PROPOSAL TO CREATE A MACHINE LEARNING MODEL TO DETERMINE INDIVIDUAL CREDIT CARD ISSUING DECISIONS

INTRODUCTION

1.1 Credit in Nigeria

Credit in Nigeria is a developing space, while there are so many institutions that offer short to long term credit to individuals and businesses there are still some challenges posed by the current system of lending in the country. Many Credit lending institutions have developed their own internal processes to determine who they lend to. These processes differ from one company to another both in terms of steps they involve and the parameters that are examined to determine how viable a loan will be.

2.0 Problem Description

One of the biggest problems that lending institutions face is determining if lending to an individual or business is viable i.e the ability of the person or business to pay back the loan. There is also an issue that emanates from having no true source of truth for obtaining information about an individual's or business's credit worthiness or their ability to repay loans. This problem has led to a lot of non performing loans[1] incurred by lending institutions. The task of some of these credit lending institutions to give loans can therefore get muddled with trying to check and confirm details, this can cause a lot of missed business because the amount of loans they can disburse depends heavily on their ability to ascertain the credit worthiness of a borrower. There are also limited methods for individuals to access credit for example things like credit cards are only available to a few[2] and the process to obtain one. This project seeks to create a model that can help individuals better access credit through credit cards.

There have been some attempts by Nigerian startups and companies to determine credit worthiness of an entity such as Sigma[3] but a lot of these focus solely on micro lending institutions

3.0 PROPOSED METHOD

This project seeks to create a model that can be used to make decisions on issuing to individuals credit cards. The model would be able to recommend the credit limit to offer based on the individual that applies.

3.1 Data Sourcing

The model would be ideally trained on data sourced from microlending companies such as [Sycamore](#), [Carbon](#) and [Aella](#) however since I have limited access to data from these companies and a very limited budget some of the dataset for this project would be based on data gotten from Kaggle.

3.2 Data Cleaning

The dataset collected would be cleaned to highlight only the following features from individual items: amount, tenure, age, location, income, whether the full amount was recovered or not, whether the loan was late or not. In cases where the data needed is missing then the data would be replaced with a default value based on the data type or the data would be skipped.

S/N	Data Type	Default
1	boolean	false
2	number	skipped
3	string	"Empty"

3.3 ML Model and Model Deployment

The model would be trained using Logistic Regression and Gradient Descent. It would be a simple model deployed on a remote server. There would be a web page where one can apply for credit card by filling in certain parameters and then based on the computation from the model receive a card with credit of a certain amount. The backend of the application would be written with the Python Flask framework,

this is to keep consistent with the tools used to train the model.

PROPOSED TIMELINE

The proposed project would take about 23 days

- 3 days for data sourcing
- 1 day for data cleaning
- 10 days to train the model
- 5 days to test the model
- 5 days to design the web application where the model would be run

CONCLUSION

A System like this that would help individuals who ordinarily would be exempted from getting access to credit or see credit as bad to find easier ways to access credit. Easier access to credit can foster economic growth in the country as people would be able to invest more in potentially lucrative opportunities. Access to credit can stimulate consumer spending, which, in turn, can contribute to economic growth. When consumers have confidence in their ability to access credit, they may be more likely to make purchases.

However, it's crucial to note that while these advantages exist, responsible and prudent use of credit is essential. Excessive borrowing or mismanagement of credit can lead to financial difficulties, debt accumulation, and negatively impact the economy. Hence the need to verify whatever information provided to this model. The model is also trained with the Logistic Regression technique which is mostly good for making binary (yes or no) decisions, but since here we want to determine a binary decision and also a decision that is not binary.

REFERENCES

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