INTRODUCTION

1. Rationale

Credit risk is one of the main risks, having strong impact on business activities of commercial banks. Credit risk also affects the capability to appeal for funds of businesses, leading to negative impacts on the growth and development of the economy. Despite the detrimental effects, commercial banks cannot radically eradicate credit risks. They can only mitigate the risks at a certain level. In the credit activity of commercial banks, they accept the risk and trade them for profits instead of choosing a strategy to eradicate risks. The system of credit risk management of a bank ensures that the bank always manage the risks at an appropriate level (the level of risk that the bank can accept) that is suitable for the scale and credit business nature of the banks and obtains the highest profit.

Nowadays, credit activity plays an essential role for Vietnamese commercial banks and brings the most profits. However, credit activity possesses many risks, especially in the case of conforming to international practices where Vietnamese commercial banks express many downsides. In that context, no financial bank or organization can perudably survive without an effective risk management system. The development of a general management system and a specific credit risk management system has crucial role for bank activities.

The Basel II Accord is the agreement between Central Banks of the nations belonging to the Basel Commitee on a managerial, regulatory and supervising mechanism of banking activities in order to improve the effectiveness of risk management, especially credit risk. In 2006, the Accord comes into practice with the financial institutions implemented in nations of Basel Committee. Recently, according to the investigation of Basel Committee, the Accord has been vastly implemented in commercial banks of more than 150 countries, including those who are not members of Basel Committee as an international standard on risk management, inspection and supervision of activities of commercial banks.

In Vietnam, March 20th 1014, the National Bank (NB) announced the official guidelines on the implementations of Basel II by Correspondence 1601/NHNN-TTGSNH. According to the Correspondence, 10 Vietnamese Commercial banks including BIDV, are chosen for process testing, other commercial banks will implement the Accord after the testing period.

Besides, at BIDV in the previous period existed many emerging issues relating to credit, profoundly affecting business activity of the bank and its prestige nationally and internationally, leading to strong impact on the well-being of labourers. All those effects root from credit risks in credit granting procedure.

Originating from the awareness of the theory and reality above, the PhD student decides to choose the topic ***"Prevention and mitigation of credit risk at BIDV"*** for his doctoral thesis, with the hope of completing one's professional theory, approaching and studying the credit risk in reality and first-hand suggesting a number of solutions with an aim to preventing and mitigating the risks at Joint Stock Commercial Bank for Investment and Development of Vietnam.

2. Background of the research situation

2.1 International background

Until recently, there are various theoretical research and empirical models relating to the prevention and mitigation of credit risk nationally and internationally. The most popular ones are the following:

- *Risk Management in Banking, Josel Basis (1998) [59], Dictionary of Banking, Christian Frey (1998) [60].* In this document, the author has generalized and clarified basic theoretical problems of credit risk management including basic concepts of credit risk, credit risk management... Apart from the basic concepts, the author also has in-depth research about part of the discussion about credit risk management models, property management and responsibility, credit scoring, risk-based capital, VAR, loan portfolio management, credit fund scoring and capital distribution.

- *Credit risk measurement models - Joke Basis (1998), Chrinko (2000), Crolina (2001).* In this document the significant research is the emphasis of the credit risk measurement models of commercial banks.

- *ANZ Consolidated Annual Report [50], Credit risk mangement work book of Citibank [68].* According to this research, the author has summarized the reality of risk management at ANZ and Citibank. Based on this, it is possible to study the experiences of the implementation of risk management models at ANZ, Citibank...

The mentioned research generally has provided the standard and thorough theoretical basis of credit risk, the prevention and mitigation of credit risk and credit risk measurement model as well as the conditions ensuring the development of credit risk measurement and controlling models. This is the important basis which facilitates the study of the topic of thesis.

2.2 National background

Prevention and mitigation of credit risk is an issue that is the concern of many researchers and bank managers. In Vietnam, there are many research and studies, scientific discussion on the prevention and mitigation of credit risk, particularly:

- *"A text book on commercial bank credit management"* of Associate Professor Đinh Xuân Hạng, M.A. Nguyễn Văn Lộc (2012) [1**Error! Reference source not found.**].

