The effectiveness of Different Credit Risk Assessment Methods on Loan Performance

Shivani Solanki,
Asst. Professor, School of Management, Graphic Era Hill University, Dehradun
Uttarakhand India

Abstract

Banks undergo various types of risks throughout the process. Sometimes these risks can affect the profitability and reputation of the business. It is necessary for all the banks operating all over the world to establish risk management strategy to work smoothly. To achieve the financial soundness, it is necessary to align the risk a bank can face in a structural manner. This is referred as bank strategy that is an integral part of any banking business. Of various risk associated, the banks are mostly affected by the credit risk, which means failure of payment of loan. To avoid the risk of default it is essential for the bank to assess the different credit risk assessment methods designed to evaluate the loan performance.

Keywords: Credit Risk Assessment, Loan Performance, Bank Strategy, Financial Performance, Risk Management

Introduction

Credit risk cannot be eliminated from any financial institution, specifically banks. It is important for the bank to effectively manage the credit risk associated with the process. Bank needs to manage the credit risk arises from the portfolio of an individual or from any organization. Sophisticated and well manage financial system accelerates the rate of economic growth of the country. Banks are the prime contributors in the economic growth of any country and therefore a strong and stable banking system is very essential for its development. It is evident that banks in India are the main source of credit for various sector and their landing operations holds a core position to fulfill the needs of the economy. As far as credit risk management of any Bank is concerned, it indicates that the best strategy helps the bank to avoid the level of risk, to maintain a tolerance limit, and diversify and concentrate the risk. Credit risk arises when the borrower fails to meet the obligation specified in the agreed terms. The bank incurs loss when a customer

or an individual fails to meet the commitment as per the term specified in financial instrument. There are various principles laid down regarding credit risk management. These principles promote sound practices in the banking system. The first rule of credit risk management is to create a suitable environment for credit risk. The bank's senior management oversees approving and revising its credit risk strategy and credit risk rules. These tactics demonstrate the bank's willingness to accept potential future risk. The second principle is operating under a sound credit granting process. It means, a bank needs to operate under sound, and defined credit granting criteria. It also means, the bank should understand their borrower, purpose of the borrowing, and source of repayment. Third principle specifies that a bank must facilitate or maintain an appropriate credit administration measurement and monetary process. The fourth principle specifies that the bank must ensure adequate control over credit risk. It means a bank needs to establish a system of independent and ongoing credit review. The fifth principle specifies the role of supervisor where supervisor requires having an effective system to identify major monitor and control credit risk (Premkumar, 2020 and Prabhakaran, 2020).

Credit risk means two parties have a credit debt relation where the borrower fails to repay the loan and the lender suffers the loss. Credit risk evaluation or assessment means when a financial institution evaluates the capability or ability of the borrower regarding the fulfillment of its credit. There are two risk evaluation methods: Traditional and Modern. The evaluation process or method used by commercial bank or other financial institution to evaluate the qualitative analysis based on the previous experience of the customer regarding the loan is called traditional credit risk evaluation. With the rapid development of computers, software, tools, financial engineering, mathematical knowledge, and increase in the theory knowledge, it is now easy to have quantitative evaluation of customer regarding his credit risk. These methods are called modern risk evaluation methods (Cai, Qian, 2018).

Literature Review

According to a study, credit risk is the possibility of suffering financial loss because of the borrower's credit standing deteriorating. Losses in a portfolio are the outcome of outright default brought on by a client's or a counterparty's inability or refusal to complete contracts pertaining to lending, trading, settlement, and other financial operations. A credit risk assessment, which is a quantitative and qualitative evaluation of the company, can determine a firm's ability to repay its

significant debts to the bank or other creditors or how competent it is to do so. The objectives of credit risk assessment include the identification, appraisal, and reduction of risks that can prevent a corporation from being able to satisfy the demands of its creditors. The goal of a credit risk assessment by a loan officer is to look at both the borrower and the proposed lending facility to assign a risk rating and offer an estimate of the loss that the lender would incur in the case of default. The likelihood that the borrower would default throughout the facility's duration and the amount of loss that the lender would incur in the case of default are estimated to get the risk rating (Choppari, 2015).

In a study, the credit risk evaluation procedure used the neural fuzzy approach. The knowledge is extracted from the data using the fuzzy system. The fuzzy systems, however, lack the ability to learn. Both the fuzzy and neural systems are advantages of the neuro fuzzy. It has the capacity to get knowledge from data. Since the neural fuzzy based technique matches how people think, loan officers may quickly embrace it (Sreekantha, & Kulkarni, 2010 and Pourdarab, Nadali, & Nosratabadi, 2011).

