CREDIT RISK MANAGEMENT IN BANKING INDUSTRY

Case study: Joint Stock Commercial Bank for Foreign Trade of Vietnam

Huong Minh Vo

Bachelor's thesis
August 2015
Degree Programme in International Business
Major in Financial Management

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ABSTRACT

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The commissioner of this thesis is Joint Stock Commercial Bank for Foreign Trade of Vietnam (Vietcombank). Vietcombank's credit portfolio has reached out to a wide range of customer groups with different tailored services to meet each group's preferences. However, though Vietcombank achieved the sustainable credit growth in recent years, it faces the obstacle to control credit risk reflected in the great level of bad debt. The impact of credit risk upon the bank's overall performance is significant as it damages the financial results and deteriorates the widely acknowledged reputation in the market.

The thesis firstly aims to provide the meaningful answer for the questioning relationship between a high credit growth and a great level of doubtful loans. The qualitative analysis from internal documents, different literature resources and interview with the credit expert at Vietcombank is used to analyze and evaluate the bank's credit situation and the handling of bad debt, and to mitigate any abnormal elements that may cause the questioning relationship. Based on that together with the observations of the bank's internal credit rating model, there are suggestions to build a more complete credit risk management model for group of individuals and group of corporate customers.

The findings of the analysis provided the possible explanations of the expanding credit growth accompanied by an escalating increase in the amount of bad debt. It might reflect the insufficient knowledge of the staffs, the issue of staff's morality, the loosening management of the top manager, or the need to make changes in the bank's credit risk management model. There are two models suggested by author with her own academic knowledge for Individual and Corporate model. For Individual model, the combination between collateral asset rating and the credit rating is proposed to score the individual credit more exactly. In Corporate model, the integration of internal credit rating model and the Basel II approach is taken into consideration to enhance the bank's own method of protection from credit risk and to strengthen the supervisory and regulatory role of the State Bank of Vietnam for an equally competitive banking market.

The thesis serves as the guideline of credit risk management model for possible application. It is also worth mentioning that to successfully operate a working credit risk management model, Vietcombank needs to invest more in its staff quality, information system and an effective business strategy to make use of all the resources.

Key words: Credit Risk, Credit Risk Management Model, Internal Credit Rating Model, Basel II Approach, Collateral Asset

CONTENT

GLOSSARY or ABBREVIATIONS AND TERMS (choose one or other)

SBV	The State Bank of Vietnam
CRM	Credit risk management
SOCBs	State-owned commercial banks
JSCBs	Joint- stock commercial banks
JVBs	Joint venture banks
NPL	Non-performing loan
CAR	Capital adequacy ratio
Agribank	The Vietnam Bank for Agriculture and Rural Developement
Vietcombak	Joint Stock Commercial Bank for Foreign Trade of Vietnam
Vietinbank	Vietnam Joint Stock Commercial Bank for Industry and Trade
BIDV	Bank for Investment and Development of Vietnam
VaR	Value at Risk

1. INTRODUCTION

The introduction aims to generalize the content of thesis so that the reader can have a broad picture of what the author is going to present. Firstly, it includes the reasons behind the choice of the thesis topic. The thesis objectives then will be discussed to identify the problems and provide the solutions. Last but not least, there is the research method used throughout the thesis to lay the solid foundation of all the statements.

1.1 Necessity of thesis

Together with the development of the Vietnamese economy in the recent years, especially after the 2008- 2012 period of economic crisis, the system of commercial banks has also had accelerating and evolving steps in playing the role of key channel to supply significant capital for the economy. In the open market, credit offering undeniably is the basic function of any commercial bank as interest income from lending constitute primary revenues for the banks. According to KPMG in its Vietnam Banking Survey 2013, the sector of loans and advances to customer accounts for more than 50% of the banking assets and the revenues collected from credit activities makes up approximately from half to two- thirds of the total revenues.

Despite the fact that commercial banks expand its operations by diversifying its products, customers or market niche, there is always implication of risks attached to these activities, namely: Credit risks, Market risk, Operational risk (Golin & Delhaise 2013, 40). Among the above mentioned risks, the credit risk is considered to be the major concern as it forms the largest portion and the most complex interrelationship with other risks. Credit risk once it happens would have a significant effect on not only financial losses but also the bank's reputation which leads to the missing belief of citizens towards the whole system of banks. As a result of credit risk's spreading interrelation, credit risk can be the root for a financial or social crisis.

The leading sign of credit risk is the bad debt. The high bad debt rate means the incapability of the bank to control the credit risk. During the conference to summarize the financial results of the first 6-month of 2015, Mr. Thanh Nghiem, the Chairman of Vietcombank showed anxiety for the quality of credit and bad debt. While the credit growth was 6.52% higher than the average, the certain bad debt was increased by 1.012 billion VND compared to that of the end of 2014. During author's internship at Vietcombank, this issue was repeatedly mentioned in every meeting which stimulates author's curiosity to figure out the reasons behind that and to some certain extent provide a workable model of credit risk management.

1.2 Thesis objectives

By analyzing the current situation of Vietcombank in the field of credit activities, credit risk and credit risk management, the ultimate goals of the thesis are to draw the answers for two research questions:

1. <u>What do credit growth and bad debt of Vietcombank reflect?</u>
2. <u>Is it possible to build up an effective model of credit risk management for Vietcombank?</u>

1.3 Research method

The research method used throughout the thesis is the qualitative analysis. The thesis helps to understand the lying problems of credit risk at Vietcombank, and based on the findings, the author suggests to a model serving as a sound base of the decision making of loan granting. The primary data related to Vietcombank was obtained through its official website, annual reports. Moreover, there were reliable articles on newspapers or reports from reputed financial institutions used to solidify the statements. There was an interview conducted with credit expert working in Department of Bad Debt handling at Vietcombank to extend the knowledge of the bank's credit activities.

1.4 Thesis structure

The thesis is divided into four main chapters. It starts with the introduction to give the overall view of the thesis on where the topic comes from, what author aims to achieve by the end of the thesis, which tools author used throughout the thesis. Then, the second chapter explains the theoretical framework of credit risks in the banking industry and how commercial banks generally manage the credit risks. In this chapter, the overall Vietnamese banking industry is introduced in accordance with the theory. The next chapter analyses and evaluates the situation of Vietcombank mainly in the last three years, from 2012 to 2014, and the first 6-month of 2015 concerning the credit activities. It also discusses the posed problem of credit growth and high bad debt rate at Vietcombank. The third chapter presents the suggested idea of the author to have a working credit risk management. Last but not least, the brief conclusion is given in the last chapter to summarize the findings of the thesis.

2. THEORETICAL FRAMEWORK

2.1 Basis of commercial banks

2.1.1 Definition and Functions

Commercial banks are usually considered as intermediary banks. There are various definitions of commercial banks which are depending on the banking regulations of each country. In America, under the Act of Glass-Steagall-Act (1933) it was bank serving individuals and enterprises operating in wholesale and retail banking; involving in deposit and lending activities. In India, commercial banks are financial institutions which receive deposits and provide loans and advances to individuals or enterprises (Muraleedharan 2009, 41) while Finnish commercial banks mainly offer services to corporate clients (Finland Investment and Trade… 2015, 144). From the above examples, it can be drawn that commercial banks are banks that classified into primary and secondary functions (Singh & Dutta, 2013, 13) as presented in the Figure 1 below.

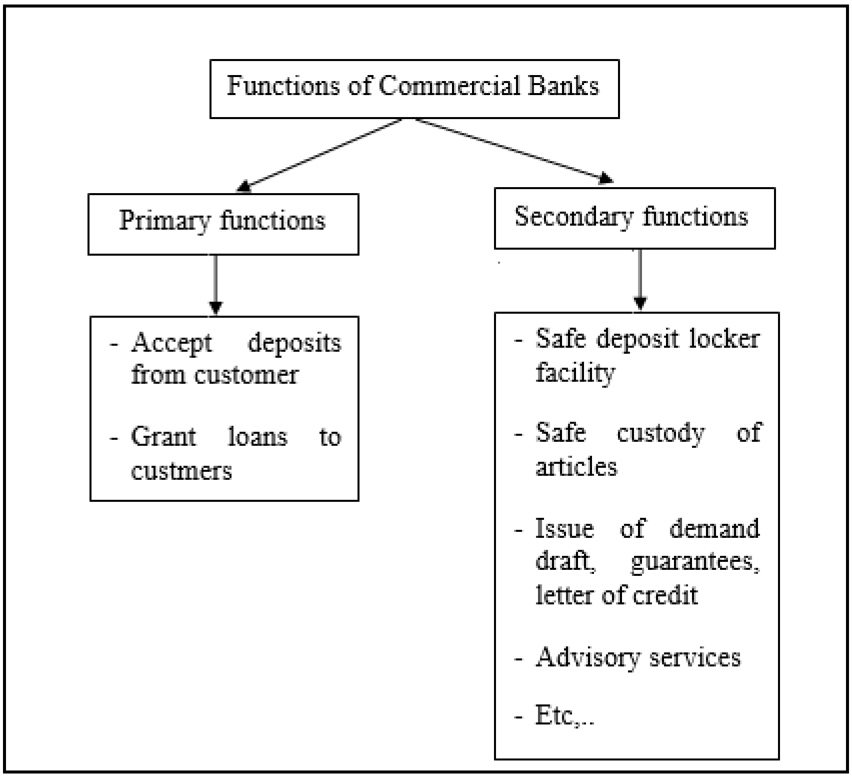

FIGURE 1. Functions of commercial banks

The primary functions create the main revenues for commercial banks. By charging higher interest rates on loans and advances to individuals or enterprises than deposits received from customer, the banks gain from the substantially different amount. Besides, commercial banks perform other secondary roles called agency functions to receive the commission. More specifically, the commission is technically called “Fee-based income” or “ECB income” (Commission, Exchange and Brokerage) (Murali & Subbakrishna 2010, 3). Banks nowadays are expanding the scope of secondary functions as they are not as much risky as the primary functions.

From what has been discussed so far, it is undoubted that commercial banks play a prominent part in the financial market. According to Mehta and Fung (2008, 10), commercial banks are unique as they help to:

- **Process information**
- **Share the risk**
- and **Create money**

As a middle man in the link of depositors who present the funds and borrowers who look for the funds, commercial banks by collecting and processing this information assist to smooth the capital flows and minimize the search costs. Moreover, when the banks act as lenders to examine borrowers’ payback capability and provide loans, they share the risks with depositors in the event of debtors’ default. These roles are indeed a combination of financial intermediaries concentrating on information and insurance companies focusing on risk sharing. Last but not least which contributes to the banks’ distinction is the role of money creation. From the initial deposits, one commercial bank lends loans to entities who will make the transactions at the base of other commercial bank; hence the amount of deposits are multiplied at an increasing rate compared to the original. Therefore, commercial banks certainly help to “control and manipulate the money supply for the government’s social- political- economic agenda” (Mehta & Fung 2004, 12).

2.1.2 System of commercial banks in Vietnam

In Vietnam, there are only two types of bank: Commercial bank and The State Bank of Vietnam (SBV). SBV is the central bank regulating all the monetary, banking and foreign currency policies (The Act 2 of Law of the State Bank of Vietnam, 2010). Commercial banks are credit agencies which can carry out all the banking and other activities to maximize profit in accordance with Law of the State Bank of Vietnam (The Act 59/2009/ND-CP, 2009). The banking activities defined by SBV include currency trading and banking services of deposits and credit supply. Therefore, the system of commercial banks in Vietnam bears the similar characteristics with international banking system in terms of functions and roles in financial market. According to Nguy (2009, 4), the system of commercial banks in Vietnam is separated depending on:

The nature of the business:

- Specialized banks focus to provide customers with several specialized products. For examples: Only lending to the industry of construction, agriculture

- Multi-functional banks provide all types of services which are the general trends for most of the banks

- Wholesale banks have corporate customers such as credit agencies, investment companies or large- sized enterprises

- Retail banks concentrate on individuals, small and medium-sized enterprises (SMEs).

Characteristics of ownership:

This division is usually used to categorize commercial banks as it reflects clearly the guidance and regulations of SBV. There are four ownership types

- State-owned commercial banks (SOCBs) were initially founded from 100% State's capital. However, in the current economic situation, all the state-owned commercial banks have gone public by issuing shares to attract capital and to boost the competitiveness with other commercial banks. The State still owns not less than 50% of the total equity.

- Joint- stock commercial banks (JSCBs) are listed in the stock market, capital is raised by share issuances. Every entity or individual is only allowed to have certain number of shares followed by the laws.

- Joint venture banks (JVBs) are established and by capital contribution from Vietnamese commercial bank and foreign commercial bank which has the representative offices in Vietnam. These banks are compulsory to operate in accordance with laws in Vietnam.

- Wholly foreign-owned banks have 100% oversea chartered capital and office in Vietnam. These banks are compulsory to operate in accordance with laws in Vietnam.