The textbook is the most basic study, the basis of all analysis, deeper research into credit as well as credit risk. The author has introduced the basic concepts of loaning of commercial banks, a number of controllings on loaning, scientifically stated the procedure and analysis of commercial bank credit, such as: loaning procedure, credit record, credit analysis in banks. Besides, the author also carried out research on the effects of credit on business activity. On the topic of credit risk in commercial banks, the author has clearly stated every content of credit risk, credit risk management, the methods of prevention and dealing with credit risk.

- *"Scientific basis on determining the credit risk management model in Vietnamese commercial banks"* (2010) of author Lê Thị Huyền Diệu [**Error! Reference source not found.**].

The thesis concentrates on the study of credit risk, the causes, signs, determinants of credit risks in business activity. The thesis simultaneously systematizes the basic content of credit risk management clearly, and on whose basis provides credit risk management models and the implementation conditions. It summarizes the basic theories of credit risk management, especially the basic steps including: risk identification, measurement, management, controlling and debt settlement. The thesis studies the case of credit risk of Vietnamese commercial banking system before and after the year 2000, in which the author systematizes the legal basis, credit characteristics and current situation of credit risks in two periods. The before-2000 period shows that credit risk most of the time exists in the loaning which heavily focuses on state-owned-enterprises, the rocketing mid and long term-loaning rate together with the increasing overdue debt ratio over periods. In the after-2000 period, the legal environment has improved, thus the risks decrease. The thesis analyzes the implementation of credit risk management models of Vietnamese commercial banks according to three indicators: credit risk management organization model, risk measurement model and risk controlling model. On these basis, the thesis sugest the appropriate model for implementation in Vietnam.

In reality, every bank has its own characteristics of organization, capital size, prioritized operational aspect, form of ownership, technological and human resources level...As a result, the solutions might be unsuitable for a specific bank.

- *"Solution of credit risk management of Vietnam joint stock commercial bank for industry and trade".* Doctoral thesis in Economics of author Nguyễn Như

Dương (2018), Academy of Finance [9].

In the thesis, the author has stated and determined the subject of the study to be the suggestion of solutions and recommendations in order to improve the credit risk management activity at Vietinbank. Scope of research: Location: The thesis focuses on studying the credit risk management in banking activity of Vietinbank; Time: Examining and analyzing the actual situation of credit risk management in period 2011 – 2017. The solution is adopted according to procedure until the year 2030.

- *"Improvement of credit quality at Vietnam Jointstock commercial bank for Foreign Trade in the process of integration"* Doctoral thesis in Economics of author Nguyễn Thị Thu Đông (2012), National Economics University [12].

In the content of thesis, the author has clarified the theoretical basis of credit quality, determinants of credit quality and experiences in improving credit quality of banks in the world. In the authentic assessment, the author assesses the actual situation of credit quality of Vietcombank, in which one of the important determinants is bad deb ratio of the bank. The author lists the solutions in order to improve credit quality including one crucial solution_bad debt management and credit risk controlling.

- *"Credit risk management at Military Commercial Joint Stock Bank"* of author Nguyễn Quang Hiện [21].

In this thesis, the author systematizes theoretical basis on credit risk, credit risk management at commercial banks with additions of recent changes when banks implement the regulations in Basel II Accord; the experiences of credit risk activity of commercial banks in the world, based on which the lessons on credit risk management of commercial banks of Vietnam are derived.

The author assesses credit risk, credit risk management of Military Commercial Joint Stock Bank in the period 2011-2015 and states the causes of the drawbacks of credit risk management activity of Military Commercial Joint Stock Bank.

The author suggests the solutions, recommendations for the government, national bank, National Financial Supervisory Commission in order to improve and increase the volume of credit risk management activities at Military Commercial Joint Stock Bank.

- *"Credit risk management according to Basel II Accord at Vietnam Bank for Agriculture and Rural Development"* of author Trần Thị Việt Thạch [**Error! Reference source not found.**].

The thesis has systematized basic issues of credit risk management which are

approach according to the standards of Basel II Accord at commercial banks, clarified the benefits brought about by the implementation of Basel II in the credit risk management of commercial banks and conditions for the implementation of credit risk management according to Basel II. The thesis correctly assesses the current situation of credit risk management to determine the level of meeting the Basel II requirements on credit risk management at Agribank. On this basis, the author suggests solutions and conditions to adopt them to implement credit risk management according to Basel II, with an aim to fulfill the standards of Basel II at the end of the year 2020.

