

Chapter 9

A Model Augmenting Credit Risk Management in the Banking Industry

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ABSTRACT

A lack of reliable credit risk measurements and poor control of credit risks has caused massive financial losses across a wide spectrum of business. Financial institutions like banks have not been able to control and contain the rapid increases of the credit defaulting. In this paper, we address the credit lending challenges by eliminating credit defaulting faced by the banking industry. Data from bank of previously accepted and rejected loan applicants was used to construct a credit risk evaluation network. The artificial neural network technique with back-propagation algorithm was applied to develop a model that supports the banks in the credit granting decision-making. The model was trained to categorize applicants as either good (credit granted) or bad (credit denied) based on the credit record. The model was able to predict whether a particular applicant is likely or unlikely to repay the credit. The training of neural network model and validation testing was done using data obtained from the bank. The results show a greater performance, classification and prediction accuracy.

INTRODUCTION

Financial institutions such as commercial banks grant credits such as personal loans, home loans, vehicle finance and credit cards to consumers with the aim of generating huge profits. Unfortunately, for the past five years some of the highly reputable local banks have been struggling to deal with the increasing number of distressed credit defaults (SA Property, 2013). The report by the South Africa national credit

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regulator indicated that about 75000 of home loans consumers were in arrears on mortgage payment for period of three months (SA Property, 2013). These mortgage defaulters have caused debt totaling to 41 Billion of Rand. The growth of revenue expected to be generated drastically slowed down and the default levels increased from 4% to 6% (SA Property, 2013). The credit crisis has exposed weaknesses in the credit risk management portfolio and has forced the banks to take a critical look at how credit risk has been managed. The credit crisis has highlighted the urgent need for improved credit risk management in credit lending. One of the major challenges that banks are facing is to be able to accurately identify, detect and reject credit risk applications. The approach to addressing this challenge has been to apply checks and balances on the credit applicants and can be achieved through the use of modern Credit Risk Evaluation Techniques (CRET). The checks and balances involve scrutinizing at the financial status, financial behaviour, and the credit history of the applicants. Historically, banks would evaluate customers through the use of manual systems, which are mostly biased and unreliable.

The use of credit risk evaluation techniques is vital for credit risk management. The risk associated with granting of credit to high-risk customers can be automatically detected. The CRETs have been successfully applied to solve complex problems in a variety of business fields including medicine, accounting and stock market. The banks can utilize the CRETs and benefit by performing the following:

- Effectively manage credit risk.
- Provide credits to low credit risk customers.
- Evaluate and assess the risk associated with granting credit.
- Maximize on profit generation and reduce the credit risk.
- Ensure that credit repayment is made in time
- Reduce the cost and time of credit risk analysis.

The credit evaluation techniques have been applied to predict whether or not credit given to an applicant most likely to result in profit or losses for the bank. The techniques predict the probability that an applicant or existing customer is likely to default or become delinquent (Komor'ad, 2002).

Credit evaluation models are widely preferred because of their ability to accurately predict and classify objects. When applied in credit risk determination, their predictive accuracy performs far better than the traditional credit evaluation manual systems. With the rapid growth in credit lending, a sophisticated credit risk evaluation model is needed to support in the credit application evaluation and decision-making. This study addresses the credit lending problems and resolves them by building a model augmenting credit risk management in the banking sector.

Credit Risk in Banking

Nowadays most of the banking transactions are conducted in credits and risk is inherited in the process. The firms or individuals running short of cash always need credits in order to continue with their business operations. The credits are the bank's most important assets so this is the reason why credits are the primary risk in banking. In this paper, the researchers refer credits as loans. The researchers use the terms "credits and loans" interchangeably. The economist dictionary defines credit as 'the use or possession of services or goods without immediate payment'. In simpler terms, credit can also be defined as the amount of money given to the borrower up front with the trust that the borrower is able to repay

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