By the end of 2014, SBV announced that there were 5 State-owned banks, 33 joint-stock commercial banks, 5 joint venture banks and 5 foreign banks operating in the banking industry. The banking sector assets by ownership types on total commercial banks' assets are presented in the Figure 2:

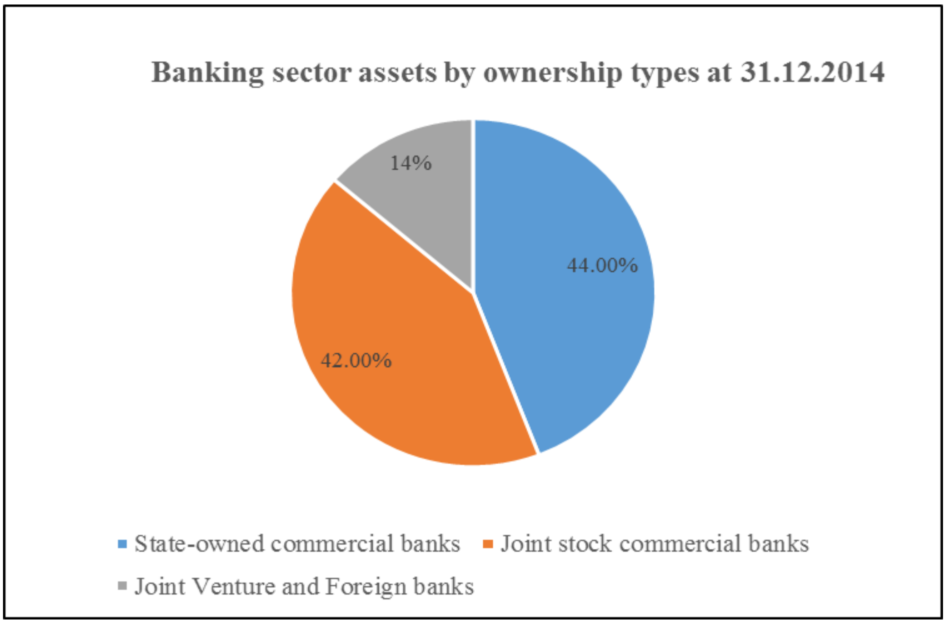

FIGURE 2: Banking sector assets by ownership types at 31.12.2014
(Source: SBV's annual report 2014)

In the group of SOCBs, though there are only five banks, four of them are the biggest players in the banking industry which account for more than one-third of the total assets. The fact of their dominance is because their traditional customers are large-sized firms wholly or partly owned by the State. While JSCBs seek for target customers of SMEs, households domestically, Joint venture and Foreign banks rely mainly on over-sea firms, investors which are looking for business opportunities in Vietnam for trading or currency exchange activities.

2.2 Credit risk at commercial banks

2.2.1 Definition of credit risk

As mentioned in the previous section, accepting deposits from savers and granting loans to needy entities are two crucial functions of commercial banks. Therefore, any risk accompanied with these functions has a great effect on the operation of commercial banks. Credit risk is one of the remarkable risks in the banking industry because "more than 70 percent of a bank's balance sheet generally relates to this aspect of risk management" (Greuning & Bratanovic 2009, 161). Credit risks originates from the loans and advances to customers, investment portfolio of commercial banks, off-balance sheet items such as financial guarantees, letter of credits, acceptances and endorsement, etc… (Ghosh 2012). However, the main focus of the credit risk is for loans and advances to customers as they make up the biggest portion of asset in the balance sheet of commercial bank

There are different definitions of credit risk which is also known as default risks. Sironi and Resti describe it as "the possibility that an unexpected change in a counterparty's creditworthiness may generate a corresponding unexpected change in the market value of the associated credit exposure" (2007, 277). Koch and MacDonald state that "credit risk is associated with the quality of individual assets and the likelihood of default", " the potential variation in net income and market value of equity resulting from the non-payment or delayed payment of the principal and interest income" (2014, 108-109). The World Bank has a simpler definition which is "the chance that a debtor or issuer of a financial instrument- whether an individual, a company or a country- will not repay principle and other investment-related cash" and leads to the "cash flow problems and affect a bank's liquidity"(Sironi & Resti, 2007, 161). Similarly, SBV refers credit risk is the possible losses in banking activities of credit agencies as clients may not make the repayment or fail to perform the committed payment (The Act of 493/2005/QDD-NHNN, 2005).

As a summary, one can conclude that credit risk happens when payments of principal, interest are not made or delayed on a timely basis. As a result, it can cause financial losses of net income and market value or even a bankruptcy. In addition, like any other risk, the risk-return discipline is still applied. The higher the credit risk the bank may perceive, the better the return the bank enjoys.

2.2.2 Relation between credit risk and bad debt

Increasing credit activities is extremely vital to commercial banks as they operate on the basis of profit maximization. Therefore, there are cases that the banks while chasing for high credit growth ignore the quality of the lending which leads to the creation of bad debts.

Bad debt as defined by Financial Times newspapers is the uncollectible debt therefore becomes worthiness to the lenders. Obviously, a high level bad debt or non-performing loan (NPL) influence the overall profit of the bank significantly. Non- performing loan is a sub-group of bad debt which includes debt that is absolutely irrecoverable. The formula of Bad debt ratio and NPL ratio are calculated as followed (Chen 2013, 8):

Bad debt ratio = Bad debts/ Gross customer loans
Non- performing loans (NPL) ratio = Non- performing loans/ Gross customer loans

From the formula above, it can be said that NPL is the leading sign of credit risk. It deteriorates the quality of credit and reflects an inefficient credit policy of commercial banks. When the bank faces a NPL, it is important to write off this uncollectible debt by increasing the “bad debt expense” account in the Profit and Loss statement and decreasing the “debt receivable” account in the Balance Sheet simultaneously (Lodewyckx et al. 2007, 251), hence affecting the financial performance of the bank.

2.2.3 Types of credit risk

There are reasons behind the credit risk of commercial banks associated with credit risk types which are categorized in Figure 3 (Grinsven 2010, 31)

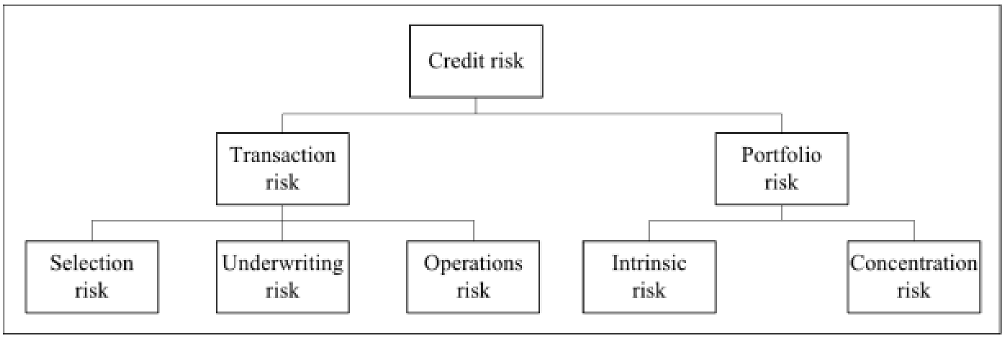

FIGURE 3: Types of credit risk

Transaction risk is considered to be internal risk caused by violating credit policies of the bank. It comprises of the reluctance of bank's staff to investigate client's credit-worthiness (Selection risk), the lack of bank's insurance method to hedge itself against event of default (Underwriting risk) and the insufficient competence of bankers in monitoring, managing lending activities and handling the problem debts (Operation risks). While in Portfolio risk, intrinsic risk is created by the nature of the borrowers or the industries they operating in; commercial banks form their own Concentration risk when investing a vast portion of their debt portfolio into a small group of customers or clients in the same industry or region without diversifying the loans.

Based on the classification of credit risk, commercial banks should understand that there is no way to leave credit risk out of their loan portfolio. Maintaining the minimum level of credit risk is the one and only choice that prevents bankers from financial losses. In the next section, the credit risk management approaches in the banking industry are discussed to achieve that target.

2.3 Credit risk management

2.3.1 Necessities of credit risk management

As previously mentioned in the last chapter, commercial banks' credit risk of loans and advances to clients is heavily emphasized. The customer target for lending activities ranges from individuals, households with small and medium-debt value to corporate entities with a larger scale; the uses of the loan are variety for different industrial sectors, or geographical areas. The length of maturity date is optional and flexible for clients to make the choice; it can be short-term, medium-term or long-term debts. The degree of credit risk hence varies constantly depending on the combination of (i) constitution of counterparty, (ii) the purposes of loans and advances, and (iii) the maturity period (Ghosh 2012). As a result, the commercial bank has no choice but investing its resources to control its exposure to credit risk.

The objective of credit risk management practices is to "maximise a bank's risk adjusted rate return by maintaining credit exposure within acceptable parameters" (Basel Committee 2000, 3). In another words, a balance between an appropriate level of credit risk and a sound financial situation should be desired by any commercial bank. Controlling an acceptable credit risk rate is when commercial banks are able to enhance solutions for risk prediction, prevention and reduction as well as to decrease overdue and bad debts; as a result, revenue from credit growth is boosted and provision expense of credit risk is minimized at the same time.

2.3.2 Credit culture in the banking sector

Credit culture in bank is understood as "a system of shared values, beliefs and formal as well as informal credit-related behavior" (Basu & Rolfes 1995, 220). It tightens the credit risk objectives set by the banks with the credit policies in line with the business strategy to obtain them. It is the bridge to communicate the understanding and purposes of lending policies made by the top managers to all staffs who are actual people implementing loan-granting process to customers. Credit policy designed by the banks nowadays is the formal written statements providing the regulatory framework for the credit-approval process, the loan rating system, the act to monitor and manage the loans, assess the potentially doubtful debts, etc… (Basel Committee 2000, 6). According to

John (1996, 55-61), every single bank has one or many credit cultures or even subcultures, and the culture can be unified among the whole bank's system or diversified depending on the departments.

When acknowledging the role of credit culture, the question hereafter is how to create a successful credit culture for the banks. The process as described by McKinley and Barrickman (1994, 20-21) is presented in Figure 4:

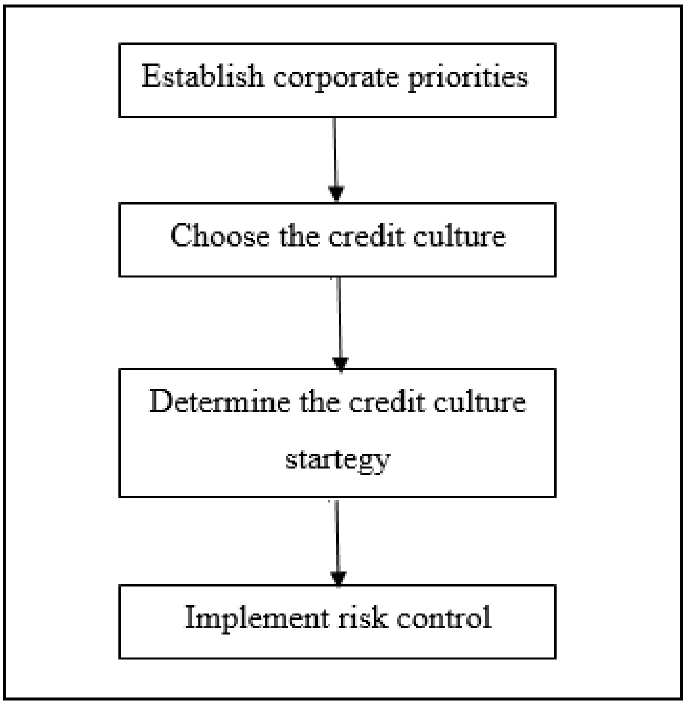

FIGURE 4: Creation of a good credit culture

As banks exist in different sizes and forms of ownership, for different business objectives, and serves different customer groups, each bank has its own strategy to prioritize its daily operation. Therefore, the first phase of the process is to identify corporate priorities so that a functioning credit risk management help to provide profitability, asset quality, growth and market share. Each corporate priority has a corresponding credit culture for the banks to strategize its success factors. McKinley in an article of "How to analyze your bank's credit culture" (1990) provided four dimensions of credit culture in line with the determined priorities as demonstrated in Figure 5:

Relationship between Corporate Priorities and Credit Culture

Corporate Priority	Credit Culture
1. Asset quality; long-term consistent performance.	1. Values driven.
2. Immediate earnings, stock price.	2. Immediate-performance driven.
3. Market share, market domination, loan growth, volume.	3. Production driven.
4. No clear priorities.	4. Unfocused.

FIGURE 5: Relationship between Corporate Priorities and Credit Culture

The value driven culture is firmly consistent with the credit policies, credit risk management approaches and being able to communicate these shared values and beliefs throughout all levels of bank organization. In contrast, unfocused credit culture has unclear or undefined corporate priorities due to constant changes of managers to react the daily changes of the external environment. As a result, in order to process a high credit quality, the bank needs an excellent risk policy together with leadership skills from top management to actively control the risk. The immediate- performance driven is quite similar to the value driven in the period of credit boom, however during the shadow period of the economics, banks may find opportunities to improve its stock price by picking up riskier loans to their loan portfolio. As the name suggests, bank following production driven culture aims to expand its presence in the lending market as much as possible through aggressive lending activities to boost the credit growth. This pressure is questioned whether the banker in pursuit of loan volume has the capabilities to comply with the loan-granting process strictly. The last essential phase of the process is to carry out the credit risk-controlling approach. It is the implementation of credit risk prediction, prevention and reduction.

In summary, bank's credit-related behaviors are directly affected by the credit culture strategy validated by the bank's managers. The strategy is reflected in the credit policy after a thorough credit analysis of not only quantitative but also qualitative methods.

2.3.3 Credit analysis

While credit policy provides a fundamental threshold of loan purposes, structure of the loans, types of customers and debtor's document of loan proposals for bankers; credit analysis is a tool to assess lender's creditworthiness. According to Dima (2010, 85), the main goal of credit analysis is "to identify risks in lending situations, draw conclusion regarding the likelihood of payment and make recommendations as to the proper type and structure of the loan in the light of the perceived financing needs and risks". It works out all the requested information related to the borrowers aligned with credit policy. It involves monitoring, managing, reviewing the loans from the initial loan- granting step to the last phase of collecting the debts from borrowers. The credit analysis process can be summarized in Figure 6:

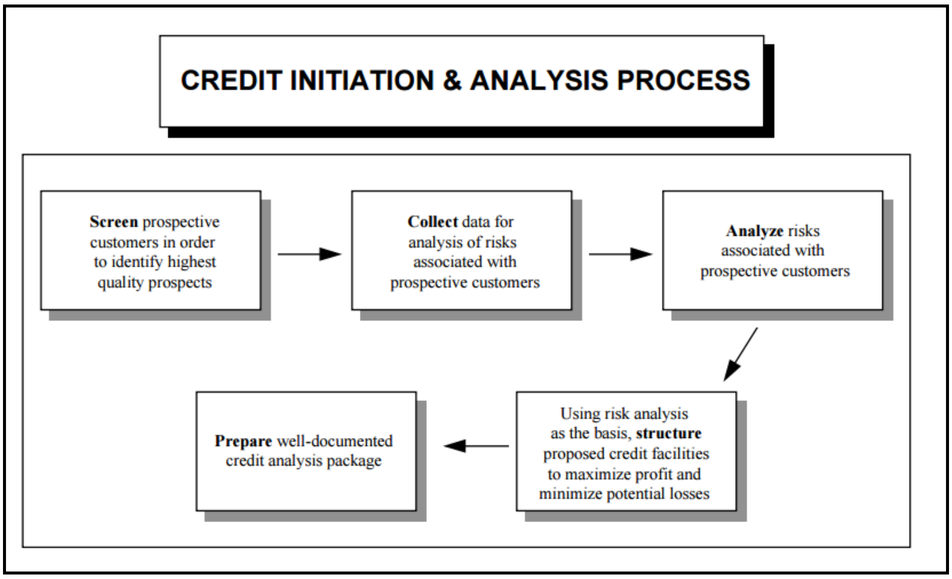

FIGURE 6: Credit analysis process (The credit process 2006, 4)

Each commercial bank has its own credit rating system to evaluate the credit situation of its existing and potential borrowers. Credit risk assessment includes two different quantitative and qualitative techniques to measure credit risk of a customer. It is generally believed that a credit decision made by commercial banks is the synthesis of financial (quantitative) factors and non-financial judgements (qualitative) of bank analysts (Golin & Delhaise 2013), taking into account the fact that a quantitative credit method usually contains a significant qualitative elements. Moreover, besides internal rating system developed by the banks, many banks nowadays take advantage of external rating system provided by rating agencies such as Standard & Poor's (S&P), Moody 's Investor Service, Fitch, etc… By using these additional rating services, commercial banks seek to enhance its decisions in lending activities. It can be seen from Figure 6 how the commercial bank combines its own internal credit evaluation of traditionally quantitative and qualitative method with external rating services to rate their customer's creditworthiness in group (Ken & Peter 2014, 29).