- *"Credit risk management at Vietnam Joint Stock Commercial Bank for Industry and Trade"* of author Nguyễn Đức Tú [47].

The thesis clarifies the theoretical basis of credit risk of commercial banks, the necessity to credit risk management, the content of credit risk management, including: identification, measurement, countermeasure, control of credit risk. Additionally, the author has in-depth understanding of the credit risk management experiences of banks such as: Korea Development Bank, Nova Scotia Bank of Canada, Citibank of the USA, ING Bank of Netherlands, KasiKom Bank of Thailand. The author draws valuable lessons on credit risk management of Vietnam Joint Commercial Bank from thorough understanding of the credit risk management of the mentioned banks.

In the authentic assessment, the author studies and assesses credit risk and its management at Vietnam Joint Stock Commercial Bank for Industry and Trade. The author assesses the achieved results including: debt quality, debt structure, framework, mechanism, system of credit rating... Additionally, the author states and assesses the downsides of credit risk management of the bank as well as its inappropriate credit risk strategy, credit granting procedure, credit measurement system... and the causes of the downsides. The author also presents the direction of and ways for improving credit risk management at the bank, and at the same time suggests recommendations to the government, national bank and the national financial supervisory commission.

2.3. Study questions and limitations of the study

2.3.1 Study questions

What is credit risk? What does it mean to prevent and mitigate credit risk? What is the content and actual situation of preventing and mitigating credit risk of BIDV and the solutions to prevent and mitigate credit risk of BIDV in the next time period? These are the study questions that need answers.

2.3.2 Limitations of the study

The mentioned studies have greatly contributed to the presentation of basic theories on the prevention and mitigation of credit risk over the last period. However, they also mention a number of limitations on credit risk prevention and mitigation at BIDV from 2014 to 2018.

The limitations in theoretical study of credit risk, prevention and mitigation of credit risk and the current situation of it at BIDV:

- The theoretical basis is not systematic and updated on credit risk in the recent period when Vietnam National Bank is in the process of implementation of credit risk management according to Basel II. Additionally, Vietnam has increasedly profound economic integration with local and international countries.

- Most of the studies on credit risk consider the risk as an issue that the bank must accept. In other words, credit risk is considered an apparent issue in credit activity of a bank. Everybank is not without credit risk and has their own characterized type of risk.

- On the other hand, there has not been any comprehensive scientific study on credit risk and the prevention and mitigation of credit risk at BIDV from 2014 to 2018 as well as the suggestion of solutions to prevent and mitigate credit risk at BIDV.

As a result, the topic "The prevention and mitigation of credit risk at BIDV" is developed in order to support the study on theoretical basis, which will be adopted in practical conditions at BIDV from 2014 to 2018, based on which solutions to prevent and mitigate credit risk until the year 2030 will be suggested.

3. Aim of the study

Suggestion of solutions and recommendations for the prevention and mitigation of credit risk at BIDV.

As the mentioned aim of the study, the missions of the study are as following:

- Clarifying the theories on the prevention and mitigation of credit risk in today's conditions.

- Drawing lessons on prevention, mitigation of credit risk for Vietnam commercial banks from studying the experiences of a number of commercial banks in the world.

- Assessing the current situation of the prevention and mitigation of credit risk at BIDV from 2014 to 2018 systematically.

- Suggesting solutions to prevent and mitigate credit risk at BIDV until 2030.

4. Subject and scope of the study

4.1 Subject of the study

Coming from the rationale of the subject of the study, on the basis of the requirements and ability to study, the PhD student chooses the main subjects of "credit risk" and "prevention and mitigation of credit risk at commercial banks".

4.2 Scope of the study

- Content: The thesis concentrates on studying the prevention and mitigation of credit risk at BIDV of its loaning activities and approaches the subject according to current laws and regulations.

- Location: The thesis focuses on the prevention and mitigation of credit risk of loaning activities at BIDV

- Time: Surveillance and analysis of the current situation of prevention and mitigation of loaning activities at BIDV from 2014 to 2018. The solutions are adopted until the year 2030.

