Predicting Loan Take Up

With Machine Learning

The problem

Inefficient

The success rate for loan take up is low at ~9%. ~90% of the time, time and effort is wasted on the wrong customers, resulting in low efficiency.

Knowledge

Knowing which customers to target for increased success rate requires specific domain expertise and experience, which can only be built up over long periods of time.

Subjective

Human judgement of which customers to target is sometimes biased and subjective.

Solution

Leverage machine learning to predict which customers will take up the personal loan

Benefits

Efficient

Based on back testing, the machine learning model is able to achieve a ~98% loan take up success rate while being able to flag out ~85% of all customers that will actually take up the personal loan.

In comparison, the loan take up success rate without the model is only ~9%.

Knowledge

The machine learning model is able to learn automatically from historical data.

Unbiased

The machine learning model is **unbiased**. It makes decision solely based on the data presented to it.

How it works

$P(personal_loan = 1)$ **Features** Label - personal_loan - age - experience - income - family_size cc_avg_spending - mortgage + Model - income_cc_spending_diff - cc_spending_income_ratio - mortgage_income_diff Model learns mortgage_income_ratio automatically from the - postal_code input features and label to - education predict the probability of - investment account loan take up deposit_account - internet_banking

0.9

0.5

0.7

8.0

Use Cases

- The machine learning model can be used to rank and prioritize customers based on their likelihood of taking up the personal loan
- Based on the ranked customers list, the retail marketing department can better target and focus their time and effort on the right customers for increased loan take up success ratio, while lowering costs