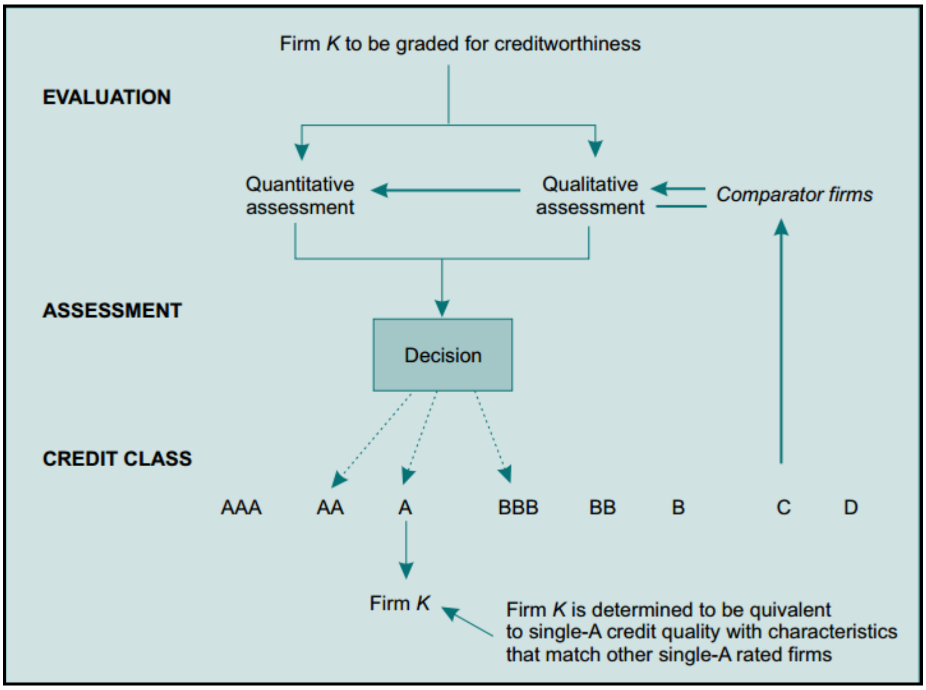

FIGURE 6: Credit assessment process

Quantitative methods in credit assessment rely on numerical date of customers based on the financial statements in case of enterprises or the private information of income, educational level or collateral property and so on for individuals. Then the bank will score the creditworthiness of their customers usually in the scale of 5: 1 for the "performing credits" and 5 for the "credit with losses" (Dima 2010, 100). In contrast, credit quality in qualitative methods is determined by the judgments of bank analyst. The judgmental conclusion is drawn based on years of experience in the banking sector. Qualitative rating method requires "comprehensive knowledge of the borrower to be successful" (Guidelines on credit risk… 2004, 23). The banks can also rank the credit score of the customers based on qualitative methods based on the qualitative criteria such as its market position, management quality, technology development and other qualitative aspects of the business (Ken & Peter 2014, 13). Different models of qualitative and quantitative approach in credit decision-making shall be introduced in the next sections.

2.3.3.1 Qualitative model

As mentioned previously, credit qualitative model helps to gain a deep understanding of customer in many aspects and to deliver a more precise judgmental decision from analyst. An outstanding model used is 6 Cs of credit which indicates that a borrower is considered worthy of credit if 6 assessment elements are fulfilled. These are: **C**haracter, **C**apacity, **C**apital, **C**ollateral, **C**onditions and **C**ompliance (Bank Lending 2012, 118). The 6 Cs of credit model was evolved from 3, 4 and 5 Cs of credit and has been developed further together with changes in business environment.

- Character is what make one borrower different from other borrowers. It is also called reputation for corporate clients. It refers to the characteristics of borrowers by examining their credit history- whether they fulfilled all the loan obligations in the past. Hence, the banks can conclude the responsibility, the willingness of borrowers to pay the loans back.
- Capacity looks at the situation of the cash flows. The banks want to certify that with the current income, borrowers are capable of making regular interest payments and repay the principle.
- Capital is what has been left after deducting all liabilities from borrower's assets. The capital is taken into consideration as in the event of default, the banks can compensate the losses by liquidating the equity capital.
- Collateral refers to the asset mortgaged from borrower to receive the loan and the security for the bank in case of default. If borrower is unable to fulfill the loan obligation, the bank is allowed to obtain the collateral.
- Conditions are external elements that may affect the borrower's capability to repay the loan. These conditions such as economic downturn, natural disaster, changes in laws, regulations and so on are out of borrower's reach.
- Compliance means that the whole lending process should be in compliance with regulatory and legal requirement in national or international level.

In addition to 6 Cs of credit approach, the banks may integrate behavioral ranking to credit rating system. Behavioral ranking "includes observable behavioral characteristics of firms' managers on the principle that it is the actions of managers that determine the success or failure of the firm" (Ken & Peter, 2014, 14). The banks usually combine it with a model of quantitative credit assessment to have a better picture of the borrower's situation based on both financial performance and operational efficiency.

2.3.3.2 Quantitative model

a. <u>Altman Z- Score model</u>

It is a multivariate statistical model developed by Edward I. Altman in 1986. Bemman (2005, 86) indicates that Z-Score model is the most popular and practical model for forecasting financial default of corporate entities. Z- Score model bases on accounting information found on company's financial reports to derive key predicting ratios to "produce a measure (a credit score) that best discriminates between firms that fail and those that do not" (Caouette, Altman, Narayanan & Nimmo 2011, 142). The formula of Z- Score model (Caouette et al 2011, 144) is:

$$\mathbf{Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5}$$

The variables in the model can be understood in Table 1:

Variable	Ratio	Explanation
X_1	Working Capital/ Total Assets	Measure of a firm's net liquid asset relative to its total capitalization
X_2	Retained Earnings/ Totall Assets	Measure of a firm's reinvested earnings and/ or losses over its entire life relative to its total capitalization
X_3	Earnings before Interest and Taxes/ Total Asset	Measure of the productivity of the firm's asset, independent of any tax or leverage factors
X_4	Market value of Equity/ Book value of Total Liabilities	how much a firm's assets can decline in value before its liabilities exceed its assets and it becomes defaulted
X_5	Sales/ Total Assets	Measure of the sales generating ability of the firm's assets

TABLE 1: Key financial ratios in Z-Score model

Based on statistical data observed from different types and sizes of corporation, Altman draw the ranges of Z score to classify the firms with high/low chance of insolvency. The lower the score, the more likely the firm goes bankrupt. According to Altman (2002, 18), if Z score value is lower than 1.81, the firm is in great financial crisis and about to becoming insolvent. On the contrary, if the score is higher than 2.67, the firm is in good financial position, at least in one year ahead.

b. Market- based model

This is a newly developed credit measuring model that gains a substantial popularity in recent years (Ponce & Medina 2012, 13). This approach is based on the trading prices of firm's equity in the stock markets; therefore, it is only useful to examine creditworthiness of the firms that go public. The company's historical financial situation was reflected in the movement of the stock prices and the stock value is believed to reveal information of the likelihood of a credit event occurring and conditional default probabilities over time (Brown & Moles 2014, 20).

Credit Risk Portfolio model is built on the basis of Market-based model. This model separates items in the portfolio and calculate value at risk (VaR) individually (Thomas 2009, 278). According to Wernz (2013, 101), the Asset-Return of the client depends on two factors: the systematic risk which influences all the businesses and the firm's specific risk; then depending the weight of each client's value relative to the total loan portfolio value, the total credit risk portfolio is computed.

c. Consumer Credit Scoring model

While the two above models focused mainly on the corporate clients, Consumer Credit Scoring model, as the name suggests emphasizes on individual credit assessment. The information obtained and the loan decision made are usually generated from loan application process (Thomas 2009, 6). The assessment scores consumer's credit by investigating past payment history, number of overdue bills, historical credit length, collateral assets and so on (Brown & Moles 2014, 17).

2.4 Credit risk and Credit risk management in Vietnam banking industry

2.4.1 Credit growth and Bad debt

The average credit growth of commercial banks in Vietnam fluctuated considerably in the last five years from 2010 to 2014; as a consequence, the bad debt ratio also moved accordingly. Pursuant to the Decision No.02/2013/QD-NHNN (2013) of SBV, loans and advances to customers at banks in Vietnam are categorized into five groups and bad debts are recognized as group 3, 4 and 5 in compliance with Decision No.493/2005/QD-NHNN (2005)

- Group 1: Current debt which is not due yet or overdue not more than 10 days
- Group 2: Noticed debt which is overdue from 10 to 90 days, adjusted the due date for the first time
- Group 3: Sub-standard debt which is overdue from 91 to 180 days, exempted from interest payment
- Group 4: Doubtful debt which is overdue from 181 to 360 days, highly risky losses
- Group 5: Non-performing loan which is overdue more than 360 days and irre-coverable

The credit growth together with bad debt movement of banks in Vietnam in the period of 2010 – 2014 can be seen in Figure 7:

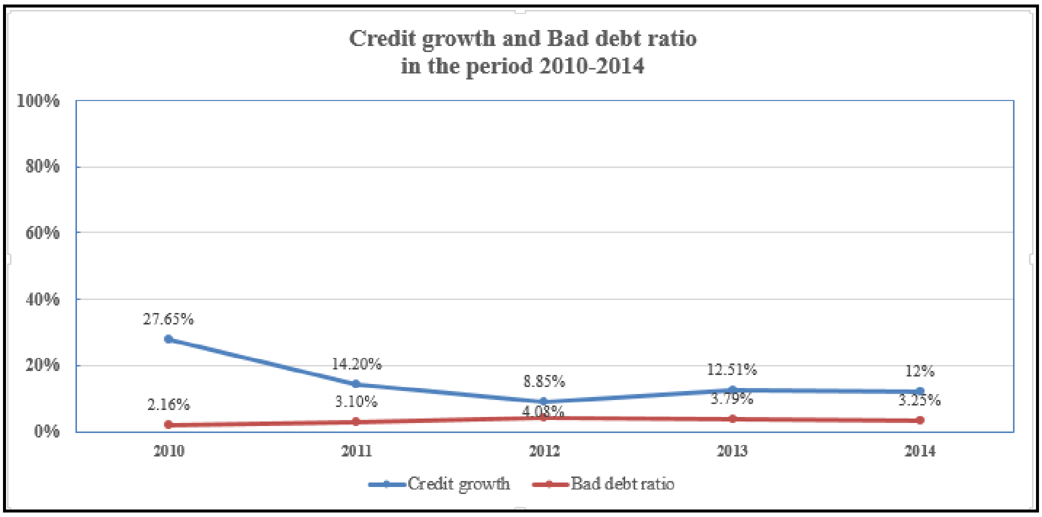

FIGURE 7: Credit growth and Bad debt ratio from 2010 to 2014

(Source: SBV's annual report from 2010 to 2014)

Year 2010 as a descendant year of the global economic crisis saw a high rate of credit growth; however, it was still much lower than that of 2009 (37.73%). The main customer group of banks at that time was SMEs as the recovery method of SBV to drive the economy forward. Low loan interest rate of 1.47% per annual, together with loosening credit policy from SBV, was key element to increase the level of credit activities. In 2011 and 2012, credit growth dropped quickly to only 8.85% by 2012, bad debt ratio otherwise rose drastically. In the annual report 2012 of SBV, these warning signs were not very surprising because it was the overall trend of the world; the deflation which tightened the consumption budget, contracted the production and manufacturing activities and led to the squeeze of the capital, cash flows, happened as the after consequence of a rocketing inflation period. That explained the high rate of bad debt at once. In the latter years, the credit growth went back to its expected range and is forecasted to be around 13% to 15% by the end of 2015. Bad debt rate was gradually decreased but SBV is still taking actions to reduce and maintain the threshold of 3% for the upcoming years.