5. Methods of the study

The thesis adopts the method of dialectical materialism and historical materialism in order to ensure that the awareness of the preventation and mitigation of credit risk according to international standards at commercial banks generally and at BIDV specifically is logical from visual awareness to thinking and realistic perception, in the dialectical relationship between parts of the same system, between the system and the surrounding environment and appropriate for its natural law of motion.

On the basis of method of dialectical materialism and historical materialism, in order to obtain scientific analysis, assessment, reasoning on the subject, the PhD student chooses the following methods:

Scientific reasoning methods: Induction, deduction, analogy, analysis, summary, reconciliation, comparison, systematization, generalization methods are used for the information collected by the PhD student to clarify basic theoretical concepts of the preventation and mitigation of credit risk at commercial bank and the current situation of preventation and mitigation of credit risk at BIDV.

Statistical method: The collection of primary and secondary information relating to the prevention and mitigation of credit risk at BIDV following the order from internal reports to reports of State management authorities and direct supervision at the operation center and various branches to collect information for the study of the thesis.

Comparison, analysis and summary method: Based on the results of statistical analysis, comparison, analysis and summary of the data in statistical reports of

BIDV, PhD student assesses the current situation of credit risk and the prevention and mitigation of credit risk at BIDV in the period from 2014 to 2018.

Logical reasoning: From the basic theoretical and basic practical issues, especially from the weakness of the prevention and mitigation of credit risk system and causes of credit risk at BIDV, PhD presents logical reasons for recommendations and solutions to improve the prevention and mitigation of credit risk at BIDV.

Questionnaire method: The questionnaires on the current situation of credit risk controlling are distributed at the following branches: Operation center 1, Operation center 3, Hanoi Branch, Da Nang Branch, Hung Yen, Hai Phong, Hai Duong, Ky Hoa, Ham Nghi, District 7 and District 9 Ho Chi Minh City, Long An, Moc Hoa Branch to obtain more information for the assessment of the prevention and mitigation of credit risk at BIDV branches. The representativeness of the branches chosen by the PhD student is ensured: There are branches in big city and in rural areas, branches with high bad-debt ratio and low bad-debt ratio. As the quantitative models, capital measurement formulas, measurement and assessment formulas of credit risk are mentioned and their precision and scientificness have already been approved, the PhD student will not have an in-depth look on mathematic techniques but will automatically accept the results of the related studies when it comes to the measurement, assessment and quantification of credit risk.

6. New contributions of the thesis

- New basic theoretical contributions:

Systematization of the theoretical basis on the prevention and mitigation of credit risk, and that of commercial banks with an addition of new changes when banks are in the process of implementing regulations of Basel II. Systematization of lessons and experiences of the prevention and mitigation of credit risk activities of various banks in the world, from which the lessons which can be reference material for commercial banks in Vietnam generally and BIDV specifically are drawn.

- New practical contributions:

+ The PhD student utilizes the basic theoretical knowledge on the prevention and mitigation of credit risk: the content related to credit risk, credit risk measurement models, impact factors and the implementation of the prevention and mitigation of credit risk in Vietnam according to international practices in order to comprehensively and systematically assess the curent status of the credit risk prevention and mitigation activities at BIDV from 2014 to 2018. With a variety of updated data withou unknown sources, the thesis has presented the level of success, downsides and their causes. From the quantitative studies, the thesis produces

reliable practical results. The thesis has a practical assessment method with more advantages than other announced works with similar topics.

+ The thesis suggests new solutions, innovative and modern content to improve credit risk management at BIDV till the year 2030, such as: Developing and completing credit risk management strategy; completing the credit risk prevention and mitigation model; completing the set of rules of credit risk prevention and mitigation; improving the quality of credit risk appraisal; improving effective control of credit after disbursement of funds...; suggesting recommendations to responsible authorities in order to prevent and mitigate credit risk at BIDV till the year 2030.

7. Structure of the thesis

Apart from the introduction, conclusion, reference and appendices, the thesis consists of three chapters:

- *Chapter 1:* Theories on the prevention and mitigation of credit risk of commercial bank.

- *Chapter 2:* Current situation of the prevention and mitigation of credit risk at BIDV.

