This data is from Kaggle, used to predict churn. The origin is https://www.kaggle.com/datasets/sakshigoyal7/credit-card-customers/data

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

# Load bank_churners data
churners_data = pd.read_csv('BankChurners.csv')

# Display the first few rows of the dataframe to understand its
structure
print("First few rows of the churners data:")
print(churners_data.head())
```

```
First few rows of the churners data:
   CLIENTNUM     Attrition_Flag  Customer_Age Gender  Dependent_count
\
0  768805383  Existing Customer            45      M                3

1  818770008  Existing Customer            49      F                5

2  713982108  Existing Customer            51      M                3

3  769911858  Existing Customer            40      F                4

4  709106358  Existing Customer            40      M                3


  Education_Level Marital_Status Income_Category Card_Category  \
0     High School        Married     $60K - $80K          Blue
1        Graduate         Single  Less than $40K          Blue
2        Graduate        Married    $80K - $120K          Blue
3     High School        Unknown  Less than $40K          Blue
4      Uneducated        Married     $60K - $80K          Blue

   Months_on_book  ...  Credit_Limit  Total_Revolving_Bal
Avg_Open_To_Buy  \
0              39  ...       12691.0                  777
11914.0
1              44  ...        8256.0                  864
7392.0
2              36  ...        3418.0                    0
3418.0
3              34  ...        3313.0                 2517
796.0
4              21  ...        4716.0                    0
4716.0
```

```
   Total_Amt_Chng_Q4_Q1  Total_Trans_Amt  Total_Trans_Ct
Total_Ct_Chng_Q4_Q1  \
0                 1.335             1144              42
1.625
1                 1.541             1291              33
3.714
2                 2.594             1887              20
2.333
3                 1.405             1171              20
2.333
4                 2.175              816              28
2.500

   Avg_Utilization_Ratio  \
0                  0.061
1                  0.105
2                  0.000
3                  0.760
4                  0.000


Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_
mon_Dependent_count_Education_Level_Months_Inactive_12_mon_1  \
0                                                  0.000093

1                                                  0.000057

2                                                  0.000021

3                                                  0.000134

4                                                  0.000022



Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_
mon_Dependent_count_Education_Level_Months_Inactive_12_mon_2
0                                                   0.99991

1                                                   0.99994

2                                                   0.99998

3                                                   0.99987

4                                                   0.99998


[5 rows x 23 columns]
```

#Statistics Summary

```python
# Summary statistics of numerical columns
print("Summary statistics of numerical columns:")
print(churners_data.describe())
```

```
Summary statistics of numerical columns:
          CLIENTNUM  Customer_Age  Dependent_count  Months_on_book  \
count  1.012700e+04  10127.000000     10127.000000    10127.000000
mean   7.391776e+08     46.325960         2.346203       35.928409
std    3.690378e+07      8.016814         1.298908        7.986416
min    7.080821e+08     26.000000         0.000000       13.000000
25%    7.130368e+08     41.000000         1.000000       31.000000
50%    7.179264e+08     46.000000         2.000000       36.000000
75%    7.731435e+08     52.000000         3.000000       40.000000
max    8.283431e+08     73.000000         5.000000       56.000000

       Total_Relationship_Count  Months_Inactive_12_mon  \
count              10127.000000            10127.000000
mean                   3.812580                2.341167
std                    1.554408                1.010622
min                    1.000000                0.000000
25%                    3.000000                2.000000
50%                    4.000000                2.000000
75%                    5.000000                3.000000
max                    6.000000                6.000000

       Contacts_Count_12_mon  Credit_Limit  Total_Revolving_Bal  \
count           10127.000000  10127.000000         10127.000000
mean                2.455317   8631.953698          1162.814061
std                 1.106225   9088.776650           814.987335
min                 0.000000   1438.300000             0.000000
25%                 2.000000   2555.000000           359.000000
50%                 2.000000   4549.000000          1276.000000
75%                 3.000000  11067.500000          1784.000000
max                 6.000000  34516.000000          2517.000000

       Avg_Open_To_Buy  Total_Amt_Chng_Q4_Q1  Total_Trans_Amt
Total_Trans_Ct  \
count     10127.000000          10127.000000     10127.000000
10127.000000
mean       7469.139637              0.759941      4404.086304
64.858695
std        9090.685324              0.219207      3397.129254
23.472570
min           3.000000              0.000000       510.000000
10.000000
25%        1324.500000              0.631000      2155.500000
45.000000
50%        3474.000000              0.736000      3899.000000
67.000000
75%        9859.000000              0.859000      4741.000000
```

