

Credit Card Transaction EMI

IIT Kanpur case study

Introduction

Banks offer EMI facility to their Credit Card customers. Customers can use this facility to break down their big-ticket purchases into smaller, more manageable monthly repayments, all the while avoiding paying revolve interest.

EMIs are offered to customers at various stages:

1. Point of sale: EMI conversion can be done at time of purchase. Banks have tie ups with a selected set of merchants (both online and offline) where this facility is offered
2. Post transaction: Customers can reach out to the Bank for a period of 30-60 days post the transaction and convert the same into EMI
3. Balance on EMI: Banks offer this plan to a select set of customers who can convert their entire outstanding into EMI

Credit Card issuers spend a significant amount of time and effort into ensuring that a high percentage of spends get converted into EMI. This enables the Banks to secure a good revenue stream – including processing fees, interest, and foreclosure penalties. Additionally, Banks don't offer reward points on transactions that have been converted to EMI.

Problem statement

Bank A has a large base of savings account customers who have been cross sold Credit Cards. Bank A launched post transaction EMI as a proposition on their Credit Cards. However, conversion rates through digital campaigns were low. So, Bank A set up a call center where agents would call customers and sell post transaction EMI.

However, Bank A soon realized that while this led to an increase in conversion rates of post transaction EMI, the cost too was on the higher side. Bank A then decided to only call customers who were more likely to convert their transactions into EMIs. This would enable the Bank to have fewer agents dedicated to EMI calling, thereby reducing the cost.

Your objective is to help the Bank prioritize its Credit Card transactions for EMI calling.

Datasets

You have been provided with a random sample of 50,000 Credit Card transactions “case_study_devdata.zip”, along with a flag (target_variable) – henceforth known as “development data”. Transactions that have been converted to EMI have target_variable = 1. You have also been provided with several independent variables. These include transaction attributes (amount, merchant etc.), card attributes (credit limit, product type etc.), previous history on the Card (spends on the card in the last few months, previous EMI conversion history etc.), savings account attributes

(balances that the customer maintains in their savings account) and bureau attributes (kind of products the customer holds on the bureau).

You have also been provided with another random sample of 30,000 Credit Card transactions “case_study_validation.zip” with the same set of input variables, but without target_variable. This will be referred to going forward as “validation data”.

Lastly, you have been provided with the data dictionary.

Requirements

You will have to come up with a way to predict the probability that any given transaction will be converted into EMI. You can use the development data for this purpose.

You are then required to use the same logic to predict the probability of all the transactions which are a part of the validation data. Your submission should contain two columns – the primary_key from the validation data, and the predicted probability against that transaction.

You are also required to submit a detailed documentation of this exercise. A good document should contain details about your approach. In this section, you should include a write up on any algorithms that you use. You should then cover each of the steps that you have followed in as much detail as you can. You should then move on to any key insights or observations that you have come across in the data provided to you. Finally, you should write about what metrics you have used to measure the effectiveness of the approach that you have followed.

Evaluation

As detailed in the previous section, you are required to submit the primary_key and predicted probabilities of all the transactions provided to you in the validation data, as well as a documentation.

We will only evaluate submissions that are complete, and pass sanity checks (probability values should be between 0 and 1 for example).

Submissions will be evaluated basis how close the predicted probabilities are to the actual outcome. We will also evaluate the documentation basis it's completeness and accuracy. Extra points will be granted to submissions that include interesting insights / observations on the data provided.