

**UNIVERSITI TEKNOLOGI MARA**

**TECHNICAL REPORT**

**CLASSIFYING CORPORATES DEFAULT AND NON-DEFAULT  
USING MACHINE LEARNING ARTIFICIAL NEURAL  
NETWORK: MULTILAYER PERCEPTRON**

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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## **ABSTRACT**

The purpose of this study is to classify the default and non-default of corporates using machine learning Artificial Neural Network (ANN) with KMV-Merton's probability default as its dependent variables and to identify the most significant variables that give impact on corporates default risk. This research highlights the importance of preparation to mitigate unexpected factors that can affect business activities. In ANN, Multilayer Perceptron (MLP) is used for the corporate default prediction. A sample data of 24 companies listed either in main market or PN17 in Bursa Malaysia from 2016 to 2020 is utilized to set up the dependent and independent variables of the ANN models. There are eight independent variables which are net profit margin, cash flows, cash coverage ratios, current ratio, debt ratio, asset volatility, gross domestic product (GDP) and currency rate. Meanwhile, the dependent variable is default or non-default. Based on the ANN model classification, 67 out of 69 companies predicted as non-default meanwhile, 9 out of 10 companies default in training sample. The percentage correct is 96.2%. In the testing sample, 32 out of 34 companies were predicted to be non-default while 3 out of 7 defaults and the percent correct is 85.4%. Asset volatility is found to be the most significant independent variable. Therefore, ANN is a machine learning algorithm that uses multiple layers perceptron to solve complex problems and predict analytics.