```
81.000000
max       34516.000000              3.397000     18484.000000
139.000000

       Total_Ct_Chng_Q4_Q1  Avg_Utilization_Ratio  \
count         10127.000000           10127.000000
mean              0.712222               0.274894
std               0.238086               0.275691
min               0.000000               0.000000
25%               0.582000               0.023000
50%               0.702000               0.176000
75%               0.818000               0.503000
max               3.714000               0.999000


Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_
mon_Dependent_count_Education_Level_Months_Inactive_12_mon_1  \
count                                         10127.000000

mean                                              0.159997

std                                               0.365301

min                                               0.000008

25%                                               0.000099

50%                                               0.000181

75%                                               0.000337

max                                               0.999580



Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_
mon_Dependent_count_Education_Level_Months_Inactive_12_mon_2
count                                         10127.000000

mean                                              0.840003

std                                               0.365301

min                                               0.000420

25%                                               0.999660

50%                                               0.999820

75%                                               0.999900
```

```
max                                                   0.999990
```

Summary based on the provided numerical columns:

Client Statistics:

- Mean client number: 7.391776e+08
- Mean customer age: 46.33 years
- Mean dependent count: 2.35
- Mean months on book: 35.93
- Mean total relationship count: 3.81
- Mean months inactive in the last 12 months: 2.34
- Mean contacts count in the last 12 months: 2.46

Credit Statistics:

- Mean credit limit: 8631.95
- Mean total revolving balance: 1162.81
- Mean average open to buy: 7469.14
- Mean total amount change Q4-Q1: 0.76
- Mean total transaction amount: 4404.09
- Mean total transaction count: 64.86
- Mean total count change Q4-Q1: 0.71
- Mean average utilization ratio: 0.27

Naive Bayes Classifier Statistics:

- Mean Naive Bayes Classifier (Attrition Flag - Card Category - Contacts Count 12 mon - Dependent count - Education Level - Months Inactive 12 mon - 1): 0.159997
- Mean Naive Bayes Classifier (Attrition Flag - Card Category - Contacts Count 12 mon - Dependent count - Education Level - Months Inactive 12 mon - 2): 0.840003

These statistics provide an overview of the numerical features in the dataset, including client demographics, credit-related information, and classifier statistics.

```
# Check for missing values
print("Missing values:")
print(churners_data.isnull().sum())
```

```
Missing values:
CLIENTNUM
0
Attrition_Flag
0
Customer_Age
0
Gender
0
```

```
Dependent_count
0
Education_Level
0
Marital_Status
0
Income_Category
0
Card_Category
0
Months_on_book
0
Total_Relationship_Count
0
Months_Inactive_12_mon
0
Contacts_Count_12_mon
0
Credit_Limit
0
Total_Revolving_Bal
0
Avg_Open_To_Buy
0
Total_Amt_Chng_Q4_Q1
0
Total_Trans_Amt
0
Total_Trans_Ct
0
Total_Ct_Chng_Q4_Q1
0
Avg_Utilization_Ratio
0
Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_
mon_Dependent_count_Education_Level_Months_Inactive_12_mon_1    0
Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_
mon_Dependent_count_Education_Level_Months_Inactive_12_mon_2    0
dtype: int64
```

#Correlations Matrix

```
# Correlation matrix
correlation_matrix = churners_data.corr()
print("Correlation matrix:")
print(correlation_matrix)
```

```
Correlation matrix:
                                                    CLIENTNUM
```

```
Customer_Age  \
CLIENTNUM                                                 1.000000
0.007613
Customer_Age                                              0.007613
1.000000
Dependent_count                                           0.006772     -
0.122254
Months_on_book                                            0.134588
0.788912
Total_Relationship_Count                                  0.006907     -
0.010931
Months_Inactive_12_mon                                    0.005729
0.054361
Contacts_Count_12_mon                                     0.005694     -
0.018452
Credit_Limit                                              0.005708
0.002476
Total_Revolving_Bal                                       0.000825
0.014780
Avg_Open_To_Buy                                           0.005633
0.001151
Total_Amt_Chng_Q4_Q1                                      0.017369     -
0.062042
Total_Trans_Amt                                          -0.019692     -
0.046446
Total_Trans_Ct                                           -0.002961     -
0.067097
Total_Ct_Chng_Q4_Q1                                       0.007696     -
0.012143
Avg_Utilization_Ratio                                     0.000266
0.007114
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...  -0.046411
0.018189
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...   0.046410     -
0.018189