2.4.2 Big names in the credit market

Though there are total 48 banks competing in the banking industry, the market of credit in Vietnam is dominated by only four key players, namely: The Vietnam Bank for Agriculture and Rural Developement (Agribank), Joint Stock Commercial Bank for Foreign Trade of Vietnam (Vietcombank), Vietnam Joint Stock Commercial Bank for Industry and Trade (Vietinbank) and Bank for Investment and Development of Vietnam (BIDV). Agribank is the biggest competitor as it was one member limited liability enterprise of the State while other three commercial banks are partly owned by the State. These commercial banks are leading the credit market due to their portfolio and the national presence. The total assets and credit portfolio of these four banks at 31/12/2014 are presented in Figure 8:

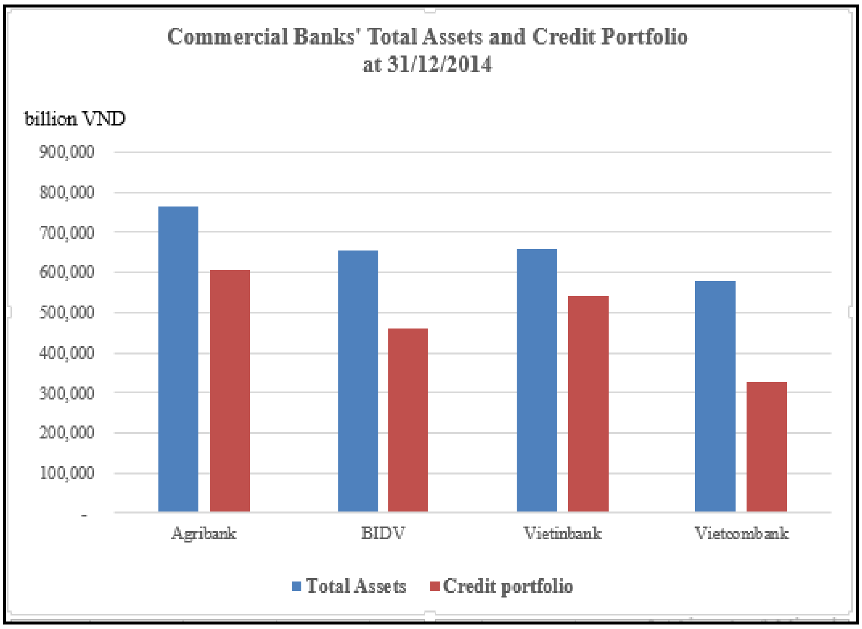

FIGURE 8: Four commercial bank's total assets and Credit portfolio at 31/12/2014
(Source: Annual reports 2014 of Agribank, BIDV, Vietinbank, Vietcombank)

All of the mentioned commercial banks had a good year of 2014 relative to previous years, the credit growth increased higher than the average which was 12% according to SBV's annual report 2014. In parallel with strong credit growth in these four banks, the situation of bad debts is well noticed. Figure 9 shows the ratio of bad debt calculated at 31/12/2014 and by the end of the first quarter of 2015:

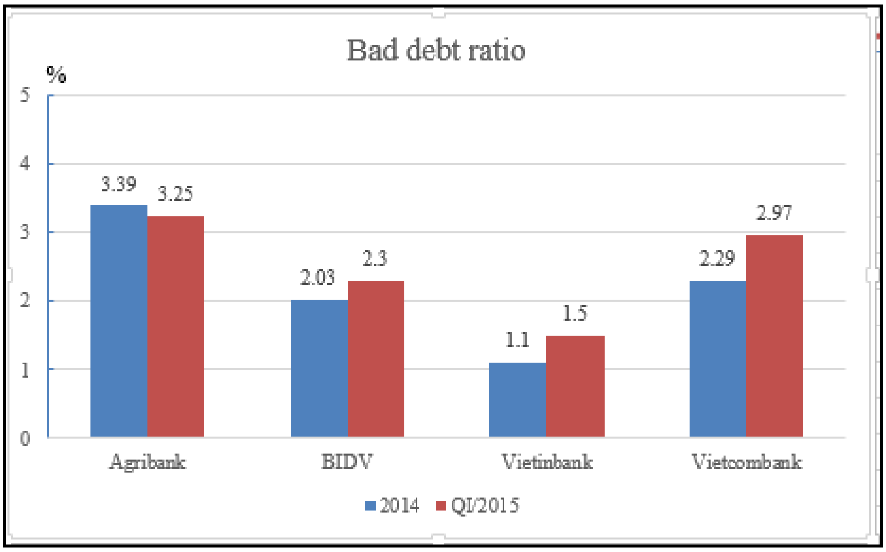

FIGURE 9: Bad debt ratios of banks at 31/12/2014 and the end of Q1/2015
(Source: Annual reports and Quarter reports of Agribank, BIDV, Vietinbank, Vietcombank)

Agribank traditionally has a classified customer group of government-owned corporations which invest in large- scaled projects and in the field of agriculture or infrastructure. This indeed helps the bank to expand the significance in the loan portfolio. However, in recent year, due to a political scandal of a 100% State-owned enterprise which led to the bankruptcy, Agribank faces an abnormal bad debt ratio. On the other hand, three remaining commercial banks are quite equally competitive with respect to the size, the target group and the role in the credit market. It can be well observed from above figures that Vietcombank's assets and credit portfolio were not as strong as other banks and it had the greatest rate of bad debt lately (exempting case of Agribank). Nevertheless, the credit growth accelerated at a higher speed (17.72%) and there are reasons to explain bad debt situation related to bad debt provision and credit risk management policy which influence the scale of Vietcombank's assets and profitability that will be discussed further in the upcoming chapter.

2.4.3 Credit risk management for commercial banks

In a survey made for Vietnam banking industry in 2013, KPMG did indicate rising factors contributed to the credit risk in commercial banks.

External factors	**Internal factors**
- Macroeconomic influences - Legal environment - Operating environment	- Inefficient credit risk management model - Undiversified loan portfolio - Lack of credit control - Deceit from staff

TABLE 2: Factors for credit risk at commercial banks in Vietnam

As can be seen from Table 2 that excepting the factors from external environment that banks are out of reach, respondents from the survey pointed out the main cause of credit risk which was ”Inefficient credit risk management model”. This was perceived as the outcome of the inappropriate usage between quantitative and qualitative tools, or the lack of the model designed specifically for consumer group and corporate group. Credit risk management model is a well-functioning mean for commercial banks to establish the safety zone and the benchmarks for credit granting process, to provide tools for measurement, and risk identification, to predict, prevent and reduce the impact of credit risk (Ha 2007, 10).

As stated by Vietnam Banks Association (2011), there are only two organizational systems that are applied in managing credit risk at commercial banks in Vietnam called: centralized and decentralized credit risk management system. Centralized system differentiates clearly three functions of (i) risk management, (ii) sales and (iii) operation when granting the loan to the customer. This is to ensure that the credit policy is in line with business strategy while minimizing the risk and maximizing the knowledge competence of staff. On the other hand, there is not a clear separation of three functions in decentralized system which requires the staff in charge to perform and be responsible for the whole loan granting process. While this system seems to be more suitable for small operating- scaled banks to save time and resources, it lacks the necessary control of the risk from the top management.

Based on the market conditions and credit characteristics in Vietnam, SBV encourages the commercial bank to implement the centralized credit risk management system as it proves the transparency as followed:

- At the head office: a transparent division of credit decision and credit management.
- At the branches: a separated line among sales (maintaining existing customers, searching for potential borrowers), credit analysis (analyzing, assessing, valuing customer) and operation (handling loan application, monitoring the loans, collecting the principle and interest).

3. CASE OF JOINT STOCK COMMERCIAL BANK FOR FOREIGN TRADE OF VIETNAM (VIETCOMBANK)

3.1 Introduction of Vietcombank

3.1.1 General information

Vietcombank was founded in 1963 and formally attached to the Bank State of Vietnam as the Foreign Exchange Bureau. It was the first State-owned bank chosen to go public in the Vietnamese stock market in 2008. Vietcombank is named as one of the four strongest commercial banks in the banking industry together with Agribank, BIDV, and Vietinbank. In many years, Vietcombank has been in the major rating lists of "Top 400 banks of the world" (Year 2013-2014) by The Banker magazine, "Top 500 most valuable banking brands of the world" by Brand Finance– a reputed asset valuation consultancy, "Top 100 most interesting companies in Asian region" by Nikkei Asian Review magazine, or "Best Bank in Vietnam 2015" by Euromoney magazine. These awards have acknowledged the position of Vietcombank in numerous operating functions and solidified the goal of sustainable development to be the leader of the market by 2020.

From the date of establishment, Vietcombank has contributed enormously to the overall economic development nationally and regionally as the crucial bank of foreign trade. Nonetheless, Vietcombank has not stayed in its comfort zone; the bank nowadays is becoming more and more diversified in its products to provide a wide range of customer groups with selective services varying from traditional activities such as deposits and loans, international trading support, project granting service, etc… to modern banking activities such as foreign currency exchange, derivative instrument, bank card services, Internet banking and so on. Moreover, by possessing and investing constantly into a highly advanced information technology, the bank has customized its products to be faster, safer and more effective to retain the existing clients and attract more potential customers. As estimated statistically by Vietcombank, it has approximately 14000 employees, 400 different offices nationally, 2 subsidiary companies and 1 representative office abroad, around 2100 ATM machines all over Vietnam. In addition, the bank is also supported by a network of other 1800 bank offices operating in 176 countries so that it gets more convenient for its customers wherever they are.

3.1.2 Business strategy

Vietnamese economy has opened the door to the international business since 1995 which created enormous opportunities for the banking industry to enlarge the scope of commercial banks' operation. However, in parallel with that, it generated challenging obstacles that force the banks to continuously revolutionize themselves and adapt to the fierce market environment. Vietcombank is not exceptional. Over more than 50 years of operating, Vietcombank has strived constantly for the sustainable growth and the overall development of the Vietnamese economy.

The business objective of Vietcombank aimed to achieve in the next few years is "to fully transform into a multi-functional bank on the base of international banking practices, maintain the key player in Vietnamese market, and become one of top 70 financial institutions in Asia by 2020" (Vietcombank annual report of 2014). To make the objective come to fruition, the business strategy should always be followed as the guideline in every move made by the Board of Director to "Bring the success to customers, Ensure the future for customers, Convenience in every transaction and commercial activity in the market".

3.1.3 Key financial performances

The business results of Vietcombank in the period 2012-2014 can be summarized in Table 3.

(billion VND)	**2012**	**2013**	**2014**
Deposits received from customers	285,196	331,546	419,974
Loans granted to customers	241,163	275,285	323,966
Net profit	4,404	4,358	4,592
Gross loans/ Total assets	58.19%	58.49%	56.03%
Return on Equity (ROE)	12.61%	10.33%	10.76%

TABLE 3: Key financial figures of Vietcombank from 2012-2014

(Source: Annual reports of year 2012, 2013, 2014)

In the last three years, the growth of Vietcombank was quite sustainable. The two main activities of commercial banks, receiving deposits and making loans, increased gradually year by year with a healthy ratio of ROE. The gross loans account for more than half of the total assets which emphasizes the importance of credit activities towards the survival of the bank. However, the concern is for the net profit after tax. Compared to competitive banks with similar sizes- BIDV and Vietinbank, Vietcombank had the lowest profit as well as the slowest growth in the net income despite the highest credit expansion. This was cited in the annual reports as the results of the increasing bad debt rate, the huge expense to write off NPLs, and the provision made to prevent defaults from doubtful accounts.

3.2 Credit activities in the market

In the last three years, the credit growth of Vietcombank was all higher than the average numbers of the whole banking system; the targeted credit growth rates set by the Board of Directors in the beginning of the year were all successfully achieved. The movement of credit activities was completely on the track in accordance with the strategic development plans to become the best retail bank and the second wholesale bank in Vietnam. More specifically, the income from credit activities at Vietcombank is generated from two sources: retail (individuals) and wholesale (corporations) customers. The bank aims to maintain the credit structure in which wholesale entities make up a considerable portion of the loan portfolio (around 85% every year) and the credit growth for the individuals must be at least 30% annually. Hence, the credit growth from now on is mainly driven from the boosting of retail customers. The overall situation of the credit expansion from 2012 to 2014 and expected figures for 2015 at Vietcombank are drawn in Table 4.

	2012	2013	2014	2015 expected
Average credit growth for the industry	8.85%	12.51%	12%	13-15%
Credit growth at Vietcombank	15.2%	13.7%	17.87%	13%
Credit growth for loans to individuals	11.9%	13.6%	33.88%	30%
Credit growth for loans to companies	15.78%	13.58%	15.04%	10%

TABLE 4: Situation of credit growth for years from 2012-2015 expected
(Source: Annual reports of Vietcombank of year 2012, 2013, 2014)

Good sign of credit activities can be understood as the general recovery of the economy after shadow of economic recession. Nevertheless, strong credit growth of Vietcombank indeed came from the timely credit programs launched by the top management to adapt to challenging macroeconomic environment. These credit programs include keeping low interest rate (7-9% annually) to attract investment from corporation and to boost the consumption, to customize credit products for sectors of agriculture and rural infrastructure construction which are prioritized by the government for national development. Additionally, the increasing pace of credit for individuals is the result of the fitting approach of customer niche. As the market conditions get better, individual and households start to spend and there is a growing need for housing purchase and housing construction after a long stage of silence. Vietcombank quickly approached this potential group with preferential interest rate and suitable timeline for loan payback which led to the booming of the market for individuals. In the first 6-month period of 2015, Vietcombank maintained the leading role in the credit market with the growth of 6.52% and once again higher than the average 6.3% of the banking sector.

3.3 Credit risk

The most transparent reflection of credit risk of the commercial bank is the level of bad debt. As compared previously, Vietcombank has a higher bad debt rate in the recent years (2.29% in 2014) compared to that of its competitors- Vietinbank, BIDV with the rate of 1.1% and 2.03% respectively. The great levels of bad debt and more importantly

NPL are a warning sign of the practice of credit risk management at bank. This section looks at the situation of bad debt, how Vietcombank handles the bad debt and mitigate possible reasons for credit risk.

3.3.1 Bad debt situation

Vietcombank classifies the loan into groups in compliance with Decision No.493/2005/QD-NHNN of SBV (2005). The loan recognized as bad debt falls into one of the group 3 (Sub-standard debt), 4 (Doubtful debt) or 5 (Non-performing loan). NPL of group 5 is most worth mentioning as they are uncollectible debts and there is hardly a chance to recall even a small amount. A comparison of the bad debt and NPL ratio of Vietcombank in the last three years and at 30/06/2015 can be seen in Figure 9.

