Scientific Research

Using Knowledge Management to Manage Credit Risks in Banking

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Abstract: Nowadays, there are more and more credit risks existing in banking and banks are operating with knowledge. So, this paper first discusses the definitions of knowledge and knowledge management, and then analyzes the need for knowledge management in banks to manage credit risks. Finally, it studies ways for banks to manage credit risks with knowledge. With the application of knowledge management in banks, customers will acquire better service and banks will acquire more rewards.

Keywords: knowledge management; credit risk; risk management; data warehouse; banking

1 Introduction

The society we live in has been gradually turning into a "knowledge society". So, what is knowledge? And what is knowledge management? Davenport(1996)[1] thinks knowledge is professional intellect, such as know-what, know-how, know-why, and self-motivated creativity, or experience, concepts, values, beliefs and ways of working that can be shared and communicated. And according to Malhothra (2001) [2], knowledge management (KM) caters to the critical issues of organizational adaptation, survival and competence in face of increasingly discontinuous environmental change… Essentially it embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies and the creative and innovative capacity of human beings. Through the processes of creating, sustaining, applying, sharing and renewing knowledge, we can enhance organizational performance and create value.

Many dissertations have studied knowledge management applications in some special fields. Aybübe Aurum (2004) [3] analyzes knowledge management in software engineering and D.J. Harvey & R. Holdsworth (2005) [4] study knowledge management in the aerospace industry. Li Yang (2007) [5] studies knowledge management in information-based education and Jayasundara & Chaminda Chiran (2008) [6] review the prevailing literature on knowledge management in banking industries. Liang ping and Wu Kebao (2010) [7] study the incentive mechanism of knowledge management in banking. But few scholars have studied the way to manage credit risks with knowledge management. So this paper will discuss using knowledge management to manage credit risks in banking.

This paper is organized as follows: Section 1 is introduction. Section 2 analyzes the need for knowledge management in banks to manage credit risks. Section 3 studies ways for banks to manage credit risks with knowledge management. Section 4 concludes.

2 Researching on credit risks with knowledge management in banking

The purpose of managing credit risks is to distinguish, calculate risks and take out countermeasures to reduce the loss caused by the risks. In modern times, the banks need to use knowledge management to make out the strategies to manage credit risks.

2.1 Sharing knowledge

Knowledge in banks includes tacit knowledge and explicit knowledge, which is scattered in different fields. For example, the information about the customers' income, asset and credit is controlled by different departments and different staffs and the information can't be communicated with others. So it is necessary for banks to set up a whole system to communicate and share the information and knowledge to manage the risks.

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2.2 Setting up knowledge data warehouse

In modern banks, there are more and more information about customers and it is necessary for banks to set up knowledge data warehouse. Through the data warehouse, banks can inquire, analyze and share the information of customers and then banks can find the latent customers. At the same time, banks can watch and guard against the credit risks.

2.3 Encouraging knowledge innovation

The warning mechanism of credit risks depends on how bank's staffs use the knowledge of customers and how the staffs use the knowledge creatively. The abilities of staffs to innovate depend on the incentive mechanism in banks. In order to manage credit risks, banks should take out incentive mechanism to urge staffs to learn more knowledge and work creatively.

3 Ways for banks to manage credit risks with knowledge management

There are five blocks in managing credit risks with knowledge management. We can show them in Figure 1:

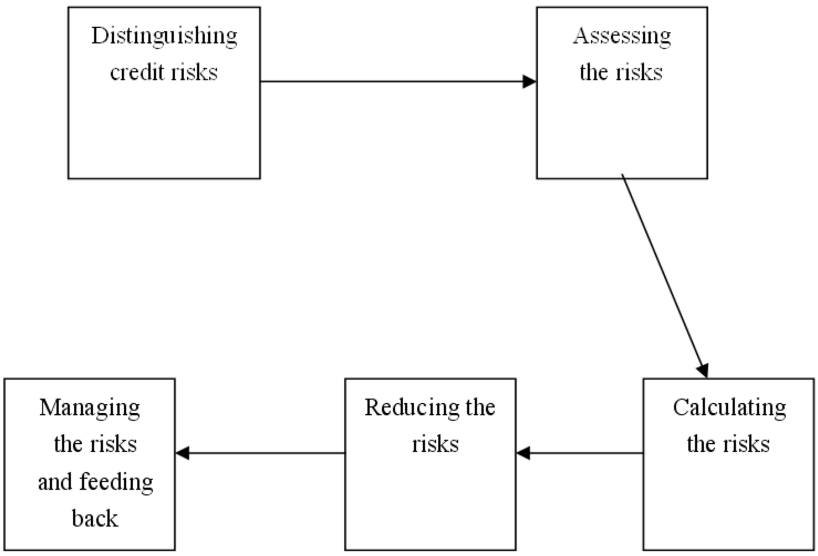

Figure 1. The blocks of managing credit risks

3.1 Distinguishing credit risks

Distinguishing credit risks is the basis of risk management. If we can't recognize the risks, we are unable to find appropriate solutions to manage risks. For example, the United States subprime crisis in 2007 was partly caused by that the financial institutions and regulators didn't recognize the mortgage securitization risks timely. With knowledge management, we can make out some rules to distinguish credit risks, which are establishing one personal credit rating system for customers and setting up the data warehouse. We can use the system to analyze customers' credit index, customers' credit history and the possible changes which may incur risks. At the same time, we should also watch on the changes of customers' property and income to recognize potential risks.

3.2 Assessing credit risks

After distinguishing the credit risks, we should assess the risk exposure, risk factors and potential losses and risks, and we should make out the clear links. The knowledgeable staffs in banking should use statistical methods and historical data to develop specific credit risks evaluation model and the regulators can establish credit assessment system and then set up one national credit assessment system. With the system and the model of risk assessment, the managers can evaluate the existing and emerging risk factors.

3.3 Calculating credit risks

The models used for risk calculation range from simple procedures and adjustments for the addition of independent activities to more complex techniques including probability trees, activity networks (such as Programme Evaluation and Review Technique- PERTZ, Graphical Evaluation and Review Technique-GERTS and Venture Evaluation and Review Technique-VERT') and simulation. The choice of risk technique depends on the risk definition of the project, its value and circumstances, perceived uncertainty and many other factors. There are many models, such as Monte Carlo Simulation, value-at-risk model (VaR), multivariate risk calculating method GHICA, are widely used. These models are used by knowledgeable staffs, and the banks should take out incentives measures to encourage the staffs to work with knowledge management [8].

3.4 Reducing credit risks

After assessing and calculating credit risks, banks should make out countermeasures to reduce the risks. These measures include： (1) Completing security system of loans. The banks should require customers to use the collateral and guarantees as the security for the repayment, and at the same time, banks should foster collateral market. (2)Combining loans with insurance. Banks may require customers to buy a specific insurance or insurance portfolio. If the borrower doesn't repay the loans, banks can get the compensation from the insurance company. (3)Loans Securitization. Banks can change the loans into security portfolio, according to the different geography, interest rate and term of the loans, and then banks can sell the security portfolio to the special organizations or trust companies.

3.5 Managing credit risks and feeding back

A customer may have housing loans, car loans and other loans and the banks can acquire the customer's credit information, credit history, credit status and economic background from assessing the risks of the customer based on the data the banks get. By assessing and calculating the risks of the customer, banks can expect the future behavior of the customers and provides different service for different customers. Banks can provide more value-added service to the customers who have high credit rates and restrict some business to the customers who have low credit rates. At the same time, banks should refuse to provide service to the customers who are blacklisted. Banks should set up the pre-warning and management mechanism and change the traditional ways which rely on remedial after the risks broke out. In order to set up the warning and feeding back mechanism, banks should score credit of the customers and then test the effectiveness and suitability of the measures, which banks use to mitigate risks. Finally, banks should update the data of the customers timely and keep the credit risk management system operating smoothly.

4 Conclusion

In this paper, we first discuss what knowledge is and what knowledge management is. Then we analyze the need for knowledge management in banks to manage credit risks. Finally, we put forward ways for banks to manage risks with knowledge management. Banks should set up data warehouse of customers' credit to assess and calculate the credit risks. At the same time, banks should train knowledgeable staffs to construct a whole system to reduce risks and feed back. With knowledge management, banks can take out system measures to manage customers' credit risks to gain sustainable profits.

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