                                                         Dependent_count  \
CLIENTNUM                                                       0.006772
Customer_Age                                                   -0.122254
Dependent_count                                                 1.000000
Months_on_book                                                 -0.103062
Total_Relationship_Count                                       -0.039076
Months_Inactive_12_mon                                         -0.010768
Contacts_Count_12_mon                                          -0.040505
Credit_Limit                                                    0.068065
Total_Revolving_Bal                                            -0.002688
Avg_Open_To_Buy                                                 0.068291
Total_Amt_Chng_Q4_Q1                                           -0.035439
Total_Trans_Amt                                                 0.025046
```

```
Total_Trans_Ct                                             0.049912
Total_Ct_Chng_Q4_Q1                                        0.011087
Avg_Utilization_Ratio                                     -0.037135
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...         0.019189
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...        -0.019189

                                                    Months_on_book  \
CLIENTNUM                                                0.134588
Customer_Age                                             0.788912
Dependent_count                                         -0.103062
Months_on_book                                           1.000000
Total_Relationship_Count                                -0.009203
Months_Inactive_12_mon                                   0.074164
Contacts_Count_12_mon                                   -0.010774
Credit_Limit                                             0.007507
Total_Revolving_Bal                                      0.008623
Avg_Open_To_Buy                                          0.006732
Total_Amt_Chng_Q4_Q1                                    -0.048959
Total_Trans_Amt                                         -0.038591
Total_Trans_Ct                                          -0.049819
Total_Ct_Chng_Q4_Q1                                     -0.014072
Avg_Utilization_Ratio                                   -0.007541
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...        0.013693
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...       -0.013694


Total_Relationship_Count  \
CLIENTNUM
0.006907
Customer_Age                                                    -
0.010931
Dependent_count                                                 -
0.039076
Months_on_book                                                  -
0.009203
Total_Relationship_Count
1.000000
Months_Inactive_12_mon                                          -
0.003675
Contacts_Count_12_mon
0.055203
Credit_Limit                                                    -
0.071386
Total_Revolving_Bal
0.013726
Avg_Open_To_Buy                                                 -
0.072601
Total_Amt_Chng_Q4_Q1
0.050119
Total_Trans_Amt                                                 -
```

```
0.347229
Total_Trans_Ct                                                 -
0.241891
Total_Ct_Chng_Q4_Q1
0.040831
Avg_Utilization_Ratio
0.067663
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...             -
0.149981
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
0.149981


Months_Inactive_12_mon  \
CLIENTNUM
0.005729
Customer_Age
0.054361
Dependent_count                                                -
0.010768
Months_on_book
0.074164
Total_Relationship_Count                                       -
0.003675
Months_Inactive_12_mon
1.000000
Contacts_Count_12_mon
0.029493
Credit_Limit                                                   -
0.020394
Total_Revolving_Bal                                            -
0.042210
Avg_Open_To_Buy                                                -
0.016605
Total_Amt_Chng_Q4_Q1                                           -
0.032247
Total_Trans_Amt                                                -
0.036982
Total_Trans_Ct                                                 -
0.042787
Total_Ct_Chng_Q4_Q1                                            -
0.038989
Avg_Utilization_Ratio                                          -
0.007503
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
0.153452
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...             -
0.153452
```

```
Contacts_Count_12_mon  \
CLIENTNUM
0.005694
Customer_Age                                                 -
0.018452
Dependent_count                                              -
0.040505
Months_on_book                                               -
0.010774
Total_Relationship_Count
0.055203
Months_Inactive_12_mon
0.029493
Contacts_Count_12_mon
1.000000
Credit_Limit
0.020817
Total_Revolving_Bal                                          -
0.053913
Avg_Open_To_Buy
0.025646
Total_Amt_Chng_Q4_Q1                                         -
0.024445
Total_Trans_Amt                                              -
0.112774
Total_Trans_Ct                                               -
0.152213
Total_Ct_Chng_Q4_Q1                                          -
0.094997
Avg_Utilization_Ratio                                        -
0.055471
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
0.205772
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...           -
0.205772

                                                  Credit_Limit  \
CLIENTNUM                                             0.005708
Customer_Age                                          0.002476
Dependent_count                                       0.068065
Months_on_book                                        0.007507
Total_Relationship_Count                             -0.071386
Months_Inactive_12_mon                               -0.020394
Contacts_Count_12_mon                                 0.020817
Credit_Limit                                          1.000000
Total_Revolving_Bal                                   0.042493
Avg_Open_To_Buy                                       0.995981
Total_Amt_Chng_Q4_Q1                                  0.012813
Total_Trans_Amt                                       0.171730
```

