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# Case study

Case Study 1: ABC Finance company

ABC is a multinational corporation and finance company which provides is into personal loan business.This company provides personal loans to individuals based on their credit policy. In 2015, the company has seen an increases in the loss rate. Which means that the number of people defaulting on the loan is increasing. The company believes that targeting the customers who are more risky at early stage of defaulting would help in reducing the loss rate.

# Definitions:

Delinquent accounts: All the accounts who have missed due date

DPD: Days Past Due: The number of days after the due date where the customer has not paid

TB0: All the accounts that are in 0 to 30 DPD

TB1: All the accounts that are in 30-60 DPD

TB2: All the accounts that are in 60-90 DPD

Regular: All the accounts who are still not delinquent.

Principlebalance: The princple outstanding balance of the account remaining to be paid by the account

Tenure: The number of months the loan has to be repaid

Months on Books: The number of months since the start of the loan

Total Income: The total income of the consumer

Sanctioned amount: The amount that has been sanctioned for the loan

Debt Burden Ratio: The EMI to be paid divided by the monthly income of the consumer

Roll Forward:An account is considered to be roll forward into the next month if the the account has not paid over the course of the month.

i.e All accounts in TB0 in current month are either TB0 or TB1 in next month are considered as roll forward

# Data Available

Loan Details: Contains information regarding the loan

Loan Status Mar to May: The status of the loan at the beginning of the month from Mar to May. Only TB0 Accounts have been given for the purpose of this case study

Loan Status Apr to June: The status of the loan at the beginning of the month from Apr to June. Only the status of the loans that have been extracted for TB0 have been obtained

Historical 6 months details: Various metrics have been calculated for the past 6 months for each of the TB0 accounts that are appearing in March to April

Variable Names:

*Paidcure*: The number of times in the past 6 months an account has paid full amount due so that he is no longer delinquenty

*Paiduncure*:The number of times in the past 6 months an account has paid a partial amount of the total due amount so that account is still delinquent

*Unpaid*: The number of times in the past 6 months an account has not paid any amount of the total due amount so that account is still delinquent

*Rollb*: The number of times in past 6 months that an account has rolled backwards. i.e If account is in TB2 in current month and moved to TB1 or TB0 or Regular in the following month

*Rollf*: The number of times in past 6 months that an account has rolled forwards. i.e If account is in TB2 in current month and moved to TB3 in the following month

*Num6mondel*: The number of times an account is delinquent in past 6 months

*Num3mondel*: The number of times an account is delinquent in past 3 months

*num6mosdel*\_*2plus*: The number of times an account is in bucket TB2, TB3, TB4, TB5 or TB6 in past 6 months

*num3mosdel*\_*2plus*The number of times an account is in bucket TB2, TB3, TB4, TB5 or TB6 in past 3 months

*max6del*: The maximum bucket in the account was present in the past 6 months. For example if the maximum bucket is TB4 in past 6 months, then the value is 4

*max3del*:The maximum bucket in the account was present in the past 3 months. For example if the maximum bucket is TB5 in past 6 months, then the value is 5

Call Details: Contains a summary of calls made to the TB0 accounts for Mar-May data

*LoginID :* The agent who called the customer who is delinquent

*Total\_contacts:* The total number of times an agent has tried to call the account

*Right Party Contact:* The number of times an agent was able to reach the borrower

*Promise to pay:* The number of times the customer promised to pay when the call was made

Loan Id mapping:The call details and rest of the data available have two different Ids captured. This mapping file maps the loan id between the tables so that there can be a unique identifier for each consumer

# Level 1: Specific data Questions:

What is the account roll forward rate for the months of Mar , Apr, May and June for TB0?

What is the Princple outstanding balance roll forward rate for the same months as above for TB0?

What is the average attempt intensity, RPC rate and PTP rate on accounts for the months of mar, Apr and May

# Level 2: Open Ended questions

What QCs will you do on this data to ensure the data is accurate and useable?

Show the results of the QCs as well

Is there any correlation between the princple balance remaining and the term completed

Term Completed: The months on books / tenure

Identify the agents who are showing the best and worst performance.

Please provide the metrics that you used to rate these agents

Please prepare one paragraph explaining the approach and results

# Level 3: Analytics question

Profile/Classify the accounts the accounts based on riskiness to roll forward

You can either use simple data manipulation to understand the which group of accounts have the highest risk or

Build any regression model / decision tree to identify the riskiness

# Level 4: Strategy Question:

Based on the analysis that you have done till now, could you please come up with a strategy that you would like to implement to improve the collection efficiency (i.e., reduce roll forward rate). Please note that the aim of the company is to reduce the principle outstanding balance that has rolled forward.

*Notes:* Please clearly specify any assumptions that you have used.

# Definitions:

## Calculating Roll Rates

The roll rate is the percentage of credit card cardholders that roll from one category of delinquency to the next.

For instance, you can measure the percentage of cardholders who roll from 60-days overdue to 90-days overdue.

Financial institutions have varying methodologies for calculating roll rates. They may calculate roll rates by the number of borrowers in delinquency or the amount of funds delinquent.

For example, if 20 out of 100 credit card users who were delinquent after 60 days are still delinquent after 90 days, the 60-to-90 days roll-rate is 100%. Furthermore, if only 10 out of 20 credit card issuers who were delinquent at 60 days are now delinquent at 90 days, the roll rate would be 50%.

When considering delinquency roll rates by balances, a bank will base their calculations on total delinquent balances. For instance, if the 60-day delinquent balance for a small bank's credit card portfolio in February is $100 million, and the 90-day delinquent balance for March is $40 million, the 60-to-90 day roll-rate in March is 40% (i.e., $40 million/$100 million). This implies that 40% of the $100 million receivables in the 60-day bucket in February have migrated to the 90-day bucket in March.

Credit card issuing banks estimate credit losses by segregating their overall credit card portfolio into delinquency "buckets," similar to the 60-day, 90-day categories mentioned earlier. A bank's management measures roll rates for the current month and current quarter, or an average of several months or quarters to smooth out fluctuations. Roll rates may also be further broken down by product category or borrower quality to gain a better understanding of delinquencies overall.

## Equated monthly installments

An equated monthly installment (EMI) is a fixed payment amount made by a borrower to a lender at a specified date each calendar month. Equated monthly installments are used to pay off both interest and principal each month so that over a specified number of years, the loan is paid off in full.

## Average attempt intensity?

Right Party Contacts (RPC) rateThis KPI measures the ratio of all outbound calls that were made to a valid phone number of the person from whom collection is sought (or a “right party”). For collections organizations, the higher this number, the better, since a high score indicates a high success rate of locating debtors.

Percentage of Outbound Calls Resulting in Promise to Pay (PTP)It measures the percentage of all calls made that ended with a promise to pay by the debtor.