- *Chapter 3:* Solutions to prevention and mitigation of credit risk at BIDV.

CHAPTER 1
THEORIES ON THE PREVENTION AND MITIGATION OF CREDIT RISK OF COMMERCIAL BANK

1.1 CREDIT RISK OF COMMERCIAL BANK
1.1.1 Credit activity of commercial bank

Credit activity of commercial bank is the relationship between lenders and borrowers with the repayment of both the loan and interest in a specific time period, the relationship of temporary transference of capital and mutually benefited for both sides.

Apart from the defition, this content also mentions the classification, characteristics and roles of credit activity of commercial bank.

1.1.2 Credit risk of commercial bank
1.1.2.1 Definition of credit risk

Credit risk is the possibility of a loss or financial casualty that commercial bank must bear because of a borrower's failure to repay a loan or/ and its interest or meet the payment deadline.

1.1.2.2 Classification of credit risk

- Based on characteristics of credit risk: default risk and deferred payment risk.

- Based on the classification of credit loans: there are five types of credit risks.

- Based on the causes of credit risk: transaction risk and portfolio risk.

- Based on the scale of credit risk: unique/ unsystematic risk and systematic risk.

1.1.2.3 Causes of credit risk

Objective causes: Political and legal environment; economic environment; borrowers.

Subjective causes: Credit policy of the bank; poor skills and disqualification as well as the violation of code of ethics and conduct of the credit officers; lack of supervision and risk management after granting loans; unthorough internal inspection: lack of cooperation between commercial banks; the management's unfulfillment of its role; inappropriate credit model; concentration of credit portfolios; irregular assessment of credit activity.

1.1.2.4 Indicators of credit risk measurement

In order to identify credit risk, it is possible to base on direct indicators, such as: overdue debt, bad debt, credit loss provision. Additionally, indirect indicators including: credit amount, the increase of credit amount, credit structure and other indicators.

1.1.2.5 Impact of credit risk

Negative effect on the performance of the bank: Increasing the cost of capital; decreasing profit; posing a threat to the bank's solvency; forcing the bank to increase capital to compensate for credit losses; curbing the credit growth; damaging the bank's reputation.

Detrimental impact on the economy: Causing economic stagnation; leading to an unstable financial-banking system; negatively affecting the state budget.

1.2 THE PREVENTION AND MITIGATION OF CREDIT RISK OF COMMERCIAL BANK

1.2.1 Definition of prevention and mitigation of credit risk

Prevention and mitigation of credit risk are solutions aiming to ultimately prevent the rising of risks, such as the borrower fails or partly meets their obligations, causing losses to the bank; the borrower does not make a repayment or only pays a part of the debt, not pay on time both the loan and the interest.

1.2.2 Content of prevention and mitigation of credit risk

1.2.2.1 Developing credit risk prevention and mitigation strategy

- Developing a strategy for the prevention and mitigation of credit risk.

- Formulating a policy for the prevention and mitigation of credit risk.

1.2.2.2 Developing a credit risk prevention and mitigation model

a. Model of credit risk concentration management

The model in which the authority of credit granting concentrates on independent credit approval individuals or a group of people (credit committee, credit department...).

b. Model of credit risk dispersion management

The model in which each manager, board of management of business units is responsible for a specific level of credit decision. When granting a higher level of credit, the business unit must present the document to higher authority for approval.

1.2.2.3 Organizing the prevention and mitigation of credit risk

a. Credit risk identification

On the basis of the identification of risk, risk managers continue with the next steps. This is one of the most important content of the credit risk management. In order to identify a risk, it is necessary to examine the signs and base on which to analyze and assess the risk, realizing its nature, impact factors and their level of impact on credit risk of commercial banks.

b. Credit risk analysis, assessment and measurement

Based on the indentification signs, the next steps are analyzing, assessing and measuring credit risk.

c. Response to credit risk

In order to deal with credit risk, the bank often use risk dispersion, risk prevention, risk insurance tools and settle bad debts

d. Control of credit risk

Credit risk control is one content of credit risk management and is simultaneously carried out together with risk management aiming to: (i) prevent and control possible risks that might arise in banking activity; (ii) ensure all activities, departments and individuals are in accordance with legal regulations, levels of authority, ensure safety and effectiveness in activities of the bank.