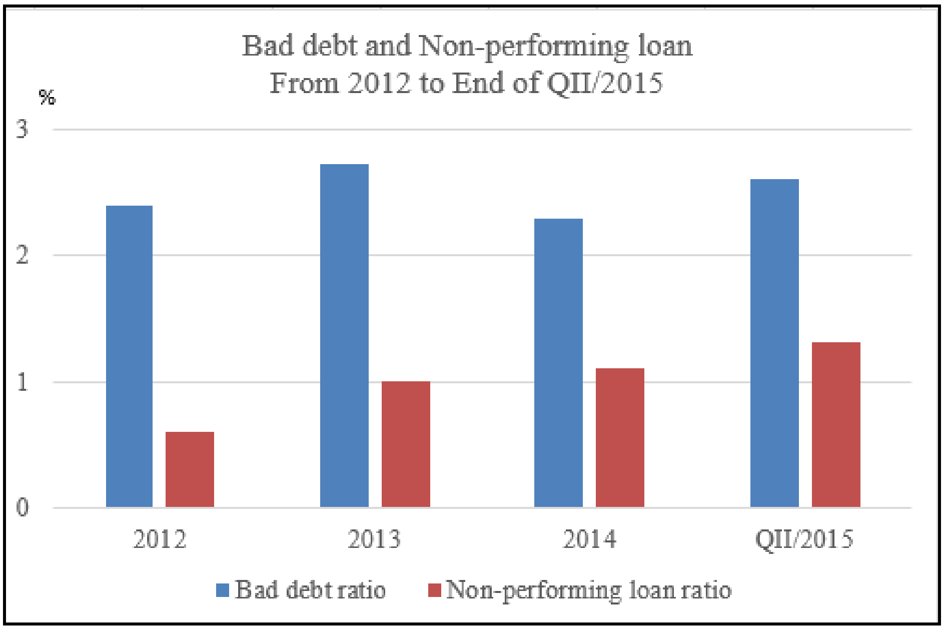

FIGURE 9: Situation of Bad debt and NPL from 2012 to 30/06/2015

(Source: Annual report of Vietcombank of year 2012, 2013, 2014, and Quarter report of 2015)

The bad debt ratio was controlled constantly under 3%. This was indeed a good news as it acknowledged Vietcombank capability to handle problem loans in group 3 and 4. In 2015, the bank sets the target to push down the ratio more aggressively of below 2.5%. The situation of NPL is worth the attention. NPL ratios increased gradually since 2012. The amount of bad debt at the end 2014 and the first 6-month of 2015 included more than half of uncollectible loan. This is a burdensome pressure for Vietcombank to make provisions and allowances for credit risk to write off the bad debt and prevent the defaulted loans.

3.3.2 Provision for bad debt

SBV requires all the commercial banks to set the specific provisions for loans. In the Decision No.02/2013/TT-NHNN (2013), SBV defined that "specific allowance for credit risk is calculated based on loan grading and corresponding allowance rate against principal outstanding as at 30 November less allowed value of collateral". The allowance rates for group 1 to 5 are 0%, 5%, 20%, 50% and 100% respectively.

Vietcombank has lower net income and smaller size of assets when comparing to BIDV and Vietinbank. The root of the issue basically comes from the bad debt. The high bad debt rate forces the bank to hedge the borrowers' risk of default through provisions and allowances for credit loss. By calculating the amount of potential bad debt, Vietcombank decides the allowances for loans and advances to customers, hence reduces the asset item of "loans and advances to customer" payable to the bank in the balance sheet. Simultaneously, in the income statement, there is an expense of "provision and allowances for credit loss". This is the amount of NPLs needed to be written off and the cost to the bank for not collecting the loans. Figure 10 presents the practice of provision for doubtful debts at Vietcombank from 2012 till the end of the second quarter of 2015.

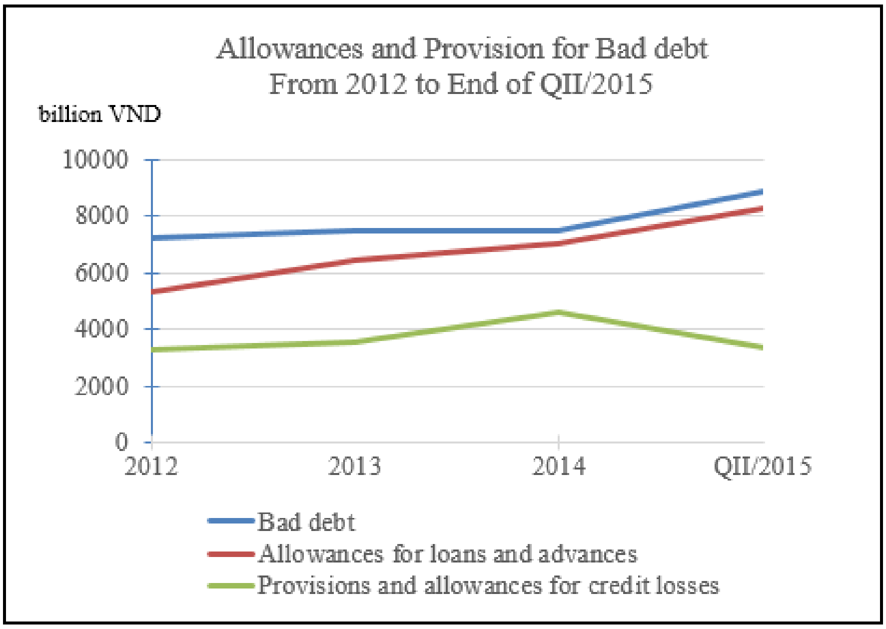

FIGURE 10: Allowances and Provisions for bad debt from 2012 to the end of QII/2015

(Source: Annual report of Vietcombank of year 2012, 2013, 2014, and Quarter report of 2015)

The amount of NPLs written off accounted for more than 50% of the total bad debt every year. The movement of bad debt level and the provisions for credit loss is covariant. The ratio between loan allowances and problem loans in 2014 was almost absolute (98%). The slight difference between these amounts implies Vietcombank's full ability to cope with defaulted events of debtors. Vietcombank is the only commercial bank which is fully prepared with credit risk (Vietcombank đầu bảng về khả năng tự xử nợ xấu 2015)

3.3.3 Bad debt handling

There is no doubt that the bad debt handling activities are crucial to the operation of commercial bank. The handling activities is believed to recover considerable amount of loans classified as bad debts of group 3, 4 and 5. Mr. Thanh, the managing director of Vietcombank, in the annual meeting for year 2014 did point out the vitality of bad debt handling. According to Mr. Thanh, it helps to unknot resting billions of VND for reinvestment of capital, to strengthen a healthy credit environment, and to enhance the financial capability of commercial banks in the international market. In 2014, by implementing more detailed plans for bad debt handling, the bad debt recovery rate speed up while bad debt ratio decreased and recovered bad debts contributed one-third of the net income.

Vietcombank processes the bad debt from two sources: Vietcombank's own credit policies and the support from SBV. The bank launched different policies implemented by Bank's debt handling department at head offices and branches to recover the bad debt as much as it could before relying on the last resort from the government.

3.3.3.1 Credit policies

The bank continuously monitors all the suspect loans and implement the bad debt processing by liquidating the collateral asset, outstanding shares or continue to pursue the lawsuit to get a piece of assets liquidated of the defaulted firms. This is the general direction for most of the commercial banks including Vietcombank as it results in the high recovery rate. However, this policy has its weakness of wasting time and resources to collect the bad debt and requiring a separate department to examine only bad debts.

Another effective credit policy in favor for the borrower is loan discount. It reduces the value of the loan payable to the bank as negotiated by the borrower and lender. The agreed amount of the loan is usually beneficial for the debtor. In this case, Vietcombank is willing to take the loss as it can collect part of the capital and get disposal of the long lasting debts.

The credit policies of Vietcombank did prove its effectiveness and harvest great success in recent years. Especially, year 2014 is the benchmark of Vietcombank for collecting bad debt. It was able to collect 1.9 trillion VND which was approximately 40% of total amount of bad debt and increased more than 50% compared to the previous year.

3.3.2.2 Solution from SBV

While the credit polices implemented by the bank work effectively for the loans of group 3 and 4, Vietcombank counts on solution from SBV to handle the NPLs of group 5. One option that Vietcombank can make use of is to sell the loans to the third entity called Vietnam Asset Management Company (VAMC). VAMC established in June 2013 by Decision No. 1459/QĐ-NHNN of SBV. It is a non-profit State owned enterprise which focuses on buying problem loans from commercial banks in exchange for long term VAMC bonds of zero coupon rate. These bonds are "are initially recognized at face value at the date of transaction and subsequently carried at face value during the holding period. Face value of the bonds equals to the outstanding balance of the sold debt less their unused specific allowance" (Decision No. 1459/QĐ-NHNN, 2013). The trading of bad debt between Vietcombank and VAMC is strictly followed by Circular No. 19/2013/TT-NHNN (2013) for "Guidance on accounting for bad debts purchase and sale between VAMC and credit institutions". According to this circular, in order to sell problem loans to VAMC and receive special bonds, the loan held by Vietcombank should have the collateral assets and legal documents of the existing debtor, and the value of the loan should not be less than 3 billion VND for corporate borrower or less than 1 billion VND for individual borrower. As generally understood, the more NPLs the bank sells in return for bonds of VAMC, the fewer the bad debts existing and then the "clearer" its balance sheet.

Based on the operating situation and financial position of all commercial banks, SBV fixes the amount of bad debts needed to be sold to VAMC for each bank in 2015 to achieve the target of average 3% for the whole banking sector. As regulated by the governor of the State bank, at the end of the third quarter of 2015, 100% of total designated bad debt has to be completely transferred to VAMC.

The process of NPL trading can be explained as followed:

- At the date of purchasing: Vietcombank sells NPLs which fulfill all the compulsory criteria to VAMC and receive special bonds with non-coupon payments and due in five years. The face value of the bond equals the value of the debts sold and the face value is discounted for unused specific allowance. These bonds are not common bonds and not traded in the market for other purposes than selling bad debts.

- During the maturity period of 5 years: These bonds basically are tickets of Vietcombank to receive the low-interest loans (0%) from SBV to fund the operation. Vietcombank is obliged to make allowances for 20% value of the special bonds sold to VAMC annually instead of 100% of allowance rate. As a result, when Vietcombank gets the bad debt back at the due date, it is able to write off NPLs at once. VAMC, in contrast, would restructure the debt by auctioning the loan with its collateral assets or selling collateral assets to compensate the cost of bad debt purchase.

- At the maturity date: Vietcombank gets the loans back from VAMC and return the face value of the bonds to VAMC

The fact that Vietcombank makes a huge amount of provisions and allowances for doubtful debts led to the humble sale of NPLs to VAMC in 2014 compared to its competitors. While BIDV and Vietinbank traded 6,600 and 4,500 billion VND of bad debts in exchange for special bonds, Vietcombank only sold 1,925 billion VND. This partly explained the reason for the higher bad debt rate and lower net income of Vietcombank in 2014. Vietcombank is forecasted to trade 1,000 billion VND of bad debt in 2015 and still a smaller number in comparison with the whole sector.

3.3.4 Possible reasons for credit risk

From what has been reviewed so far, an obvious summary is that Vietcombank is always in the list of the fast credit growth commercial banks. In parallel, the bad debt ratio, though under controlled of 3%, was the highest among banks with similar sizes; the target of 2.5% by the end of 2015 is challenging as the rate was 2.97% at 30.06.2015. It is now to question the inter-relation of the high credit growth and the bad debt rate at Vietcombank. There are issues internally as well as externally affecting the practice of credit risk management at the bank. Those signs of warning are ultimately reflected in that questioning relationship.
The credit risk of Vietcombank may be triggered from external factors and the internal factors coming from the operation of the bank itself. Among them, Managing Director of Vietcombank- Mr. Nghiem (2015), emphasized that the initiation of the risk made by the bank is the worst as it implies the big hole of the credit culture regulated by the bank.

External factors includes the macro-economic elements which drive the overall movement of credit growth and the ability to pay back the loans of the borrowers. For example, from 2008 to 2010, SBV issued different monetary policies to direct the economy out of the global economic downturn. As a result, GDP grew quickly from 6% to around 7.5%; simultaneously the credit expansion of banking sector climbed considerably from 22% to almost 40% (KPMG Banking Survey, 2013). However, three years after, the credit growth plummeted to only around 12% and the bad debt rate was abnormally high (Referring to Figure 7). Governor of the State Bank explained that it was the period of deflation after the inflation which limited the consumption and investment and delaying the production, manufacture of corporations. These firms might have difficult time to pay back the loans or even go bankruptcy. The level of problem loans in most banks in 2014 decreased enormously while credit activities maintained sustainably as the effective function of VAMC operated by SBV.

The internal factors of credit risk generated by the operation of Vietcombank has been brought on the table in the second quarter meeting of shareholder in June 2015. Mr. Nghiem showed the concerns toward a very high figure of bad debt rate (2.61%). Several possible reasons have been assumed which are:

- The incompetence of the staff’s knowledge: The staffs working daily on credit activities lack the understanding of the credit culture of Vietcombank. The incompetence of knowledge and experience results in the staff’s ability to evaluate and process the information of loan application, incorrect assessment of customers, unsuitable loan amount, interest rate and loan maturity.

- The matter of staff’s morality: According to the credit policy of the bank, every credit employee is required to raise a designated amount of loan from existing or potential customers every month. Staff can get commission for every loan they made. It is the “silent rule” that if he/she is unable to reach the loan quota, there is a chance of job loss. Many staffs have difficulty finding not only customers in need of the loan but also ensuring the credit quality of the loans granted to these borrowers. Therefore, they neglectfully ignore the compliance of the loan granting process to speed up the loan application. It is indeed a serious problem faced by the bank on how to deal with these cases.

- The loosening control of top management: The staff needs the approval of the manager to make the last move of the loan granting process. Therefore, if the top managers are indifferent to verifying and reviewing the decisions of the staffs, the potential credit risk is undeniable. Moreover, the staff after making the loans to customers is demanded to continue monitoring the situation of customers to identify the possible loss of the loans; nonetheless, credit staff usually ignores this step. The supervision of the managers are vitally important as it keeps the practice of credit activities carried out by the staff efficient and prevents the moral deterioration in the act of granting and collecting the debts.

- The need of a more working credit risk management model: Mr. Thanh in the quarter meeting raised the assumption for the great bad debt rate with the high credit growth: whether the credit risk model used by Vietcombank is suitable in the fast changing banking industry anymore, and if there is another functioning model fitted for Vietcombank.

These assumptions leave the door for the top managers of Vietcombank to reevaluate the credit programs and credit risk management. There will be a large-scale restructure of the credit risk management at Vietcombank in the next few years according to the future visions in the annual report of 2014 so that the bank will become more advanced in actively monitoring and controlling all the information related to the customer and the loan attached.

3.4 Credit risk management (CRM)

3.4.1 The organizational structure of credit risk management

As advised by SBV, Vietcombank has applied the centralized CRM system which neutralize three functions of risk management, sales and operation to minimize the adverse effect of credit risk and maximize the staff's expertise. The organizational structure of credit risk management at Vietcombank comprises of three hierarchical namely: Risk Control Committee, Credit Committee and Functional Departments at head office and branches showing in Figure 11:

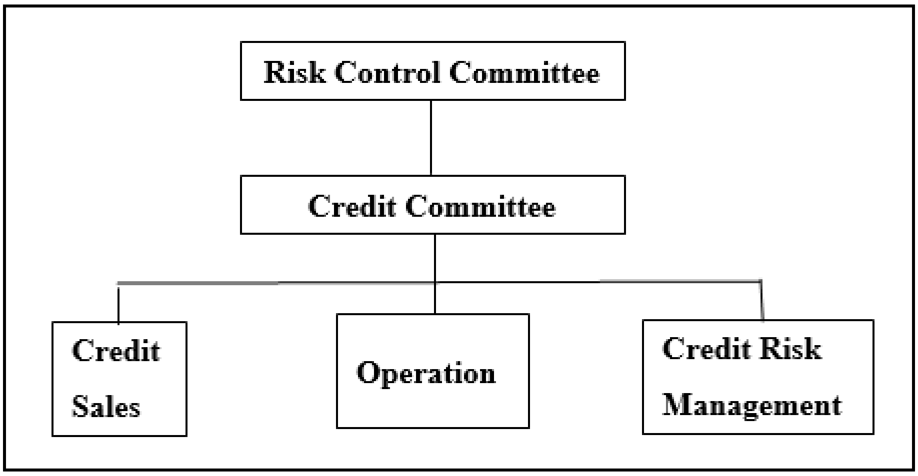

FIGURE 11: Organizational structure of CRM at Vietcombank
(Source: Vietnam Banks Association)

While Risk Control Committee is responsible for issuing policies of credit and CRM, Credit Committee takes role of supervising and monitoring the general implementation of credit programs and confirming the law compliance in credit activities. Functional departments follow the guidelines of credit programs from the Risk Control Committee to perform three separate functions. The Sales department customizes the credit products to attract customers. The Operation department handles all the loan documents legally before transferring to Credit Risk Management to guarantee that the perceived credit risk suits the bank's risk preferences. For outstanding credit applications, decision will be made at the head office and by Credit Committee.

3.4.2 Credit Rating System

Vietcombank has carried out credit rating model since 2003 with the consultancy of the World Bank and adjusted continuously on the basis of customer orientation. In practice, Vietcombank combines the internal rating system and independent rating assessment in its loan granted decision making. The independent rating assessment is available through the credit rating agencies to provide a supplementary source for financial institutions when examining their customers' credit-worthiness. However, this reliable source is only restricted to the small number of companies which are listed as the credit risk assessment of credit rating agencies is heavily focused on analyzing the historical movement of stock in the open market. On the other hand, the facts that Vietcombank's major customer group is State-owned enterprises that are hardly found in the stock market, and the business objective for upcoming years is to expand the growth in individual credit limits the advantageous use of independent rating information. For this reason, this section places an emphasis on the internal rating model developed by Vietcombank.

The internal rating model is designed by the Risk Control Committee with the purposes of "overseeing and managing trends of changing levels of customer's credibility and credits, and optimizing the profitability" said by the Vice Managing Director of Vietcombank- Mr. Nguyen Van Tuan. Vietcombank has invested its available resources into building a working internal scoring system to support credit activities as followed:

- <u>Support in credit decisions</u>: It helps to enhance the accuracy and effectiveness of the loan granting decisions, to provide supportive means for saving time, costs and reducing human errors.

- <u>Management of credit risk</u>: It is undeniably a tool to assess credit risk level of borrower. It helps to recognize a "good" or "bad" customer, compute the probability of default by integrating credit policies, credit cultures, credit programs into deciding acceptable risk level in compliance with prudence concept, business strategy and national banking regulations.

- <u>Support in customer service and management</u>: A well function model will assist in developing a solid base of customer information. Specifically, when a borrower has a problem loan, there should be a special attention for classifying other loans of this customer in the portfolio while "good" customer with a high rating score will get favor in other trading transactions.

- The foundation of bad debt provisions and allowances: It makes it easier for the bank to clarify the provisions and allowances needed for bad debt to prevent the events of default. Moreover, it also helps to reduce the amount of problem loan allowances by requiring the high credit loan to be backed up by a valuable collateral assets.

- Support in managing information in groups and exporting the reports: Input data of credit rating system is diversified in customer's operating activities and their credit portfolio. Vietcombank has incorporated high IT and credit rating model to better managing information and producing the reports scientifically.

3.4.3 Internal Credit Rating Model

The internal credit rating model at Vietcombank has two scoring schemes for its customer targets of individuals/households and enterprises. Both schemes though provide credit scores on the basis of non-financial and financial factors, there are different criteria used for assessment. The credit scores range in the scale of 100 and Vietcombank rates its customer's creditworthiness and classifies the loans accordingly as showed in Table 5:

Credit Score	Letter of credit rating	Credit risk level	Loan classification
> 95	AAA	Low	Group 1
90- 94	AA		
85- 89	A		
80- 84	BBB	Average	Group 2
70- 79	BB		
60- 69	B		
50- 59	CCC	High	Group 3
40- 49	CC		
35-39	C		Group 4
< 35	D		Group 5

TABLE 5: Credit scoring table at Vietcombank

(Source: Vietcombank Handbook of Internal Credit Rating model)

3.4.3.1 Credit Scoring for Individual customers

The model to score creditworthiness of individual/ household borrowers includes criteria of customer's personal information and the relationship with the bank. The final credit score is computed as:

<u>Individual credit score</u>= 0.4* Final score of personal information + 0.6* Final score of relationship with bank

The criteria and the weighted ratio to assess customers' credit risk are presented in Table 6:

CRITERIA	Score					Weight %
	100	**75**	**50**	**25**	**0**	
Personal information						
Age	36-55	26-35	56- 60	20-25	>60 or 18-20	**10**
Education	Graduate	Under-graduate	College	High-school	Below High school	**10**
Criminal record	No				Yes	**10**
Housing	Owner-ship	Co-ownership	With family	Renting	Others	**10**
Dependents	<3	3	4	5	>5	**10**
Living back-ground	Alone	With par-ents	With other family	Others		**10**
Insurance	>100 mil-lion VND	50-100 million VND	30-50 mil-lion VND	<30 mil-lion VND		**10**
Job situation	Manage-ment	Speciali-zation	Skillful worker	Seasonal job	Unem-ployed	**10**
Working period	>7 years	5-7 years	3-5 years	1-3 years	<1 years	**10**
Job risk	Low		Average		High	**10**
Relationship with Vietcombank						
Annual income	>10 mil-lion VND	5-10 mil-lion VND	3-5 million VND	1-3 mil-lion VND	<1 mil-lion VND	**10**
Loan payable/ Income	<30%	30-45%	45-60%	60-75%	>75%	**30**
Principle, inter-est payment	At due date	Due date extension and paid	Past over-due or New cus-tomer	Past overdue, unstable payback capability	Current overdue	**25**

Service in use	Deposits		Transac-tional payment		Not in use	**15**

TABLE 6: Criteria and weighted ratio in Individual Credit Rating Model
(Source: Vietcombank Handbook of Internal Credit Rating model)

The last step is to put the score in the credit rating table to get the level of credit risk for the firm. According to the credit policies of the bank, the individual credit rating activities are compelled to be processed at least every three months. This is to ensure the instant update on the potential changes in credit risk so that the bank can have the timely method to prevent the adverse effect.

3.4.3.2 Credit Scoring for Corporate customers

Vietcombank is one of the first commercial banks steering CRM towards corporate credit ranking. The scoring benchmark for corporate debtors is totalized from 16 financial and three areas of non-financial norms which can be applied into different operating scopes in 52 business sectors (Nguyen 2014, 2). While for financial criteria, Vietcombank examines the key quantitative factors in the recent financial report; non- financial criteria are reviewed by qualitative factors to assess other aspects of company other than numerical figures.

a. Financial criteria

The sources for the input data of financial information is drawn from the financial reports provided by the company. The compulsory reports are Profit and Loss statement and Balance Sheet, the report of Cash flows can be optional as Vietcombank information system can automatically generate it based on the two other reports. The financial criteria in the financial reports must comply with standards set by Ministry of Finance (Decision 200/2014/TT-BTC, 2014). It makes it more convenient for the bank to collect the necessary financial figures by the IT system. There are 16 norms of financial criteria classified into five groups. These norms with its basis definition can be understood in Table 7.

NO.	CRITERIA	FORMULA
I	***Liquidity ratios***	
1	Current ratio	Current asset/ Current liability
2	Quick ratio	(Current asset- Inventory)/ Current liability
II	***Activity ratios***	
3	Inventory turnover	Cost of goods sold/ Average Inventory
4	Account Receivable turn-over	Gross Revenue/ Average Account Receivables
5	Total asset turnover	Gross Revenue/ Average total Assets
III	***Leverage ratios***	
6	Debt to Asset ratio	Total Debt/ Total Assets
7	Debt to Equity ratio	Total Debt/ Total Equity
8	Overdue debt ratio	Overdue debt/ Total bank debts
IV	***Profitability ratios***	
9	Return on Equity	Earning before tax/ Total Equity
10	Return on Assets	Earning before tax/ Total Assets
11	Gross margin	Gross profit/ Total Revenues
V	***Cash flow ratios***	
12	Interest coverage ratio	Earnings before Interest and Tax/ Interest payments
13	Debt service coverage ratio	(Earning before Tax + Depreciation)/ (Principle + Cost of debt)
14	Operating cash flow ratio	Operating Cash flow/ Current Liabilities
15	Net cash flow ratio	Operating Cash flow/Sales
16	Cash to equity ratio	Cash and cash equivalent/ Total Equity

TABLE 7: Five groups of financial criteria in Corporate Credit Rating Model

(Source: Vietcombank Handbook of Internal Credit Rating model)

The above criteria are believed to reflect every aspect of the company's financial performances. There is none of the specific weighted average for each of the norm because depending on the nature of the business of a borrower, Vietcombank will decide the weighted ratios appropriately.

b. Non-financial criteria

Non-financial information used to compute the debtor's credit scores is qualitative analysis of

- Management quality: It comprises of the achievement of the company under the supervision of the top managers, the internal controlling environment or the feasibility of a future plans guided by the Board of Directors.

- Credibility in transactional relation: By examining the historical loan payback or number of transactions, amount of deposits made at Vietcombank account, the bank can at least generalize partly the picture of the firm's credibility.

- External environment: The borrower might get better credit scores if they are operating in the potentially booming industry, or their reputation is well known in the region. Their competitors and their position in the market is also taken for granted.

c. Final score of credit rating

The final computation to produce the credit score for corporate customer is the combination of both financial and non-financial criteria as followed:

<u>Corporate credit score</u> = Weighted average of financial criteria* Score of quantitative figures + Weighted average of non- financial criteria * Score of qualitative information

The calculation is slightly different from that of individual score in the weights put on each criteria. Vietcombank separates the corporate customers into three sub-groups which can be found in Table 8.

CRITERIA	State-owned firms	Other firms	Foreign invested firms
	Weight (%)	Weight (%)	Weight (%)
Financial	50	40	60
Non-financial	50	60	40
Additional points for audited financial report	+6 points	+6 points	+6 points

TABLE 8: Weighted average ratio of financial and non-financial criteria for different types of companies
(Source: Vietcombank Handbook of Internal Credit Rating model)

There are plus points for the firms which submit the audited financial report. The report with the comment of the auditor is very important to the credit analysis of Vietcombank as the financial analysis accounts for the considerable weighted average ratio of the final calculation of credit score. The audited report certifies the reliable financial figures and prevent the fraud from the corporate borrower.

3.4.3.3 SWOT analysis1.

After understanding the practice of internal credit rating model implemented by Vietcombank, the author arrives at the SWOT analysis to assess the effectiveness and efficiency of its rating model.

STRENGTH	WEAKNESS
- The leading bank in fully utilizing financial reports in scoring the credit risk - A well-functioning IT system to calculate the credit scores - A fair model of quantitative and qualitative analysis - The convenience to compare the credit risk of customers in the 2012e operating sector	- Lacking a logically specific estimate of the bank's capability to cope with problem loans. - The non-financial criteria for Corporate Rating model are mainly based on expert's judgement - Collateral assets are not considered in Individual Rating model - Difficulty in scoring company working in many sector
OPPORTUNITY	**THREAT**
- The closer step to the international credit rating benchmark with the support from SBV	- Frauds from financial reports of corporate customers leads to the incorrect credit scores

TABLE 9: SWOT analysis of Vietcombank's Internal Credit Rating model

Since 2007, Vietcombank has levelled its credit rating model up by developing a web based system. The staff only needs to input the necessary data into the IT system, it will automatically calculates the credit scores and credit rating letter. This is the worth mentioning achievement that helps the bank maintain the steering role in the credit market. Moreover, by separating corporate borrowers according to their industries, it helps the bank to compare the credit risk of different groups of customers as well as to figure out the acceptable level of credit risk in each sector.

Traditionally, Vietcombank calculates the allowances for problem loans based on the allowance rates designated by SBV. However, this practice blurs the link between the credit rating of the company and the bank's capability to prevent itself from credit risk which is reflected in the provisions and allowances for bad debts. While the financial analysis of the enterprise credit model is firmly estimated, the measurement of the non-financial criteria is quite subjective. In most of the banks, the scores for these criteria are usually based on the judgement of experts who have a long experiences in the field.

