Business Summary Report: Predictive Insights for Collections Strategy

# 1. Summary of Predictive Insights

Through the predictive model, some important insights regarding customer delinquency were found:

* The three strongest predictors of customer delinquency are:
  + Payment History- Having more than 3 missed payments are 5 times more likely to default. Pre-emptive debt restructuring could help.
  + Credit Utilization- Utilization above 70% correlates with 2.8 times higher odds of default. Lower credit limits could address this.
  + Income – Unemployed/self-employed people represent 3 times more risk than salaried employees as does having low Income (<$50k). Payment plans could help with this.

# 2. Recommendation Framework

To address these insights, I have the following recommendations:

* Insight: Poor Payment History (3+ missed months) has 5x more default risk.
  + Recommendation: I recommend to outreach to the customers that reach this threshold with a targeted 2-month messaging campaign to encourage them to restructure their debt.
  + Since three months seems to be the threshold for the sharp increase in delinquency, getting the customer’s attention during this time would produce a measurable change in the amount of missed/late payments.
* Insight: High Credit Utilization represents 2.8x more default risk.
  + Recommendation: I recommend that you communicate with the customer to make them aware of their usage in four thresholds, in increments of 25%.
  + Communicating this information with the customer may help them better plan their future spending so that they may have more money to pay with and therefore be less likely to become delinquent.
* Income: Having lower income (>$50k/yr) represent 3x more default risk.
  + Recommendation: I recommend that you provide them with payment plans and advising so that they may become more financially literate and therefore not become tempted to default on their payments.
  + As the customer’s income is unlikely to improve in the future, giving them opportunities to pay that are closer to their capacities may be better.

# 3. Ethical and Responsible AI Considerations

Looking at the model, it’s clear that it does not favor people who may just be getting their adult lives started and people who are no longer able to work. Younger adults, disabled people, and the elderly may be the most disadvantaged groups per the model’s output.

As this model uses decision trees, following the model’s logic should not be too difficult as it makes judges on a per factor basis. There is additional transparency thanks to clear values like the Shapely Additive Explanations (SHAP) that show how much each factor contributes to the predictions being made.

The recommendations I have made are austere and tailored to keep risk to Geldium low, while minimally impacting the customer base. Any drawbacks from these recommendations should be outweighed by the potential for gain.

The model is transparent thanks to SHAP and the decision trees involved in the predictions. Granted it is not as transparent and fast as logistic regression could be, but I believe the gain in accuracy should be worth it as your decisions should be guided by information that is true-to-the-facts as possible. Additionally the data has been anonymized beforehand, so there is little regulatory risk related to the consumer’s privacy.