```
Total_Trans_Ct                                             0.075927
Total_Ct_Chng_Q4_Q1                                       -0.002020
Avg_Utilization_Ratio                                     -0.482965
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...        -0.023853
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...         0.023853


Total_Revolving_Bal  \
CLIENTNUM
0.000825
Customer_Age
0.014780
Dependent_count                                                -
0.002688
Months_on_book
0.008623
Total_Relationship_Count
0.013726
Months_Inactive_12_mon                                         -
0.042210
Contacts_Count_12_mon                                          -
0.053913
Credit_Limit
0.042493
Total_Revolving_Bal
1.000000
Avg_Open_To_Buy                                                -
0.047167
Total_Amt_Chng_Q4_Q1
0.058174
Total_Trans_Amt
0.064370
Total_Trans_Ct
0.056060
Total_Ct_Chng_Q4_Q1
0.089861
Avg_Utilization_Ratio
0.624022
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...             -
0.263033
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
0.263032

                                                    Avg_Open_To_Buy  \
CLIENTNUM                                                  0.005633
Customer_Age                                               0.001151
Dependent_count                                            0.068291
Months_on_book                                             0.006732
Total_Relationship_Count                                  -0.072601
Months_Inactive_12_mon                                    -0.016605
```

```
Contacts_Count_12_mon                                      0.025646
Credit_Limit                                               0.995981
Total_Revolving_Bal                                       -0.047167
Avg_Open_To_Buy                                            1.000000
Total_Amt_Chng_Q4_Q1                                       0.007595
Total_Trans_Amt                                            0.165923
Total_Trans_Ct                                             0.070885
Total_Ct_Chng_Q4_Q1                                       -0.010076
Avg_Utilization_Ratio                                     -0.538808
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...        -0.000267
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...         0.000267


Total_Amt_Chng_Q4_Q1  \
CLIENTNUM
0.017369
Customer_Age                                                  -
0.062042
Dependent_count                                               -
0.035439
Months_on_book                                                -
0.048959
Total_Relationship_Count
0.050119
Months_Inactive_12_mon                                        -
0.032247
Contacts_Count_12_mon                                         -
0.024445
Credit_Limit
0.012813
Total_Revolving_Bal
0.058174
Avg_Open_To_Buy
0.007595
Total_Amt_Chng_Q4_Q1
1.000000
Total_Trans_Amt
0.039678
Total_Trans_Ct
0.005469
Total_Ct_Chng_Q4_Q1
0.384189
Avg_Utilization_Ratio
0.035235
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...            -
0.131207
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
0.131207

                                                  Total_Trans_Amt  \
```

```
CLIENTNUM                                                 -0.019692
Customer_Age                                              -0.046446
Dependent_count                                            0.025046
Months_on_book                                            -0.038591
Total_Relationship_Count                                  -0.347229
Months_Inactive_12_mon                                    -0.036982
Contacts_Count_12_mon                                     -0.112774
Credit_Limit                                               0.171730
Total_Revolving_Bal                                        0.064370
Avg_Open_To_Buy                                            0.165923
Total_Amt_Chng_Q4_Q1                                       0.039678
Total_Trans_Amt                                            1.000000
Total_Trans_Ct                                             0.807192
Total_Ct_Chng_Q4_Q1                                        0.085581
Avg_Utilization_Ratio                                     -0.083034
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...        -0.168642
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...         0.168642

                                                       Total_Trans_Ct  \
CLIENTNUM                                                  -0.002961
Customer_Age                                               -0.067097
Dependent_count                                             0.049912
Months_on_book                                             -0.049819
Total_Relationship_Count                                   -0.241891
Months_Inactive_12_mon                                     -0.042787
Contacts_Count_12_mon                                      -0.152213
Credit_Limit                                                0.075927
Total_Revolving_Bal                                         0.056060
Avg_Open_To_Buy                                             0.070885
Total_Amt_Chng_Q4_Q1                                        0.005469
Total_Trans_Amt                                             0.807192
Total_Trans_Ct                                              1.000000
Total_Ct_Chng_Q4_Q1                                         0.112324
Avg_Utilization_Ratio                                       0.002838
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...        -0.371403
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...         0.371403


