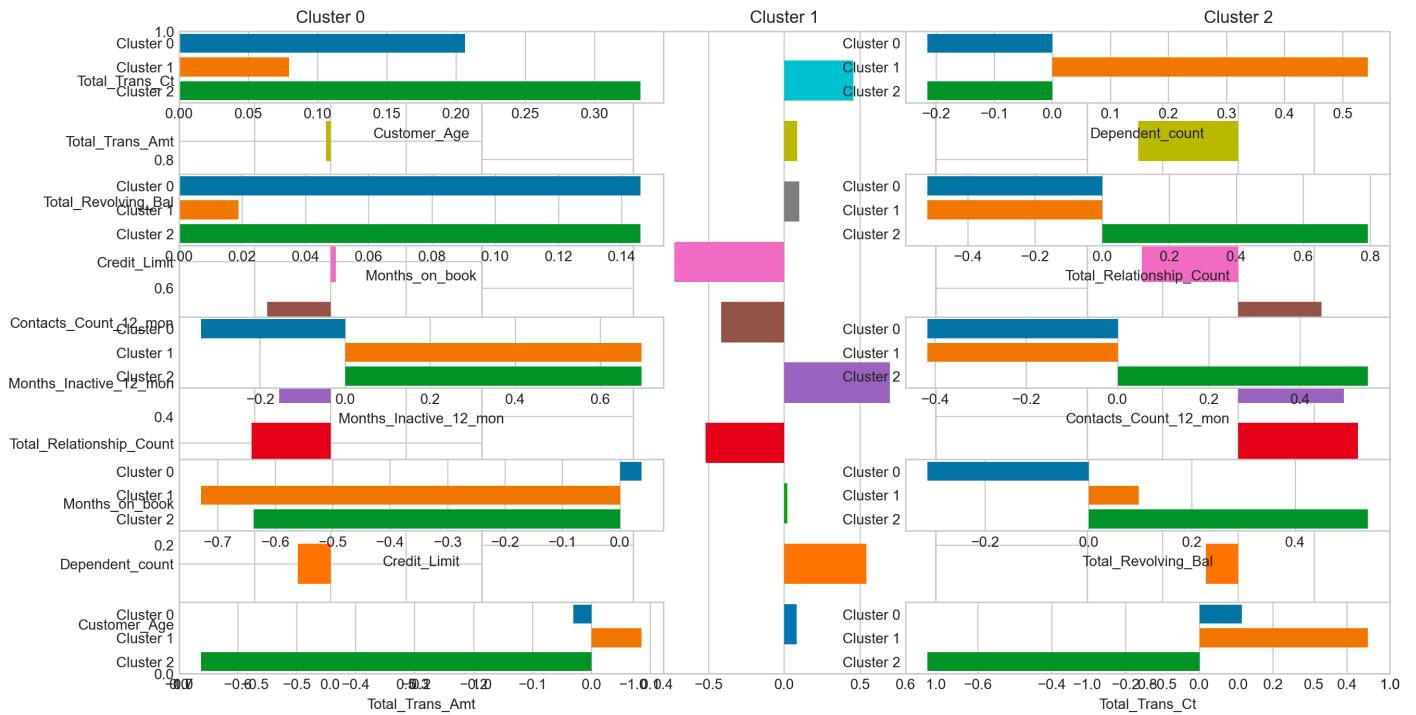


```
In [27]: Vacp.Kmeans()
```









In []:

In []: