

# Fintech Loan solution

## Problem Statement

Being a Fintech company, we provide loan to small and medium enterprises. We particularly lend finance to small hair spa and saloon businesses. How we come to know what amount we should lend to one business and for how much time. How to decide credit score for any particular lending.

## Data Analysis Approach

Data analysis procedure provides a great vision in loan prediction systems, since this will promptly distinguish the customers or businesses who are able to repay the loan amount within a period. Whenever the Fintech makes decision to give loan to any customers then it automatically exposes itself to several financial risks. It is necessary for the company to be aware of the clients applying for the loan.

**Annual Income vs. Purpose of Loan:** For the applicant who is applying for loan, we can ask him for his annual income report and according to his purpose of loan we can decide whether his loan demand is valid or not. When it comes to annual income, we find people under several category of annual income. For our purpose as we lend money to small businesses we can categorize those applicant in three different category such as **low, medium** and **high**. And according to our lending rule or norms we can set range of values to these categories. For example: for low category suppose we put those applicant whose annual income is under 10 lakhs. And for moderate, we can put those applicant whose annual income is under 10 to 25 lakhs. Finally for High category we put those applicant whose annual income is more than 25 lakhs. This is what we can do with annual income.

Now purpose of loan in this situation is basically for business only. But on that also there would be difference in purpose of loan for different applicant. Applicant generally take loan for the debt consolidation or for expansion of their business.

Now we have both in our hand annual income of applicant and for what purpose he or she is asking for loan. Then we can think of taking loan application forward and also decide applicant credibility for particular loan using these two parameters.

**Customer Classification:** Applicant coming to us for loan, we can classify those applicant in two category:

**Applicant do not having delinquent:**

There are many customers or applicant we find who does not have delinquents, has applied for the loan which intimates or indirectly conveys that the applicant has some chances to get approval of the loan as the applicant have no delinquents.

**Applicant having delinquent :** Those applicant who has some delinquent, we can put those applications aside and ponder much to decide what to do next and we can then select some different parameters to valid this kind of application. When it comes to delinquent then it question also arises that for how many month. Because generally people having delinquent for more than 90 months are not going to get loan again and if yes then the applicant will not be able to pay it back.

**Third Category** deals with the customers who can pay the loan within term period against customers who cannot repay their monthly debts within the particular term. Basically this category is applicable to those applicant who has some history of loan.

## **Loan Term Vs. Credit Category:**

### **What is credit score?**

Credit scores are known in India as the CIBIL Transunion score. CIBIL Score is a 3-digit numeric summary of applicant credit history, rating and report, and ranges from **300 to 900**. The closer applicant score is to 900, the better applicant credit rating is.

To avoid the credit risk, we can hold the technique called as “credit score”, where it will help us to keep note on who are the applicants who will be able to repay the amount or probability of going into the default risks. For credit evaluation we can use customer data or business data, CIBIL score.

People generally have credit score between 300-900. Between these there are some categories such as credit score between 300 and 579 falls in poor, credit score between 580 and 669 falls in category fair and the credit score between 670 and 739 is good and above this is considered to be very good.

For people applying loan for first time, then for them it becomes somewhat easy for us to decide because for those kind of applicant we do not need to check credit score. It is generally seen that customers with good and very good credit score prefer for short term payback period in contradiction to customers with fair credit score.

Credit score or CIBIL score is a very important parameter to decide for granting loan as credit score simply reveals the history of credit for any particular applicant. Depending on credit score only we should decide the loan term for particular loan application.

**Company Details Analysis:** We can ask for business loan details, company details, company year of incorporation, VAT details, Service Tax Registration details, turnover of company, net profit after tax and personal details of applicant. These things help us in deciding loan grant and if granting then how much. From company details we get reflection of company's history, which is very important to know and analyse before making any business with any applicant.

**Collateral:** Banks for granting large amount of loan to small businesses, ask for collateral. The need for collateral also means that most small business owners have to pledge personal assets, usually house equity, to get a business loan from bank. The increasing NPAs have made the banks become more stringent in the eligibility criteria to sanction a business loan. Banks have stopped providing business loans without collateral or an asset to secure the loan.