According to studies, Credit rating is one of the technical variables to assess credit risk. Credit scoring's objective is to categorise applicants or individuals into two groups: those with outstanding credit and those with bad credit. It is possible to occasionally use a variety of methodologies to estimate a bank's credit risk. An artificial neural network was used to determine the credit risk of bank customers. It was also demonstrated that by combining novel indicators with traditional financial ratio indicators, forecasting accuracy rose dramatically. The study found that the criteria for excellent customers and bad customers are influenced by an individual's borrowing frequency and loan quantity. The artificial neural network approach lowers the risk of non-payment and boosts bank profits. (Nazari, & Alidadi, 2013).

A research study employed a linear programming model to assess the credit risk posed by banks. It was discovered that banks could only slightly enhance their goal when a loan is longer in term by decreasing the proportion of unsecured loans. Additionally, it was discovered that linear programming approaches may be used to lessen the issue of bad debt. It is a quantitative method for addressing a range of issues in management choices, portfolio choice, financial planning, etc. In the long run, this method helps to diversify bank loan portfolios by maximising profit and lowering default risk. One effective strategy to review bank credit policies for bad debt is to

evaluate them using a linear programming approach. When there are limitations or limits that might impact the decision-making process, linear programming is a way for addressing long-term challenges that enhances managers' decision-making. When the augments are restricted to a linear route, it is a technique for figuring out the maximum or minimum of a linear function. (Agarana, Anake , & Adeleke, 2014).

In a study, a discriminate analysis method was used to reduce the credit risk of banks for an individual. The linear discriminate function or method is used to generate data for banks, financial institutions, rating institutions, government etc. This method is used to evaluate the credit capacity of an individual. By using this method, banks can examine the capability of an individual to repay the loan. With the help of a discriminate analysis banks and identify three types of efficiency and faulty classification: bad client percentage, good client percentage and overall efficiency which means total client percentage (Balina, & Nowak, 2017).

In research, it was found that Logistic regression is a standard mathematics statistical method, which is used to predict the probability of an event. It is distinguished by the forecast of the likelihood of the occurrence, which may or may not materialize. Either one or zero is equal to the likelihood. Three drawbacks of discriminating analysis are eliminated using logistic regression. The alternative to the logit approach is probit analysis. Simplicity and interoperability are two tangible advantages that logging systems have over probit approaches. The logit model's equation is straightforward, and its inverse linear transformation may be understood immediately. (Kliestik, Kocisova, & Misankova, 2015).

According to research, the economic model, sometimes referred to as the credit portfolio perspective, is a technique that takes into account a number of variables to establish the default likelihood as a whole. Macroeconomic variables including long-term interest rates, GDP growth rates, unemployment rates, currency rates, etc. are related to default likelihood. The economic cycle is reflected in the economic model. Credit is less available during economic downturns, but it is more available during inflation. Models of macroeconomic factors like unemployment, GDP growth rate, and long-term interest rates affect the likelihood of failure (Abdelkader, 2018).

The long-term viability of any financial organisation depends on effective credit risk management, a crucial element of a bank's overall risk management strategy. Successful credit

risk includes several elements. effective board involvement, senior management control, adequate risk monitoring and measurement, and rules, regulations, and restrictions. rigorous internal controls and information management systems. The method of managing credit risk should include measuring the risk via the use of credit ratings and scoring, scientific risk pricing, efficient loan review procedures, portfolio management, and quantification of the risk through the prediction of likely loan losses. The quality of the bank's loan portfolio is evidence of how effectively it manages credit. Every bank works extremely hard to keep its non-performing assets (NPAs) at the lowest level feasible and to maintain a strong credit portfolio, since both of these criteria have a direct influence on the profitability of the bank. Effective project evaluation is now extremely important since it may check for and stop the addition of poor accounts to our loan portfolio. Pre-sanction evaluation must be strengthened in every way (Singh, 2013 and Lulaj, Mazreku, Dragusha, 2020).

Objective:

- To measure the effectiveness of Different Credit Risk Assessment Methods on Loan Performance

Methodology

This study is descriptive in nature in which data is obtained from 192 respondents who have used different credit risk assessment methods. In the above study only the banking sector has been covered. A checklist question was used to analyze and interpret the data. In a checklist question respondents choose "Yes" or "No" for all the questions.

Table 1. The effectiveness of Different Credit Risk Assessment Methods on Loan Performance

The effectiveness of Different Credit Risk Assessment Methods on Loan Performance	Yes	%Yes	No	%No	Total
The fuzzy and neural systems enhance the efficiency of manager by extracting knowledge from the data	160	83.33	32	16.67	192
Artificial neural network method lowers the risk of non-payment and	152	79.17	40	20.83	192

boosts bank profits.					
Linear programming method reduces the risk of bad debt	171	89.06	21	10.94	192
Discriminate analysis method examines the capability of on individual to repay the loan	149	77.60	43	22.40	192
Logistic regression method helps to forecast the probability of an event	169	88.02	23	11.98	192
Econometric method helps to analyze the market risk of banking system	161	83.85	31	16.15	192
Credit risk management helps in the long term sustainability of banks	174	90.63	18	9.38	192
Credit risk management helps to evaluate the performance of the loan	165	85.94	27	14.06	192

Table 1 shows that 90.63% respondents agree that Credit risk management helps in the long-term sustainability of banks while 89.06% respondents agree that Linear programming method reduces the risk of bad debt. 88.02% respondents agree that Logistic regression method helps to forecast the probability of an event while 85.94% respondents agree that Credit risk management helps to evaluate the performance of the loan. 83.85% respondents agree that Econometric method helps to analyze the market risk of banking system while 83.33% respondents agree that the fuzzy and neural systems enhances the efficiency of managers by extracting knowledge from the data. 79.17% respondents agree that Artificial neural network method lowers the risk of non-payment and boosts bank profits while 77.60% respondents agree that Discriminate analysis method examines the capability of one individual to repay the loan.

Conclusion

The above study concludes that a credit risk assessment, also known as a quantitative and qualitative analysis of the company, is used to establish a firm's capacity to repay its major commitments to the bank or other creditors. Identification, evaluation, and mitigation of risks that can prevent a company from being able to meet its creditors' obligations are some of the goals of credit risk assessment. The basic objectives of credit risk assessment are to identify risks in lending situations, ascertain the likelihood of repayment, and make recommendations for the

optimal form and structure of the loan in light of the anticipated risks and financing requirements. The credit risk is assessed with the neurophysical technique. The first and neural system is capable of learning from the information. The artificial neural network approach was utilised to calculate the bank customer's credit risk. This technique is used to categorise customers as either excellent or bad. The artificial neural network method reduces the risk of non-payment and increases profit. The linear programming model is used by the bank valid the credit risk. Cleaner programming method reduces the problem of bad that and hands Bank can margin Lee improve their objective by reducing the percentage of unsecured loans. Discriminate analysis method is used to identify three type of efficiency and faulty classifications bad client percentage, good client percentage and over efficiency. This method is used to generate data for banks and other financial institutions. Logistic regression method is used to product the probability of an event that either may occur or not.

References

1. Cai, Q., Qian, Q. (2018). Summary of Different Credit Risk Assessment Methods, *Advances in Intelligent Systems Research,* 148, 89-93.

2. Nazari, M., & Alidadi, M. (2013). Measuring Credit Risk of Bank Customers Using Artificial Neural Network. *Journal of Management Research*, *5*(2), 17.

3. Pourdarab, S., Nadali, A., & Nosratabadi, H. E. (2011). A Hybrid Method for Credit Risk Assessment of Bank Customers. *International Journal Trade, Economics and Finance*.

4. Lulaj, E., Mazreku, I., Dragusha, B. (2020). Credit Risk Management and Measurement Econometric and Empirical Model in the Banking System, *Economica,* 16 (3), 155-188.

5. Kliestik, T., Kocisova, K., & Misankova, M. (2015). Logit and Probit Model used for Prediction of Financial Health of Company. *Procedia. Economics and Finance*, *23*, 850–855.

6. Agarana, M. C., Anake T, A., & Adeleke, O. J. (2014), Application Of Linear Programming Model To Unsecured Loans And Bad Debt Risk Control In Banks, *International Journal Of Management, Information Technology And Engineering*, 2 (7), 93-102.

7. Balina, R., & Nowak, M. (2017). Assessing individual credit risk on the basis of discriminant analysis by Poland's cooperative banks. *International Journal of Business Continuity and Risk Management*, *7*(2), 103.

8. Singh, A. (2013). Credit Risk Management In Indian Commercial Banks, *International Journal of Marketing, Financial Services & Management Research,* 2(7), 47-51.

9. Premkumar, S. (2020). Cedit Risk Management Framework in Indian Banks: a Sypnotic View*, International Research Journal of Management, Science and Technology,* 11(7), 100-110.

10. Choppari, N. (2015). Credit Risk Management Practices Of Indian Commercial Banks, *International Journal of Management and Social Sciences,* 3(1), 89-94.

11. Prabhakaran, J. (2020). Effect Of Credit Risk Management: Financial Performance Of Private banks, *International Journal of Management,* 11 (10), 2148-2154.

12. Sreekantha, D. K., & Kulkarni, R. (2010). Expert system design for credit risk evaluation using neuro-fuzzy logic. *Expert Systems*.

13. Abdelkader, D.(2018). The credit portfolio management by the econometric models: A theoretical analysis. *hal-01696010f*.