This is indeed a weakness of the credit risk analysis because the judgement is not always correct and generally accepted by other experts. In addition, the fact that nowadays there is an increasing number of firms expanding their presence in many industry creates challenges for Vietcombank to input the proper information. For Individual Credit Rating model, the lacking assessment of the borrower's collateral assets is a weak point of the model as it partly proves the creditworthiness of borrower. Meanwhile, there are not really relevant norms such as "Living background" or "Job risk" existing in the assessment.

As previously mentioned, Vietcombank always encourages the corporate customers to provide the bank with audited financial report for better decision making even for the firms of which financial reports are not required to be audited. However, there are cases without auditor's comment which create obstacles for the bank to investigate their financial performance. In this situation, Vietcombank with its resources needs to review possible frauds by questioning on the possible reach or evidences of the doubtful results such as: high profitability but bad net cash flows; high income in spite of price pressure from the market; an increase of account payable, account receivable and inventory with stable sales; current liability > current assets as an indication of violating loan payback commitment with bank (Van Huong 2014, 13)

In the fast growing market of credit, SBV as the playing role of the key channel to provide the guidance for CRM at commercial bank, realizes the major importance of getting proximate to the international standards and has issued many Decisions to support the completion of the bank's internal rating model. The position of the leading commercial bank in the market turns every decision of SBV favorable for Vietcombank with the aim to test the pattern on the bank's operation. This is a good opportunity for the bank to step by step make their international expansion plans come true.

3.5 A more completed Credit Risk Management Approach

The idea of this section is to suggest a more completed working approach for Vietcombank to enhance the management of the credit risk for both target groups: Individual and Corporate customers. The approach is built based on the key weaknesses of Vietcombank as investigated in the SWOT analysis. The background of the suggested themes is a process of referring and comparing the models from other banks, consulting from credit expert at Vietcombank and learning about the updated information from SBV in standardizing credit norms on the base of international system. There are two subsections which emphasizes the improvement of the model for individual and corporate borrower separately.

3.5.1 Individual Credit Risk Management Model

As the collateral assets are not taken for granted in the assessment of the creditworthiness of individuals, the author recommends to combine the rating letter of collateral assets with the credit rating letter of the borrower to give the final credit decision. More specifically, the three-group criteria to score collateral assets of debtors on the scale of 300 are given; then the sum score will be categorized into credit letter of A, B or C; last but not least, there is a matrix of letter of credit rating and letter of collateral asset rating for the loan granted decision. The proposed criteria to assess collateral assets and its scores accordingly can be presented in Table 10 and 11 respectively.

CRITERIA	**SCORES**				
	100	**75**	**50**	**25**	**0**
Types of collateral assets	Deposit accounts, Certificate of bonds issued by State or Vietcombank	Certificate of bonds issued by other financial institutions	Real estate (houses)	Other real estate (not houses, shares	No collateral assets
Collateral assets/ Total loans	>200%	150-200%	100-150%	70-100%	<70%
Reduction in value of collateral assets in the last 2 years	0% or less than 1%	1-10%	10-30%	30-50%	>50%

TABLE 10: The proposed criteria to score collateral assets

Scores	Collateral rating letter	Analysis of collateral asset
225- 300	A	Strong
74-224	B	Average
<75	C	Weak

TABLE 11: Categorization of collateral rating score

The finished step is to input the collateral rating letter and credit rating letter to the matrix showed in Table 12, to determine the quality of credit. In fact, this matrix is the result of Table 8 and Table 11.

<table>
<tr><th>Collateral rating
Credit rating</th><th>A</th><th>B</th><th>C</th></tr>
<tr><td>AAA</td><td rowspan="3">Excellent</td><td rowspan="3">Good</td><td rowspan="3">Average</td></tr>
<tr><td>AA</td></tr>
<tr><td>A</td></tr>
<tr><td>BBB</td><td rowspan="3">Good</td><td rowspan="3">Average</td><td rowspan="3">Average/ Refusing</td></tr>
<tr><td>BB</td></tr>
<tr><td>B</td></tr>
<tr><td>CCC</td><td rowspan="4">Average/ Refusing</td><td rowspan="4" colspan="2">Refusing</td></tr>
<tr><td>CC</td></tr>
<tr><td>C</td></tr>
<tr><td>D</td></tr>
</table>

TABLE 12: Matrix of credit rating and collateral asset rating

Different combinations between credit rating and collateral rating decide the quality of the credit, then affect the bank's decision making in granting the loan depending on the "taste" of the bank's credit risk and fitting into the economic situation. In the booming period of the economy, for example, the bank recognizes that in order to seize the big piece of the market, it can accept the loan that has the credit quality of "Excellent", Good" and "Average"; while during the shadow time of the recession, Vietcombank might need to contract its expansion and to strongly maintain a healthy profit rather than a growing one, the bank only grants the loan for individual customer who proves to have an "Excellent" or "Good" creditworthiness only.

An example is given for a good understanding of proposed model. For instance, customer A wants to borrow 100 million VND from Vietcombank and he has a house as a collateral asset. By investigating customer A's criteria of personal information and relationship with bank, Vietcombank decides the letter of credit rating CCC for him. Next by evaluate the historical and current market price of the house, the bank indicates that the house is worth about 500 million VND which is 500% of the wanted loan and the price has not been considerably changed for the last two years. According to Table 10 and 11, the score of collateral security is 250 (=50+ 100+ 100) and the letter of collateral rating is A. Based on the matrix in Table 12, Vietcombank has 2 choices: either accept the loan or refuse it. If the bank agrees to grant the loan for customer, it needs to regularly monitor this sub- standard debt and its customer to prevent the possibility of default. On the other hand, if at that time, there is a global spread of economic turmoil in the market, Vietcombank will refuse to make the loan as the possibility of default is highly happened.

3.5.2 Corporate Credit Risk Management Model

The most significant issue of Vietcombank's Corporate Credit Risk Management Model under the view of author is the insufficient connection between the final credit rating of the company and the assessment of the bank's capital to provision against the default. The examined connection is to prevent Vietcombank from not being able to fulfill its obligation to its depositors as the severe consequences of the credit risk. More specifically, under the circumstances of a single or a massive default of borrower(s), the question is whether the bank manages to pay back its depositors and performs other responsibilities in such financial distress with its available capital.

In recent years, SBV has caught up with the international improvement on advancing credit risk management guiding by Basel Committee since 2010. SBV by the Circular 24/TT- TTGSNH5 (2014) requests commercial banks to initiate the practice of Capital Adequacy Standards under Basel II. Vietcombank has been the pioneering bank to adjust its entire operation to experience the international standard and to set the pattern for other banks to follow. However, the bank is still struggling itself to express the relationship of capital adequacy requirement under Basel II approach and the level of credit risk logically in its corporate credit risk management model.

3.5.2.1 Basel supervisory and regulatory approach

Basel Committee on Banking Supervision (BCBS) was established in 1974 by G10 central banks in Basel, Switzerland with the purpose to enhance the quality of the banking industry during the recession in 1980s. As time goes by, the Basel Committee has been strongly developed and changed its objective to be "the primary global standard-setter for the prudential regulation of banks and provides a forum for cooperation on banking supervisory matters" (Basel Committee on Banking Supervision Charter 2013, 1), therefore, the regulation, practice and supervision of banking operation enforced by BCBS do not hold any legal status other than acting the role of building and publishing working method for each nation's banking authority to consult (A brief history of the Basel Committee 2013, 1). The supervisory standards and guidelines of BCBS nowadays are not limited only to the member countries but expanding the influence on other non-members as the international setting. The ultimate aim of BCBS is to "to close gaps in international supervisory coverage so that (i) no foreign banking establishment would escape supervision; and (ii) supervision would be adequate and consistent across member jurisdictions." (A brief history of the Basel Committee 2013, 2)

a. Basel Capital Accord: Basel I

In 1988, BCBS published a capital measurement system commonly known as Basel Capital Accord or Basel I which indicated that international banks operating in any financial market have to hold a minimum capital against the loan granted to customer to cope with possible risks. This minimum capital is expressed in

Capital Adequacy Ratio (CAR) = Total Capital / Risk Weighted Assets (RWA)

Basel I focused on the most vital credit risk which reduces the value of the asset. Risk weighted asset is calculated by multiplying risk weight by the value of loan. For example, the loan 1 backed up by a property has a lower risk weight than the loan 2 with no collateral asset; therefore, the capital charge for the bank for making the loan 1 is less than that for loan 2 which led the bank to grant the loan 1 for customer. According to Basel I, the total capital charge to the bank should be 8% against the value of the loan or CAR should be equal or more than 8%. Bank with CAR greater than 10% has a good source of capital while CAR less than 8% implies the capital inadequacy of the bank.

The proposed system at that time was meant to unify the banking operation during the peak of internalization to enhance the financial stability and to structure an equally competitive environment among multi-national banks (A brief history of the Basel Committee 2013, 2). Indeed, Basel I did achieve basis success in supplementing a widely recognized definition of bank's capital, and providing a setting for CAR. Nevertheless, Basel I showed weaknesses after years of application which led to a new improving system- Basel II.

b. Basel II & III

In 2004, Basel Committee suggested a new risk-based supervisory and regulatory approach to compensate the challenges faced by Basel I. The summary of Basel II framework is presented in Figure 12:

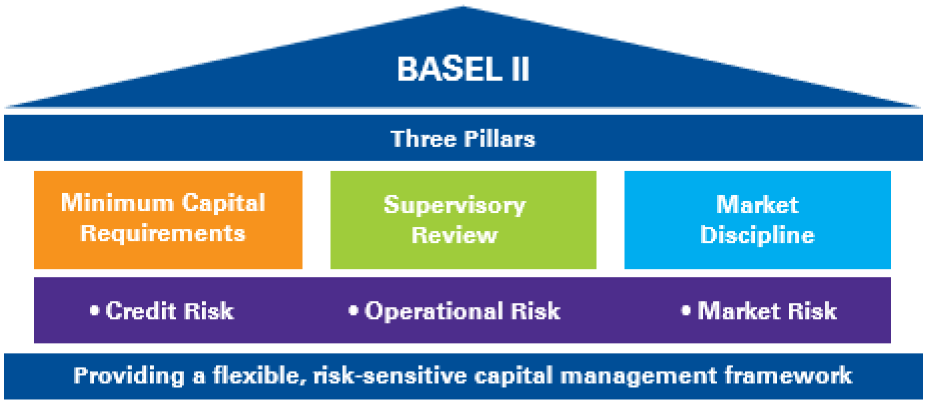

FIGURE 12: Basel II - Supervisory framework
(Source: KPMG Banking Survey 2013)

Compared to Basel I, Basel II emphasizes the risk of credit, operation and market. Moreover, while Basel I controlled the credit risk mainly through the requirement of capital, Basel II focused on risk management by three pillars: minimum capital requirements, supervisory review and market discipline (Overview of Basel II 2012). The formula of CAR with the minimum required rate remains the same, there is just one adjustment in the denominator which combines the weighted risk of credit, operation and market. The second pillar puts an emphasis on the supervisory review on how well the bank assess its capital adequacy in relation to the bank's risk; as the result, the central bank can intervene in the bank's activities by, for instance, requesting an inflow of capital or the reduction of dividends paid to shareholder to raise the capital if needed. In the final pillar, the information of the capital structure, risk sensitivity and the risk assessment of the bank towards the risk is disclosed to strengthen market discipline (Basel Accord I & II 2014).

There was once again arising need for a more comprehensive set of reform measures after the banking disruption in 2008 which urges BCBS to develop Basel III in 2010. Basel III basically is similar with the framework of Basel II; there is one innovation which was the mention of liquidity risk indicating the bank's capability to overcome financial distresses during the recession (International regulatory framework for banks (Basel III) 2011). Due to the fact that the current infrastructure of the bank is not fully equipped to respond the requirements of Basel III, BCBS set the timeline of 2017 for the complete implementation at banks in developed countries.

c. The applicability in Vietnam banking sector

In Vietnam, as pointed out by SBV, commercial banks are only able to carry out the framework of Basel II because of the restricted infrastructure. The guidelines of BCBS have been followed and adjusted depending on the economic situation in Vietnam. Specifically, in the formula of CAR, the denominator has been kept exactly the same with that of Basel I equation; only credit risk matters the capital adequacy assessment. The application of Basel II standards means the costing expenses to the bank and a must to have an internal credit rating model to assess different customers with different credit risk profiles (The possibility of Basel II applicability in Vietnam 2013); hence SBV has chosen ten commercial banks to implement the Basel II approach for trial purpose by the end of 2015.

3.5.2.2 Vietcombank's practice of Basel II approach

Vietcombank was one of the ten banks selected for experiencing the Basel II regulatory and supervisory approach starting in 2015. Vietcombank has a good start of a credit risk management system for further development under Basel II approach. To be more precise, the key elements, in the light of Basel II approach defined by SBV that Vietcombank should be able to fulfill are:

- Maintaining a minimum capital requirement for every loan granted to customer expressed by CAR. The minimum CAR for commercial banks in Vietnam is 9% (Circular 13/TT- NHNH 2010)

- A working internal credit rating model for corporate customer which is somehow achieved by Vietcombank. This well functioning model helps in classifying the loan group and make the allowances for doubtful debts

- Establishing the bank's internal control team to internally monitor the execution of credit activities and the bank's compliance of capital adequacy in proportion to level of credit risk

All the mentioning elements seem to be feasible for Vietcombank to successfully carry out the Basel II approach. Nonetheless, the challenge lying ahead is how to effectively co-operate the internal credit rating system and the supervisory and regulatory approach of Basel II in the most connected way.

3.5.2.3 Suggestion of Corporate Credit Risk Management Model

The corporate credit risk management model suggested by the author is the integration of corporate internal credit rating model and Basel II supervisory and regulatory approach. This model is built under the review of the necessary factors to design a Basel II approach based on what has been available through the bank's internal rating system. The proposed model is summarized in Figure 13.