Total_Ct_Chng_Q4_Q1  \
CLIENTNUM
0.007696
Customer_Age                                              -
0.012143
Dependent_count
0.011087
Months_on_book                                            -
0.014072
Total_Relationship_Count
0.040831
Months_Inactive_12_mon                                    -
```

```
0.038989
Contacts_Count_12_mon                                                -
0.094997
Credit_Limit                                                         -
0.002020
Total_Revolving_Bal
0.089861
Avg_Open_To_Buy                                                      -
0.010076
Total_Amt_Chng_Q4_Q1
0.384189
Total_Trans_Amt
0.085581
Total_Trans_Ct
0.112324
Total_Ct_Chng_Q4_Q1
1.000000
Avg_Utilization_Ratio
0.074143
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...                   -
0.290115
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
0.290115


Avg_Utilization_Ratio  \
CLIENTNUM
0.000266
Customer_Age
0.007114
Dependent_count                                                       -
0.037135
Months_on_book                                                        -
0.007541
Total_Relationship_Count
0.067663
Months_Inactive_12_mon                                                -
0.007503
Contacts_Count_12_mon                                                 -
0.055471
Credit_Limit                                                          -
0.482965
Total_Revolving_Bal
0.624022
Avg_Open_To_Buy                                                       -
0.538808
Total_Amt_Chng_Q4_Q1
0.035235
Total_Trans_Amt                                                       -
```

```
0.083034
Total_Trans_Ct
0.002838
Total_Ct_Chng_Q4_Q1
0.074143
Avg_Utilization_Ratio
1.000000
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...                -
0.178405
Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
0.178405


Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_
mon_Dependent_count_Education_Level_Months_Inactive_12_mon_1  \
CLIENTNUM
-0.046411

Customer_Age
0.018189

Dependent_count
0.019189

Months_on_book
0.013693

Total_Relationship_Count
-0.149981

Months_Inactive_12_mon
0.153452

Contacts_Count_12_mon
0.205772

Credit_Limit
-0.023853

Total_Revolving_Bal
-0.263033

Avg_Open_To_Buy
-0.000267

Total_Amt_Chng_Q4_Q1
-0.131207

Total_Trans_Amt
-0.168642
```

```
Total_Trans_Ct
-0.371403

Total_Ct_Chng_Q4_Q1
-0.290115

Avg_Utilization_Ratio
-0.178405

Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
1.000000

Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
-1.000000



Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_
mon_Dependent_count_Education_Level_Months_Inactive_12_mon_2
CLIENTNUM
0.046410

