Report for Lending Manager

The task is to tell the lending manager to approve or reject a company's loan (ABC). The analysis and modeling notebook is present here which can help the lending manager to get a better picture of the company's financials to make a decision.

Dataset

The dataset has ABC's financials for a year and the current account's spending for 2022.

Approach

The approach that I took to find insights from the dataset was to first extract the numerical figures from ABC's financial statements and come up with an aggregated figure which tells the budget.
After that, the current account's spending is analyzed and the trend is observed to assess the current financial position of ABC.
Given below is the spending's chart for ABC aggregated for all 12 months.

Total amount spent per month
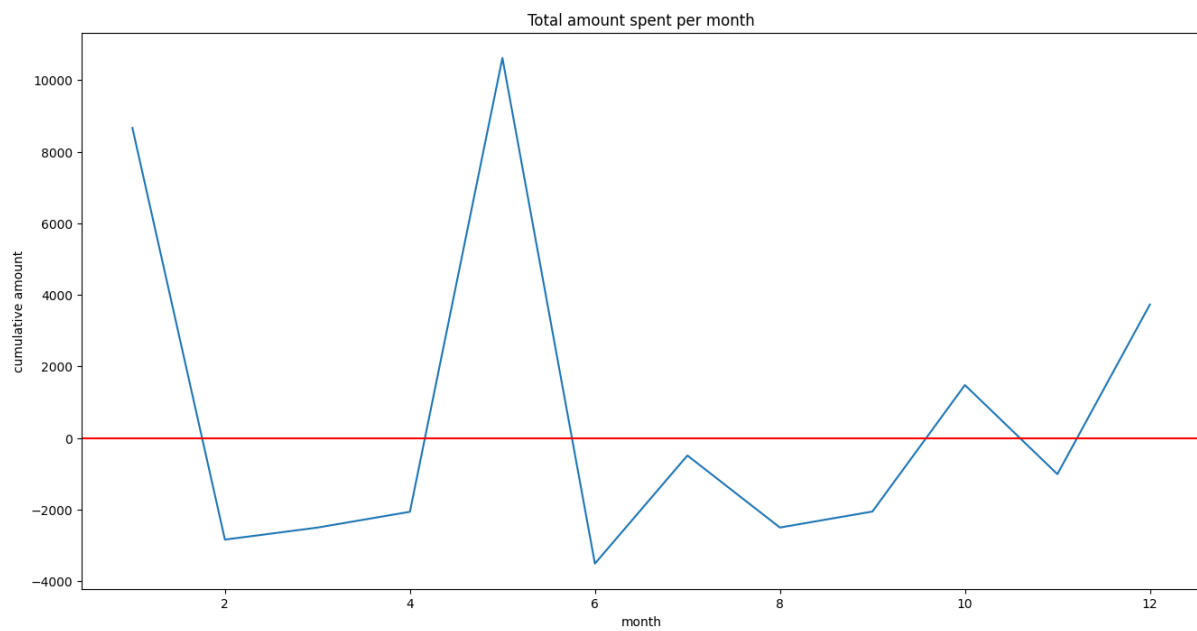
As it is evident from the figure, the company's spendings are greater and longer in terms of months than the profits.

The categories on which the money was spent or was received are shown below:

Amount spent grouped by categories
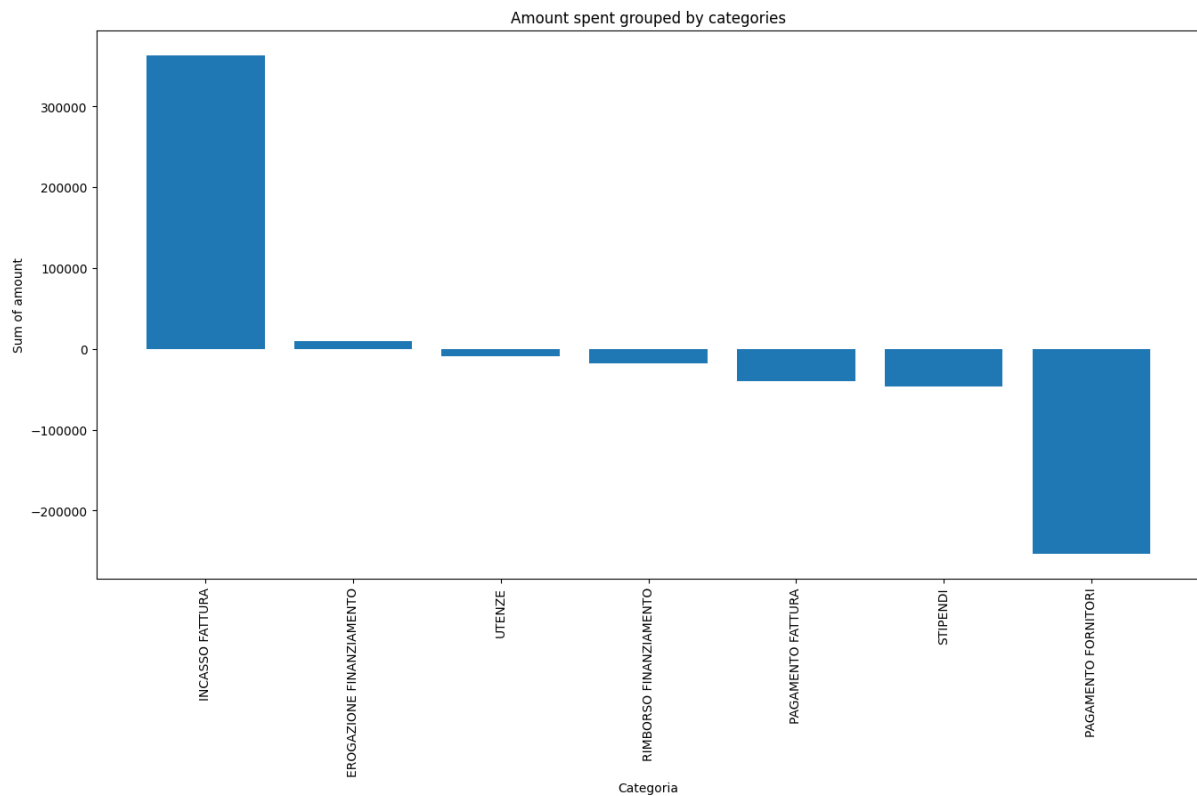
The autocorrelation of the amount is also plotted to see the relation of the amount with itself over time. This helps in understanding whether there is a pattern in the amount or is it very random.
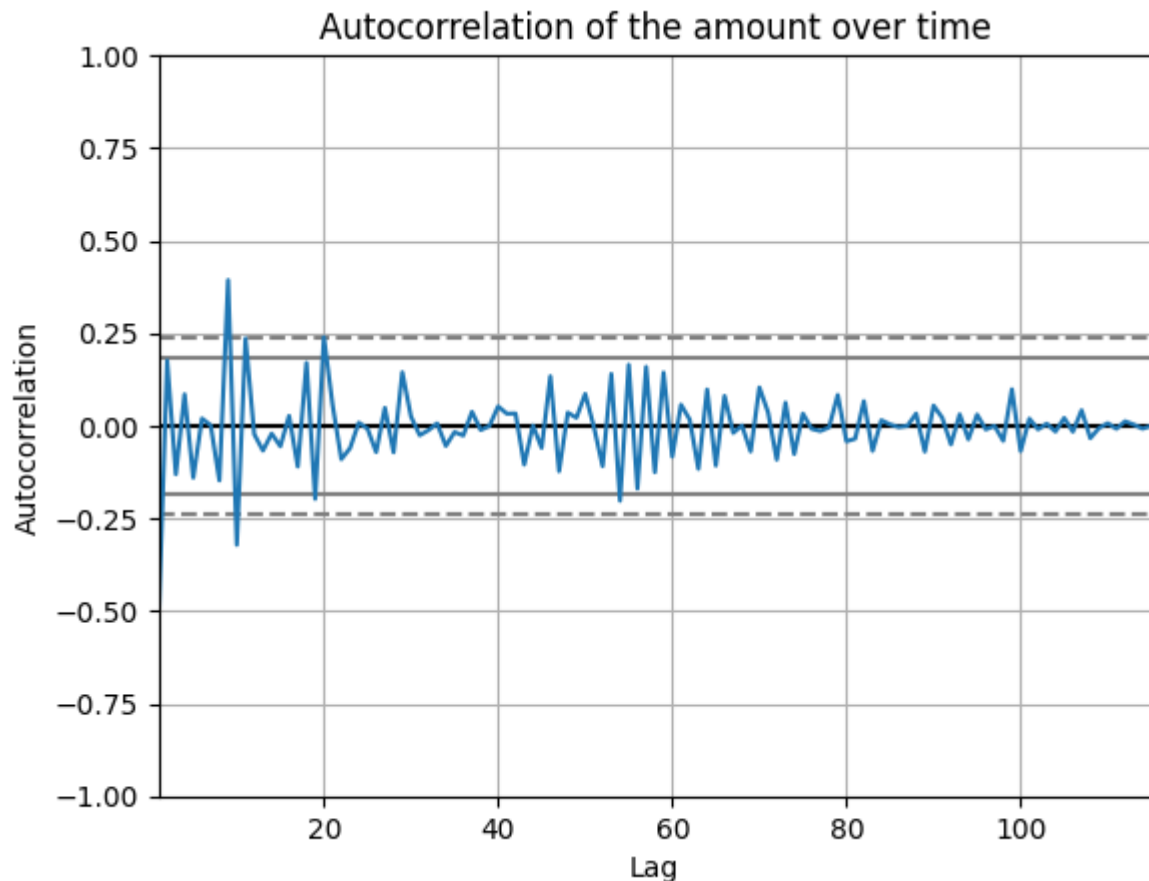
Facebook's prophet model is incorporated to predict the company's financials which if are very accurate, can tell a lot about how ABC will do financially in the future. Due to the limited data the results were not good but the model can be enhanced and can be improved with more data as well. Given below are the results of prophet's forecasting on the validation data.
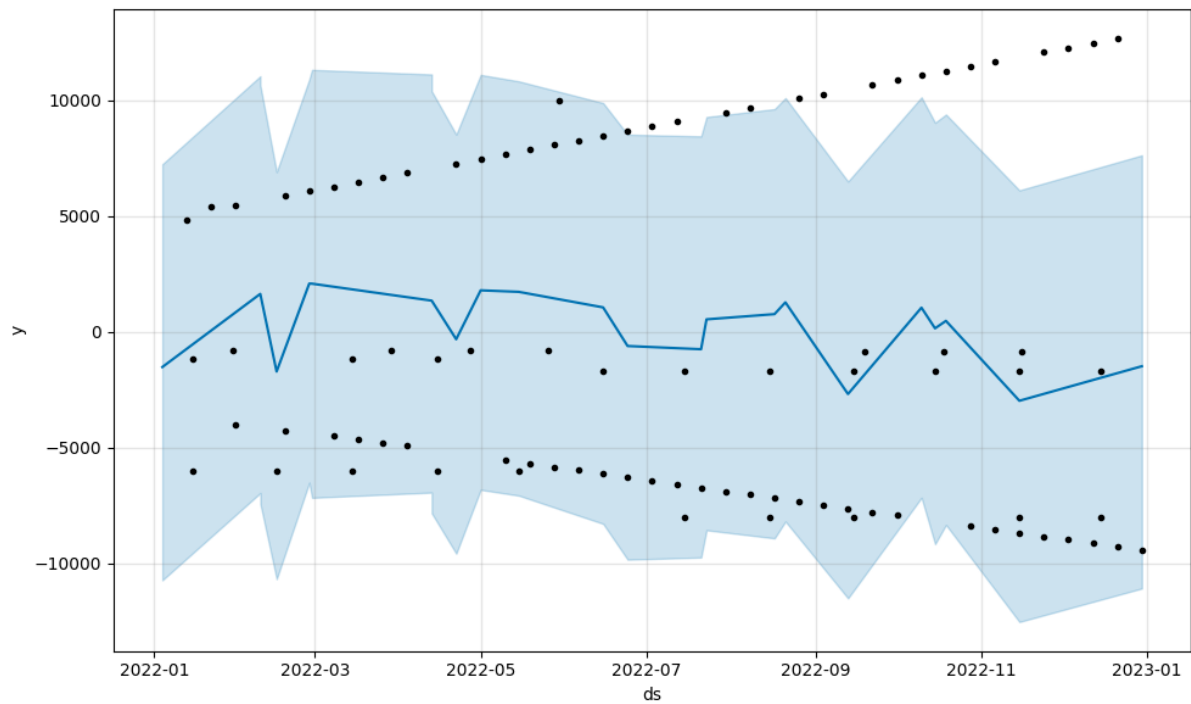
Verdict

