

**BANK LOAN APPROVAL PREDICTION USING
MACHINE LEARNING APPROACH: EVIDENCE FROM
SRI LANKA**

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ABSTRACT

Nowadays, commercial banks are experiencing a tremendous increase in loan demand. Loan Originators and Loan Approval Officials have a big obligation to make sure that all applicants are eligible and get the right amount of aid. A borrower must fulfill a number of additional program conditions, be income-eligible, have a credit history that demonstrates their capacity and desire to repay a loan, and more. When a financial institution decides to lend money to a loan originator, there is always a significant risk related to the cash flow of the financial institution. An important part of the loan approval process is the analysis of the applicant's personal data, for bank workers, it will be quite difficult to evaluate application details and data in an adequate manner.

This study aims to utilize machine learning techniques and algorithms to analyze the applicant's personal information and predict whether a customer is eligible for a loan and the loan amount based on his financial situation. The models were developed using supervised learning mechanisms such as Logistic Regression, Decision Tree, SVM, and Random Forest to train and evaluate the customer creditworthiness and loan approval decision by the bank employee whether the request will be accepted or not. The outcome of the above-mentioned models, Random Forest has indicated 85% accuracy with the highest Recall and F1 scores among the other three models. The Random Forest machine learning technique was selected as the best model to predict the loan approval status and a further model was developed to calculate the applicable loan sanction amount based on the customer information. The credit score of the client plays a crucial role in the determination of the loan sanction amount. Further study gives insights to individuals to qualify to receive a loan in the future if they demonstrate a record of satisfying requirements in compliance with the bank's specifications.

Keywords —Bank Loan, Creditworthiness, Machine Learning Algorithms, Supervised Learning, Credit score, Loan Approval Status