

**Micro-Credit Defaulter Model**

Submitted by:

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**INTRODUCTION**

* Business Problem Framing

A Microfinance Institution (MFI) is an organization that offers financial services to low income populations. MFS becomes very useful when targeting especially the unbanked poor families living in remote areas with not much sources of income. The Microfinance services (MFS) provided by MFI are Group Loans, Agricultural Loans, Individual Business Loans and so on.

Many microfinance institutions (MFI), experts and donors are supporting the idea of using mobile financial services (MFS) which they feel are more convenient and efficient, and cost saving, than the traditional high-touch model used since long for the purpose of delivering microfinance services. Though, the MFI industry is primarily focusing on low income families and are very useful in such areas, the implementation of MFS has been uneven with both significant challenges and successes.

Today, microfinance is widely accepted as a poverty-reduction tool, representing $70 billion in outstanding loans and a global outreach of 200 million clients.

Now are days every company providing micro finance service , for example India Telecom provider give this facility to prepaid customer to get their mobile recharge instantly of they don’t have recharge facility. Similarly CAB providers also giving pay later account to their customer.

Using Micro credit facility consumer can keep using their services even if they have short of money. Consumer can use this amount to make payment on other services as well.

* Conceptual Background of the Domain Problem

Micro finance service give as lot flexibility to user, they can avail this service in whenever they are in need,

This facility also helping business to gain more revenue because of its convenience to use.

To understand the implications of this issue, the study details that on average 5200 unique resellers of one operator are affected every day. Due to lack of credit, these resellers were then unable to carry out airtime topup transactions, resulting into a total loss of about USD 1.98 million per annum for the operator. Such losses can be avoided if service providers can ensure service continuity despite the low stock at reseller’s end. Micro Credit is just the solution that can help them regain this lost value.

* Review of Literature

Microfinance is not a new concept. Small community-oriented microcredit operations have existed since the Franciscan monks in the 15th century. In the mid-1800s, Friedrich Wilhelm Raiffeisen founded the first cooperative lending bank to help the rural farmers of Germany. Bhaskar 4 However, the inception of the modern microfinance industry began in the village of Jobra in Bangladesh in 1976, with Muhammad Yunus establishing Grameen Bank in 1983. It is important to delve into the roots of modern microfinance to analyze and compare with any other program, as today more than 250 institutions on nearly 100 countries operate micro-credit programs based on the Grameen methodology. Borrowers of the Grameen Bank own 93% of the total equity of the bank, with 7% being owned by the Bangladeshi government. Grameen stopped soliciting and taking donor money in 1998, financing its credit program purely through existing deposits and loans from then onwards. Grameen Bank has 1,181 branches, works in 42,127 villages, and has a staff of 11,777. The total number of borrowers is 2.6 million, 95 percent of whom are women. The total amount of loans disbursed by Grameen Bank since inception is $3.9 billion. Out of this, $3.6 billion has been repaid, with the recovery rate standing at 98 percent. Grameen Bank provides three types of loans: income generating loans (with an interest rate of 20 percent), housing loans (with an interest rate of 8 percent), and higher education loans for the children of Grameen families (with an interest rate of five percent). Grameen believes education is one of the major primary components for poverty alleviation, for future generations. Grameen provided loans for higher because education culminates in more competitive and skilled workers and sustainable improvement education covering tuition, living costs, and other school expenses to 466 students studying in medical and engineering schools and scholarships for an average of 3,700 high-performing schoolchildren.

The basic mechanism that Grameen has worked into its product design to reduce tension and maintain dignity among poor borrowers is the distinction between its basic and flexi-loan products. If borrowers cannot maintain a constant stream of payments for their loans, their loans are converted from basic to flexi-loans, thus exiting the highway (metaphorically represented in the diagram above) to a higher loan ceiling typically for between six months to two years while providing respite to borrowers before subsequent re-entry. This prevents negative group peer pressure on a member struggling to pay back a loan while facilitating collection through renegotiation rather than hounding someone who is unable to pay. However, Grameen surely must manage the relative percentage of these loans on its portfolio carefully, as they carry a substantial amount of default risk and incur costs by complicating the jobs of loan officers.

* Motivation for the Problem Undertaken

Micro credit service is designed for those people who don’t have bank account or poor. Companies always worry about payback amount, they want to make sure that maximum part of loan amount is recovered, hence the try to predict their customer behaviour on the basis of different factor which are easily available at company’s data, these factors are very useful and one can predict that potential customer will be able to pay back the borrowed amount.

**Analytical Problem Framing**

* Mathematical/ Analytical Modeling of the Problem

Describe the mathematical, statistical and analytics modelling done during this project along with the proper justification.

* Data Sources and their formats

What are the data sources, their origins, their formats and other details that you find necessary? They can be described here. Provide a proper data description. You can also add a snapshot of the data.

* Data Preprocessing Done

What were the steps followed for the cleaning of the data? What were the assumptions done and what were the next actions steps over that?

* Data Inputs- Logic- Output Relationships

Describe the relationship behind the data input, its format, the logic in between and the output. Describe how the input affects the output.

* State the set of assumptions (if any) related to the problem under consideration

Here, you can describe any presumptions taken by you.

* Hardware and Software Requirements and Tools Used

Listing down the hardware and software requirements along with the tools, libraries and packages used. Describe all the software tools used along with a detailed description of tasks done with those tools.

**Model/s Development and Evaluation**

* Identification of possible problem-solving approaches (methods)

Describe the approaches you followed, both statistical and analytical, for solving of this problem.

* Testing of Identified Approaches (Algorithms)

Listing down all the algorithms used for the training and testing.

* Run and Evaluate selected models

Describe all the algorithms used along with the snapshot of their code and what were the results observed over different evaluation metrics.

* Key Metrics for success in solving problem under consideration

What were the key metrics used along with justification for using it? You may also include statistical metrics used if any.

* Visualizations

Mention all the plots made along with their pictures and what were the inferences and observations obtained from those. Describe them in detail.

If different platforms were used, mention that as well.

* Interpretation of the Results

Give a summary of what results were interpreted from the visualizations, preprocessing and modelling.

**CONCLUSION**

* Key Findings and Conclusions of the Study

Describe the key findings, inferences, observations from the whole problem.

* Learning Outcomes of the Study in respect of Data Science

List down your learnings obtained about the power of visualization, data cleaning and various algorithms used. You can describe which algorithm works best in which situation and what challenges you faced while working on this project and how did you overcome that.

* Limitations of this work and Scope for Future Work

What are the limitations of this solution provided, the future scope? What all steps/techniques can be followed to further extend this study and improve the results.