But the best about a FinTech business loan is being collateral free. FinTech company does not follow banks parameters to gauge the creditworthiness of a business loan applicant. FinTechs take every applicant as an individual case and don't follow a fixed set of eligibility criteria. Because of this the same, more and more business loan applicants are able to avail a business loan successfully.

Providing a collateral free loan to applicant is a high risk job. We can not ask for collateral then our task for evaluation of applicant entirely depend on other parameters which ensure us that amount is going to come back.

**Annual sales:** Annual sales can also be one important attribute in deciding the loan amount and loan term. The revenue company generate in a year and the profit company making from that is directly proportional to loan amount. If company is already in debt from past years then granting finance to those companies will be doubtful.

### **Physical Confirmation:**

When people claim that they are running this business and generating revenue of this much and from that making profit of that much. Then we need to go physically to the spot of the business and verify these things by own. Asking details which proves these things. Physically doing inspection to business is very important as it gives you courage to decide what amount of loan we can lend to this particular business and for what tenure. What kind of business they are running and what amount their business deserve is get confirm when we do physical confirmation.

### **Deciding Loan Amount:**

Applicant always ask for loan amount which generally not get approved. What I mean to say is that for whatever amount they are asking most of the time that amount never get approved. We should decide the loan amount according to our study and analysis. And loan term should also be decided accordingly.

# Machine Learning Approach:

We will be now discussing Machine Learning Approach to solve this particular problem.

## What is Machine learning?

Machine learning is a method of teaching computers to parse data, learn from it, and then make a determination or prediction regarding new data. Rather than hand-coding a specific set of instructions to accomplish a particular task, the machine is “trained” using large amounts of data and algorithms to learn how to perform the task.

## Abstract:

Every year many startups are launched and propelled in India. As India is a country of young people, there are really a great number of youths who come up with excellent business ideas every year. But sadly most of the business dies in silence while only a few can survive. Almost 90% of the new businesses fail and prime reason behind it is the lack of fund.

A parallel way of business financing is FinTech lenders. A FinTech refers to the entities who work in finance but the way of functioning is unlike to the traditional lenders. These companies are fuelled by technology and these are the progressive vision of banking. FinTech companies easily provide business loans for the SMEs and MSMEs hence can be used as the alternatives of bank loans.

But Fintech lender want something which help them to analyse and classify their applicants in good and bad customers with respect to loan repayment. We can solve this problem with the help of machine learning. By using past data of such applicant we can train machine learning model and use it for classification purpose of applicant.

## Data Requirements:

Data requirements generally depend on problem statement. For this particular problem I am going to assume some data attributes which will prove helpful to solve this problem.

- Name: Name of the applicant, who is applying for loan.
- Pan\_No(CreditScore): Pan details of applicant to check credit score.
- ApplicantIncome: Monthly income of applicant applying for loan.
- CoapplicantIncome: Monthly income of coapplicant .
- Dependents: Number of dependents applicant having.
- BusinessType: Type of business
- BussineesSales: Monthly sale from business
- BusinessProfit: Profit per month in business
- LoanAmount: Amount of loan, applicant is asking for
- Loan\_Amount\_Term: Term of loan amount in month
- LoanApproved: This will be output variable going to be binary class. Having two values either “Yes” or “No”.

Above written data attributes are under my assumption, these may change depending on problem statement



## Machine Learning Model:

We can train machine learning model from above data attribute and can make classifier which will be strong enough to classify applicant in good and bad customer for loan. We can use past data points of our institution to train our machine learning classifier and able to make a classifier which will help us in classification of applicant.

We can use predictive model technique and descriptive model technique to predict the loan approval. In predictive model technique, we can use classification and regression and in descriptive model technique we can use clustering and association . The main goal of the is to predict the loan classification based on the above data points.

We can use Logistic Regression, Random Forest, Nave Bayes, ensemble algorithms to make classifiers. We can do clustering in our data set using KMeans clustering to find hidden pattern among bad loan customers.

# Thank You