ABSTRACT

Credit default is the failure of a borrower to make required principal or interest repayments on a debt. In credit risk management, it is important for banks to anticipate credit defaults, whether in the credit underwriting process or in the area of credit monitoring. In this study we focus on the use of machine learning in the area of credit monitoring to predict default of working capital credit and investment credit based on non-demographic debtors' data, where we then test model's accuracy and level of precision that can be achieved, and identify variables that have high importance on the predictive model. The resulting model is then evaluated in terms of their explainability using eXplainable Artificial Intelligence (XAI) tools to identify the relationship of the variables with credit default.

This study uses monthly snapshot of sampled credit accounts data from 105 banks in Indonesia for the period of August 2018 to December 2019 to build a classification machine learning model, and finally evaluate the model in terms of their explainability using SHapley Additive exPlanations (SHAP) as one of the algorithms for eXplainable Artificial Intelligence (XAI) tool.

The resulting machine learning model can achieve 98.85% accuracy overall and 75% precision in predicting true positive or correctly predicting credit is defaulted. And by using SHAP, we can understand how each variables contribute to the model's prediction result and thus its relationship with credit default, where most are consistent with the findings of previous researches.

Keywords: Machine Learning, Credit Default, Predictive Model