1.2.3 Factors affecting the prevention and mitigation of credit risk

Objective factors: lack of awareness; lack of conform with current regulations; moral degradation and irresposibility of lending officers; inappropriate internal inspection; inappropriate supervision and debt management after issuing a debt; lack of customer information.

Subjective factors: Customer related factors; factors originated from the ownership of the government…

1.3   LESSONS   AND   INTERNATIONAL   EXPERIENCES   IN

PREVENTING AND MITIGATING CREDIT RISKS

1.3.1 International experiences on the prevention and mitigation of credit risks of a number of banks in the world

In this section, the thesis studies the experiences of ANZ, Bangkokbank, KDBank, and Citibank in order to form a basis for BIDV experiences.

1.3.2 Lessons for Vietnam's commercial banks

From studying the experiences of credit risk management of various banks in the world, there are many lessons for Vietnamese commercial banks that can be drawn as following:

- Execute the prevention and mitigation of credit risk in accordance with international practices.

- Choose a credit risk management model based on specific conditions.

- Notice that the effectiveness of the credit risk management depends on its steps.

- Improve and conform to legal systems.

- Modernize technology to effectively implement the credit risk management model.

CONCLUSION OF CHAPTER 1

Chapter 1 has generalized the basic concepts of credit risk and the prevention and mitigation of credit risk including credit risk's nature, classification, causes and credit risk impact on commercial banks. An important content of this chapter is the prevention and mitigation of credit risk, in which the definitions, necessity, content including: credit risk indentification, analysis, assessment, response and control are clarified. In addition, this chapter has an in-depth look on credit risk prevention and mitigation models, experiences on the credit risk prevention and mitigation of banks in the world and lessons for Vietnamese banks and BIDV.

CHAPTER 2

CURRENT SITUATION OF CREDIT RISK PREVENTION AND MITIGATION OF THE JOINT STOCK COMMERCIAL BANK FOR INVESTMENT AND DEVELOPMENT OF VIETNAM

2.1 BACKGROUND OF THE JOINT STOCK COMMERCIAL BANK FOR INVESTMENT AND DEVELOPMENT OF VIETNAM

The thesis presents the history of the establishment and development, structure of the organization, credit risk current situation and the performance results of BIDV from 2014 to 2018.

2.2 CURRENT SITUATION OF THE PREVENTION AND MITIGATION OF CREDIT RISK AT BIDV

2.2.1 Current situation of strategy and policy of credit risk prevention and mitigation at BIDV

BIDV has always been the pioneer of implementing the best international practices to manage business activity, especially to prevent and mitigate credit risk.

BIDV maintains a credit risk management policy that ensures the following basic rules: establishing a suitable credit risk management environment; following an appropriate credit-granting-procedure; maintaining an appropriate process of credit management, measurement and supervision; ensuring full control over credit risk.

2.2.2 Current situation of the credit risk prevention and mitigation model of BIDV

Nowadays, BIDV implements a credit risk prevention and mitigation dispersion model, in which the organization credit risk management is at different parts of the organization, the authority and risk management of the loan does not focus on the head office but on various branches.

2.2.3 Current situation of the prevention and mitigation of credit risk at BIDV

(1) Current situation of credit risk identification

Identify credit risks comprehensively and continuously in all periods when credit risk might arise, according to specific requirements of each type of credit transaction. Credit risk indentification process at BIDV is executed in a specific order.

(2) Current situation of credit risk analysis, assessment, and measurement

a. Credit analysis and assessment of credit activity

The determinants of the amount of credit expressed in the credit outstanding balance of BIDV in 2014 are 445,692 billions VND and increased up to 988,738 billions VND in 2018, with the growth rate of 122%. The growth rate of credit outstanding balance also expresses the level of credit risk of the bak. With the high growth rate, it is essential to develop effective policies and tools to prevent and mitigate credit risk to control the level of credit risk according to plans.

