UNIVERSITI TEKNOLOGI MARA

PREDICTING CREDIT RISK OF THE SMALL MEDIUM ENTERPRISES USING MODIFIED KMV MODEL

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ABSTRACT

Credit risk is a very important risk to banks since failure of borrowers to make required payment will lead to high non-performing loans. Hence, it is necessary for banks to develop a mechanism to gauge the credit risk of its borrowers. One of the methods is credit scoring. Small Medium Enterprises (SMEs) are the backbone of the Malaysian economy comprising 98.5% of the total business established in Malaysia. Despite their importance, access to finance is relatively limited. According to banks, lending money to SMEs are risky compared to large companies due to few factors such as less of publicly available information, young and lack of collateral. Hence, this study tried to predict the credit risk of SMEs in Malaysia by developing a credit scoring that combined financial and non-financial criteria. This study proposes a credit scoring method based on MCDM algorithm that will be able to forecast the score of the potential borrowers at a certain time by using the historic information. Result obtained is verified via the comparisons with the given credit risk level provided by banks and by measuring the correlation. The correlation value is 0.88640526 indicates the high positive linear relationship. This study also derives the discrete credit scoring model. This model is built up with deterministic and random factors. The MAPE value is 1.59% which suggests that the forecast scores are highly accurate as compared to actual scores. The model is extended to forecast the credit scoring of companies up to two years. Lastly, this study derives the probability of default model based on three assumptions. The formula derived is similar to the KMV distance to default formula except that this study uses the industrial production index to replace the risk-free rate of interest. Four cases are considered with different value of score, default point and risk. For validation purpose, the correlation between the company's rating which is determined by the model and the risk category provided by bank officers is calculated. Result shows that when using score equal to company's score, default point equal to 0.5000 and inflation rate equal to 3.8%, the correlation is 0.878310066 which indicates highly positive relationship. It implies that this method is one of the viable alternatives that bank institutions can use in determining the credit risk of the SMEs when approving loan application.

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CHAPTER ONE
INTRODUCTION

This chapter explains the general idea of the study. For the introductory, brief information of the study is given. Subsequently, the problem statement, research questions, research objectives, significance of the study and also the scope and limitation of the study are highlighted. The summary is provided at the end of this chapter.

1.1 Background of the Study

In the last few years, the subject of risk has become very prominent at all levels of industry. However, the definition of risk differed depending on its context being used. Generally, risk is defined as the possibility of loss or something unwelcome that will happen and the degree of probability of such loss (Dionne, 2013; Kaplan & Garrick, 1981). This event has a potential in influencing the future achievement of one organization (Berg, 2010).

In banking sector, there are many kinds of risk involved such as credit risk, market risk, operational risk, and liquidity risk (Hui-Nee, 2014). As claimed by Vodová (2003) and Turan (2016), credit risk is the major and important risk that banks face since credit risk is associated with the core business of the bank. Besides, credit risk becomes the main interest topic among the managers and policy makers (Hui-Nee, 2014). The loan lending and the deposit activities are the activities associated with the core business of the bank (Norlida et al., 2015). In Malaysia, credit risk remains as the largest source of risk for development financial institutions (DFIs) since DFIs loan or financing portfolio is the major revenue of banks (Guidelines on Best Practices for the Management of Credit Risk for Development Financial Institutions – BNM/RH/GL 005-9). Bank Negara Malaysia defines credit risk as a risk that counterparty failed to meet its obligations (Circular: Credit Risk – BNM/RH/PD 029-22: issued on 27 September 2019). When the customers fail to pay the required payment timely, it means that customers are unable to pay the principal and interest as written in the credit contract. The worse cases are when the customers have total failure in payment and may cause problems to the cash flow and will affect the liquidity of banks.