Customer_Age
-0.018189

Dependent_count
-0.019189

Months_on_book
-0.013694

Total_Relationship_Count
0.149981

Months_Inactive_12_mon
-0.153452

Contacts_Count_12_mon
-0.205772

Credit_Limit
0.023853

Total_Revolving_Bal
0.263032

Avg_Open_To_Buy
0.000267

Total_Amt_Chng_Q4_Q1
0.131207
```

```
Total_Trans_Amt
0.168642

Total_Trans_Ct
0.371403

Total_Ct_Chng_Q4_Q1
0.290115

Avg_Utilization_Ratio
0.178405

Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
-1.000000

Naive_Bayes_Classifier_Attrition_Flag_Card_Cate...
1.000000

<ipython-input-10-ca4bdf0fda51>:2: FutureWarning: The default value of
numeric_only in DataFrame.corr is deprecated. In a future version, it
will default to False. Select only valid columns or specify the value
of numeric_only to silence this warning.
  correlation_matrix = churners_data.corr()
```

The provided correlation matrix represents the pairwise correlations between numerical features in the dataset. Here's a summary:

Positive Correlations:

- Customer Age is positively correlated with Months on Book (0.788912).
- Total Transaction Amount is positively correlated with Total

- Transaction Count (0.807192).
- Total Revolving Balance is positively correlated with Avg Utilization Ratio (0.624022).

Negative Correlations:

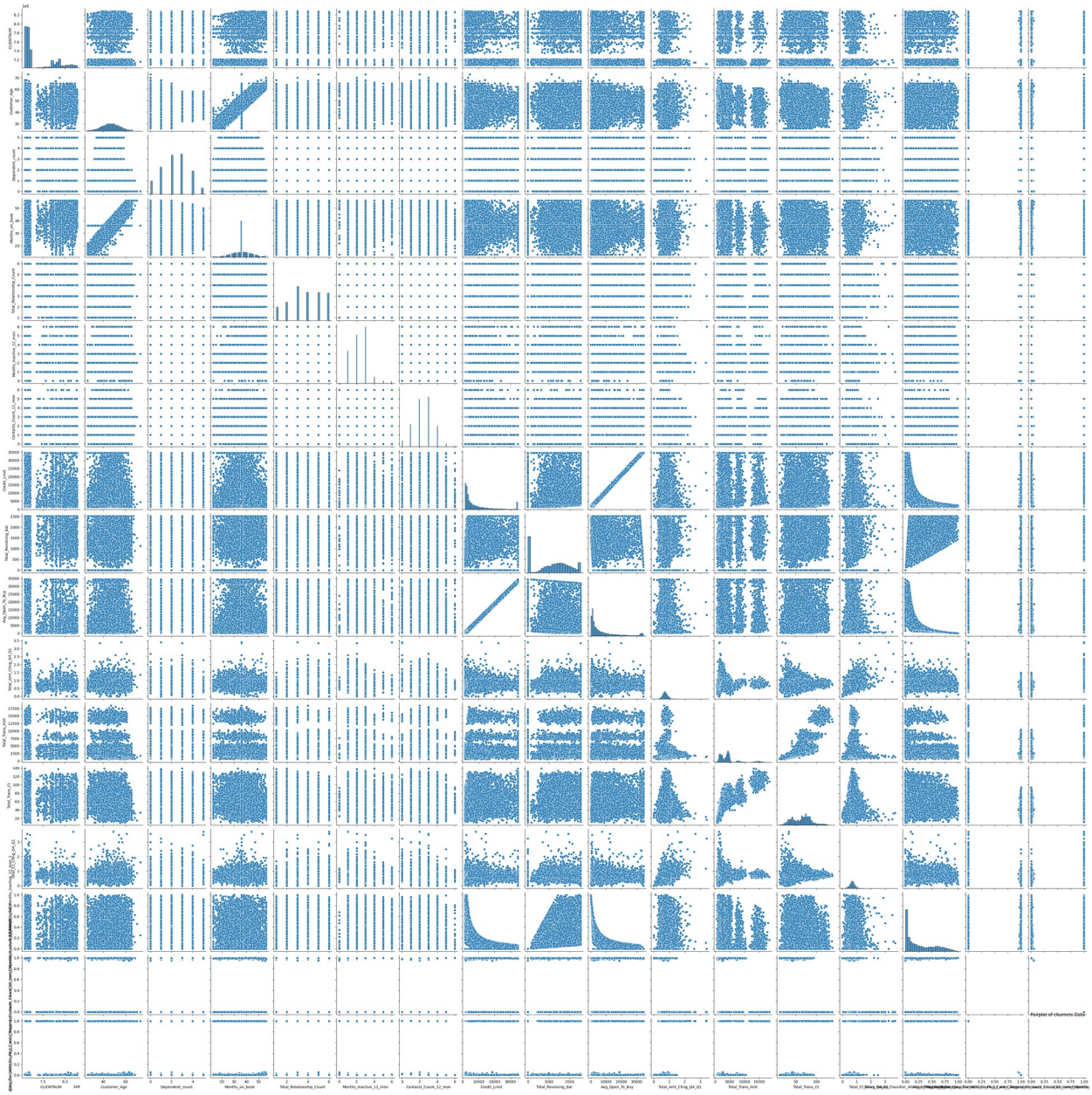
- Avg Utilization Ratio is negatively correlated with Credit Limit (-0.482965).
- Total Relationship Count is negatively correlated with Total
- Transaction Amount (-0.347229).
- Total Transaction Count is negatively correlated with Naive Bayes Classifier (Attrition Flag - Card Category - Contacts Count 12 mon - Dependent count - Education Level - Months Inactive 12 mon - 1) (-0.371403).

Weak Correlations:

There are weak correlations (close to 0) between many pairs of features, indicating little linear relationship between them. This correlation matrix provides valuable insights into how features are related to each other within the dataset. However, it's important to note that correlation

doesn't imply causation, and further analysis may be needed to understand the relationships between variables more deeply.

```
# Visualization: Pairplot
sns.pairplot(churners_data)
plt.title('Pairplot of churners Data')
plt.show()
```



```
# Visualization: Correlation Heatmap
plt.figure(figsize=(10, 8))
sns.heatmap(correlation_matrix, annot=True, cmap='coolwarm',
fmt=".2f")
```

```
plt.title('Correlation Heatmap of churners Data')
plt.show()
```