The details of the cash inflow and outflow of ABC from the current account are shown below:

```
total amount spent:  -16973.66641160614
total amount received:  24498.700497288854
received - spent:  -41472.366908895
```

	month	amount
0	1	8666.000000
1	2	-2839.823395
2	3	-2504.153256
3	4	-2061.955108
4	5	10622.218429
5	6	-3510.556988
6	7	-489.333333
7	8	-2502.000000
8	9	-2055.447509
9	10	1479.815402
10	11	-1010.396822
11	12	3730.666667

The stats obtained from the financial statements are given below:

```
sum of financial figures for 1 year:  24115206.0
twenty-four million, one hundred and fifteen thousand, two hundred and six point zero
sum of positive values:  24492262.0
twenty-four million, four hundred and ninety-two thousand, two hundred and sixty-two point zero
sum of negative values:  -377056.0
minus three hundred and seventy-seven thousand and fifty-six point zero
-----------------------
```

Hence, my suggestion to the lending manager is to approve the loan:

The loan can be approved because the company's financials are strong even though the expenditure is more than the cash inflow, the maximum amount to which the loan can be approved is around 1.9M IF the company has a budget of 24M which I concluded from the financial statement of 2022.

by looking at the results of prophet the lending manager can see if it is worth giving the loan or not i.e. whether the company will be able to payback

```python
# the amounts could have been adjusted for inflation but all the data was of the same year i.e. 2022

#max loan to give calculation
total_amount=24000000 # company's budget
number_of_months=12
amount_spent=16973 # spent in 1 year from current account

max_loan=(total_amount/number_of_months)-(amount_spent*2)
print("Max loan to give: ", max_loan)
print(converter.number_to_words(max_loan))
```

```
Max loan to give:  1966054.0
one million, nine hundred and sixty-six thousand and fifty-four point zero
```

the company has spent more than what it has received in 1 year but the financial statement is strong i.e. near 24M so, it's loan can be approved