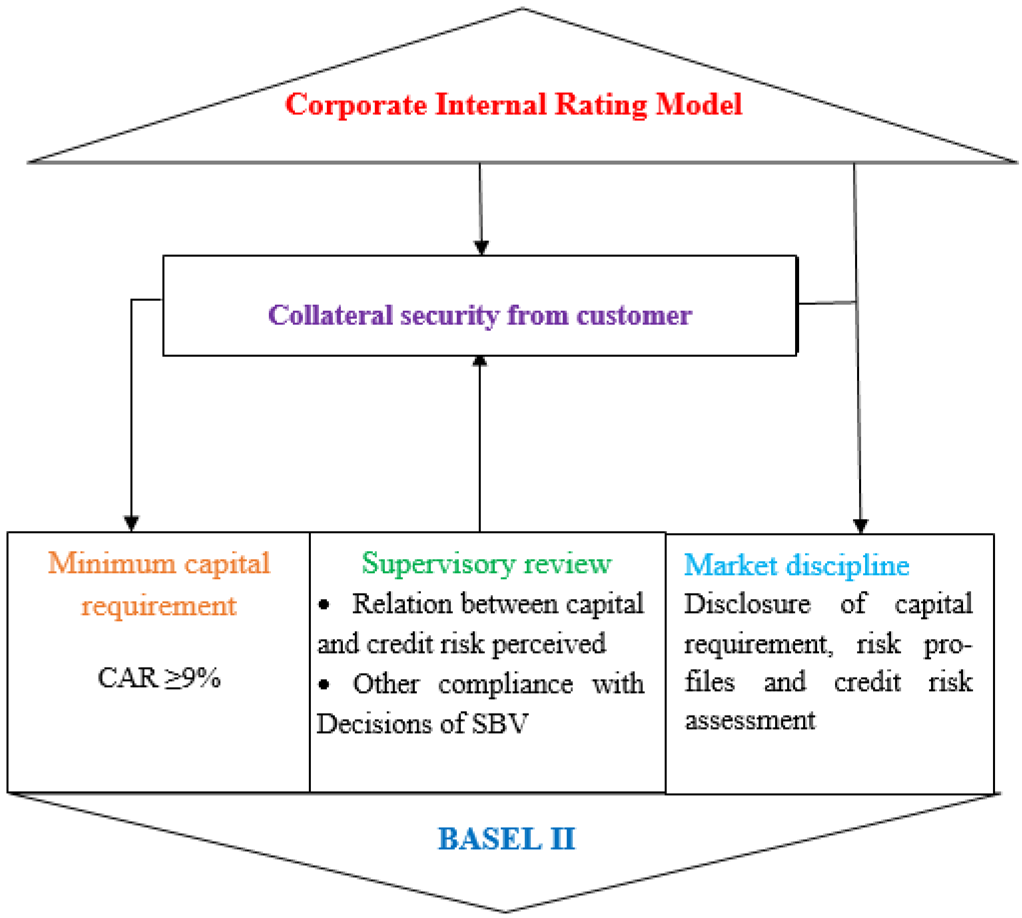

FIGURE 13: Suggested Vietcombank's Credit Risk Management Model for Corporations

From the proposed model, the factors that connects internal rating model and Basel II approach is the collateral security to guarantee for the bank in case of default. The process of integration is as followed:

1. After scoring the creditworthiness of the corporate customer and the credit risk of the loan by the rating model, Vietcombank classifies the loan into one of five loan groups; then Vietcombank is required to calculate the allowances for problems loans based on the allowances rate of each group. The practice of loan classification and allowance computation is strictly followed by SBV's regulatory framework.

2. Vietcombank assigns the risk weight of the loan in compliance with Circular 13/TT- NHNN (2010) based on the loan's collateral asset (Appendix 1), then calculate the RWA. Since the minimum CAR is 9% for all commercial banks,

the bank can easily compute the minimum capital charge for the bank against the loan to sufficiently operate in the market.

3. The whole bank's loan granting process and the practice of maintaining at least 9% CAR are closely monitored by the internal auditing team of the company to prevent any major unexpected event. SBV playing the role of supervisory body constantly investigates the Vietcombank's compliance of credit activities in the area of credit policies (Decision 457/2005/QĐ-NHHNN 2005), credit rating, provisions for bad debt, loan classification (Decision 493/2005/QĐ-NHNN 2005); to decide the functioning quality of the internal auditing team at bank; and to interfere in the bank's management to keep a required CAR.

4. Vietcombank should operate based on the market discipline of transparency to ensure an equally competitive market in Vietnam. The information related to capital adequacy to back up the credit risk, the risk profile of the bank and the assessment of credit risk is available for public disclosure. This published data is indeed a valuable resource for SBV to update, improve and amend its risk regulations to enhance the quality of the banking sector in the regional and international market.

A good example might be needed to better explain the whole model. For instance, company A want to receive the loan of 1 billion VND from Vietcombank with a certificate of deposit of 0.5 million VND from BIDV as the collateral asset. The letter of credit rating of company A after going through the corporate internal credit rating model is BBB and falling into group 2- "noticed debt" with the allowance rate of 5%. According to the risk weight table in Appendix 1, collateral asset of the company possess the risk weight of 20% to Vietcombank. The key computation for the Pillar 1 of Basel II approach is presented in Table 13:

Unit: million VND

Loan value	**Allowances**	**Risk weight**	**RWA**	**Capital charge**
1000	50	20%	200	180

Table 13: Key calculation for example of company A

To maintain the required 9% CAR for 1 billion VND loan value, its available capital should has the amount of more than 180 million VND to absorb any credit risk from Company A. In the next step when internal auditing team of Vietcombank has examined all the credit aspects of Company A for clarifying purpose of 9% CAR, at any time of the year, SBV can review the compliant procedure of the bank to ensure no intervention needed for capital adequacy. For the Pillar 3, for the end of the year, Vietcombank is obliged to reveal the information of: (i) the capital structure: where the capital comes from and how many times the bank has raised its capital to meet 9% CAR, (ii) credit risk profiles: what the average credit risk for each industrial sector in which its corporate customer functioning in is, (iii) assessment of credit risk: how the internal rating model works and if there are changes in the model in proportion to SBV's updated regulatory framework. The credit rating model works closely with three pillars of Basel II approach to produce the best reliable information as each link of the chain affect severely others.

To effectively implement the suggested corporate credit risk management model, there are several implications for Vietcombank's business undertaking. Firstly, Vietcombank while expanding its scope of operation by credit growth which in turns increases the value of the asset and RWA, needs to manage the capital adequacy to back up the credit risk of borrowers. Moreover, the requirement of minimum 9% CAR implies the efficient combination of capital raise and capital use. To meet the requirement, the bank might want to raise capital to improve the ratio of capital adequacy; however if the bank does not have an appropriate business plan to make use of the capital to generate the earnings, there will be a strong pressure from shareholders to pay dividends at the agreed date. Additionally, Vietcombank also needs to take into consideration of resource investment in staff training, business strategy communication with the aim to boost the quality of the employees in controlling the credit activities as well as the transparency of the internal auditing team. Last but not least, the bank itself recognizes the vital importance of the highly developed information system which allows the bank to actively control the customer database, and for purpose of information disclosure.

4. CONCLUSION

Providing credit is one of the most important functions of commercial bank which helps to circulate the capital in the market in the macro-economic scale, to fund the operating activities of firms and improve living condition of households in the micro-economic scale. Similarly, the credit activities play the crucial role towards the survival of the bank as its assets account for a significant portion in the balance sheet and it generates enormous income for the banks. Therefore, credit risk is the most concerned issue for managers as it influences many areas of the bank related to the severe and unrecoverable financial losses from the event of customer's default, the impairment of bank's reputation. To effectively enhance the quality of credit, every bank should actively prevent itself from losses resulted from risk of credit activities by a good risk management model. The advantages of possessing a working credit risk management model are undeniable; however, many banks are struggling to find a suitable model to fit in their structure or the market they are operating in.

Vietnamese economy since the date of opening the door internationally has seen a fast movement of the banking industry. Many banks were established and have expanded their presence geographically to serve a wide range of customer groups with different background. As a result, there was a growing pace of the credit which consequently implies the threats of the credit risk reflected in the high level of bad debt. In recent years, the bad debt rates were at the unfavorable percentages which were more than 3%. SBV has showed great concern for this problem and taken many solutions to control the rate of under 3% by the end of 2015. The central bank founded VAMC to purchase the bad debt from commercial banks to provide them with opportunities to make clearance of problem loans in the financial report and to get funded from SBV. The support from SBV has assisted many banks in overcoming the financial distresses. Nevertheless, in the long run, the banks are in need of having better credit policies, building a functioning credit risk management model to minimize the impact of credit risks.

Vietcombank is one of the competitive players in Vietnam banking sector. Together with the development of overall Vietnamese economy, Vietcombank is now having a good financial position and a sustainable growth. Nonetheless, compared to other key competitors, Vietcombank is one step behind in term of credit risk relative to its loan portfolio. It is worth mentioning that while the credit growth is higher than its competitors, the bad debt rate, especially NPL ratio is considerably greater. The purpose of the thesis is to handle two related questions faced by Vietcombank which are the questioning relationship between credit growth and high level of bad debt rate, and then a possibility to build a working model to effectively control the credit risk.

After examining current situation of credit activities and the handling of bad debt at Vietcombank, the author explains the implication of what fast credit growth and high bad debt rate reflect. The aspect of staffs is brought into the table. The pressure to raise a designated quota of loans for every credit employee may drive the deterioration of credit quality to meet the sales or the lack of necessary training from bank towards its staffs leads to the incompetence to understand and follow Vietcombank's credit policies or credit culture. Moreover, the top managers should be partly to blame for. The loosening management control by chance creates the loophole in the practice of credit risk management. Other major implication is whether it is time for Vietcombank to make changes to its credit risk management system to bring down the level of bad debt while maintaining a sustainable credit growth.

The author takes a further step to investigate how the current credit risk management model works in Vietcombank. The bank has equipped itself with the internal credit rating model divided separately into two sub-models for group of individual customers, and corporate entities. Both of the models have utilized the quantitative and qualitative analysis to score customers and their credit. The credit rating letter of customers provides the general view of their creditworthiness. Based on the observation, the author indicates the key weakness of each model which are the non-mentioning collateral assets in the Individual model and the blurring connection between the credit risk and the capital adequacy of bank to perform responsibilities towards its other customers in case of default of a specific company in the Corporate model. These weaknesses are the key factors leading to a more completed credit risk management proposed by the author.

For Individual credit risk management model, the collateral asset is suggested to be rated based on the value of its relative to the loan. Together with the letter of credit rating, there is a matrix to combine both of them for final decision on whether the loan can be granted to the customer. In Corporate credit risk management model, collateral security of customer is emphasized once again but in a different angle. To get a closer step towards the international standards, SBV has encouraged Vietcombank to implement the

Basel II supervisory and regulatory approach on having a minimum capital requirement expressed in CAR (%) to protect itself from credit risk. This ratio implies the capital charge to the bank in making the loan with the collateral- based credit risk weighted on the value of the loan. In other words, the bank needs to hold an adequate capital to hedge against the credit risk; in case of default, this capital will be used to fund other bank's activities without having an effect on its existing customers. The CAR is required to be at least 9% by SBV. The suggested Corporate credit risk management model is an integration of Corporate internal credit rating model and Basel II supervisory and regulatory approach. While the Corporate model provides the evaluation of corporate customers, international Basel II approach with adjustments made for Vietnamese banking industry the enhances Vietcombank's own protection method based on the collateral assets in the event of customer's default and strengthens the supervisory roles of SBV to discipline the players in an equally competitive banking market. The Corporate credit risk management is believed to make sure that all the bank's credit activities, policies are transparent and compliant with the SBV's regulations.

To conclude, there are several respects that Vietcombank needs to successfully undertake. Firstly, the required CAR poses the necessary combination of capital raise and the wise use of it so that the capital is not tightened to keep the 9% ratio and there is not a heavy burden to pay dividends from shareholders. Secondly, it is important to communicate carefully the credit risk management model, policies to the bank's employees to minimize the frauds which are said to come from policy misunderstanding. Lastly, a huge investment in information system is needed to build a detailed customer base for a better credit rating model. When the bank fruitfully achieves above respects with a good credit risk management model, undeniably it is step by step materializing the plan of a leading bank not only nationally but also regionally.

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APPENDICES

Appendix 1: Summary of risk weight in proportion to collateral asset to determine Risk weighted assets
(Source: Circular 13/TT- NHNH 2010 issued by SBV)

Risk weight	**Collateral security**
0%	Gold Certificate of deposit at SBV Certificate of deposit at bank requested for loan Receivables from SBV Short-term receivables from bank operating in developed countries
20%	Certificate of deposit at other banks Receivables from Local Committee Receivables in VND from State-owned enterprise Receivables in VND fully guaranteed by the documents issued by State owned enterprise Short-term receivables from bank operating in developing countries
50%	Receivables in foreign currency fully guaranteed by the documents issued by State owned enterprise Receivables in foreign currency from State-owned enterprise
100%	Certificate of shares or capital contribution Tangible assets of Land, Factory, Equipment Intangible asset of trademarks, product licenses
150%	Receivables from franchising company of financial institution Other collateral security which is not mentioned in other groups

Appendix 2: Results of the interview with credit expert of Department of Bad debt handling at Vietcombank

1. Does Vietcombank satisfy with the credit growth in the last few years?
- In general, yes. The target credit growth set in the beginning of the years was always meet and the growth was also higher than the average number of the banking industry.

2. How about the credit risk attached with the increasing amount of the bad debt?
- This is indeed the headache for the whole network. The bad debt rate though was under control but the NPL ratio is accelerating considerably even though we made a huge handling activities of bad debt to VAMC.

3. What are the reasons for that in your opinion?
- I do believe there is a warning sign for the internal credit risk management system. It can be the management issues or the need of updated credit risk management model to fit in the changing credit environment.

4. Has Vietcombank concerned to make changes to its credit risk management model?
- Yes, it has. Since the international standards of Basel II has been introduced in the market by SBV, the bank really needs to take the approach into consideration to better manage the risk in accordance with what the banking world is doing. The key issue is how to integrate the credit rating model and Basel II approach.

5. In your opinion, is this possible to integrate them with the current situation?
- Yes, it is possible. But I think the challenges are really lying ahead. It’s costly to develop infrastructure to fully adopt Basel II approach as it needs to invest in human resources, information system and a detailed business strategy to exploit these resources effectively and efficiently