

# Credit Risk Prediction Using Deep Learning: A Case Study

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## Abstract

This study aims to predict the credit risk in which an applicant can be categorized as a good or bad consumer using deep neural networks, to enable all parties to take remedial action. Accordingly, this study examines credit risk prediction using deep learning being a case study. Specifically, it aims to develop and test a machine learning model that can effectively and accurately perform credit risk prediction. This study employed a multilayer perceptron neural network will be used in this study. Credit risk data will be chosen as an input to the network while the consumer behavior diagnosis is the target. The multilayer perceptron neural network is used to classify a consumer into two classes depending on selected parameters. One of the classes is credit-worthy and likely to repay its financial obligation. The results revealed how to handle an imbalanced dataset in deep neural networks by implementing undersampling, oversampling, and some other techniques. This can be done by balancing the dataset using the SMOTEENN method, then, building the deep neural network model using an imbalanced dataset and getting the performance score. In conclusion, a multilayer perceptron neural network is a good choice for prediction problems like credit risk prediction. It works by processing the input data through multiple layers of nodes, each of which applies a non-linear transformation to the input data. This allows the network to learn complex relationships in the data and make predictions based on them. The results of applying the proposed deep neural network methodology to classify credit risk based on selected parameters show the abilities of the network to learn the patterns. The proposed network is evaluated using confusion matrices, recall, precision, and f1 score.

**Keywords:** Credit Risk, Prediction, Deep Neural Networks, Multilayer Perceptron Network.