- Bad debt indicators of BIDV account for a low portion of total outstanding credit balance. However, the indicators have the tendency to rise in recent years. The credit risk is in a controllable level, lower than the avarage level of the organization. On the other hand, the credit risk management has many downsides and it will have negative impacts if there are not any appropriate measure including the credit risk

prevention and mitigation dispersion model currently in use.

b. Credit risk analysis and assessment for customers by means of credit ratings

In 2016, BIDV has completed and introduced the internal credit rating system along with the debt classification program and credit risk provision, assisting in meeting the requirements of debt classification and risk provision in Circular 02/2013/TT-NHNN of the National Bank, and at the same time facilitating the collection of necessary data for the development of credit risk quatification model in accordance with the international standards of Basel II.

Generally, the credit risk measurement according to the requirements of National Bank only assesses the risk and classifies the loans after issuing the loan, but does not predict risks. This measurement method mainly assists in settling bad debts rather than preventing and managing credit risk.

(3). Current situation of response to credit risk

Credit risk response includes loan mangement, risk limitations formulation, authorization level granting, risk provision and classification, bad debt settlement, and doubtful debt management.

Table 2.11: Provision for credit risk of BIDV from 2014 to 2018

Unit: Billion VND

Indicators	2014	2015	2016	2017	2018
Bad debt outstanding balance	9,055	10,052	14,427	13,948	18,802
Credit risk provision	6,622	7,517	10,063	11,349	18,893
Risk provision/ bad debt	0.73	0.75	0.70	0.81	1.00

Source: [30], [31], [32], [33], [34]

It can be seen that BIDV's risk provision has the tendency to rocket: from 6,622 billions in 2014 to 18,893 billions in 2018. The increase in risk provision shows that BIDV put the credit risk prevention and mitigation into great consideration.

(4) Current situation of credit risk control

Credit risk control techniques are clearly shown in the system of policy execution papers of BIDV. The techniques include: risk avoidance, risk prevention, loss reduction, risk diversification.

2.2.4 Current situation of the introduction of credit risk prevention and mitigation system according to Basel II

- BIDV introduces the project Basel in the year from 2017 to 2019 including 57 projects, with the duration time until 2020, divided into 6 parts: credit risk, market

risk, performance risk, liquidity risk, bank ledger interest, ICAAP – integrated bank, information and data technology.

2.2.5 The adoption of econometric model to assess the current situation of preventing and mitigating credit risk at BIDV

2.2.5.1 Study model

Based on the aim and questions of the study, the thesis is developed in three aspects: (1) Study of theories of the prevention and mitigation of credit risk at commercial banks; (2) Study of the current situation of the credit risk prevention and mitigation at commercial banks; (3) Solutions for the prevention and mitigation of credit risk at BIDV.

2.2.5.2 Methods of the study

(1) Basis of the methodology:

The basis of the methodology of the thesis is the dialectical materialism method adopted by means of the collection, procession, analysis of data based on the awareness of the study issues from theoretical basis to practical prevention and mitigation of credit risk at BIDV from 2014 to 2018.The examination of the related published studies, data and practical examples will be executed by means of inspection, selection of sample and questionnaire.

(2) Means and approach procedure of the thesis

In order to approach the study topic, solve the study question and achieve the aim of the study, the thesis combines quantitative research and qualitative research.

(3) Design of the study

The design of the study is a detailed design that formulates data collection method, processing and analyzing tools of the collected data that the thesis chooses to verify the suppositions. The design of the study of PhD student includes: (1) Choosing the study sample; (2) Collecting data; (3) Analyzing data.

a. Choosing sample

In order to collect representative data, PhD student studies two groups: BIDV managers and professionals.

b. Collecting data

PhD student focuses on studying the subjects in the chosen samples from 2014 to 2018.

+ 1st period: Develop a questionnaire.

+ 2nd period: Consult professionals.

+ 3rd period: Giai đoạn 3: Design official questionnaire.

The results of BIDV's and customer's survey are summarized and used in

chapter 2 with an aim to assess the current situation of the prevention and mitigation of credit risk at BIDV and provide a basis for the suggestion of solutions of prevention and mitigation of credit risk at BIDV.

c. Processing and analyzing data

The data used in the thesis includes primary and secondary data.

After being fully collected, the data is imported into Excel, in which the variablesare coded into parts and groups of the questionnaire. Then the data is imported into SPSS. As a result, there are 32 data samples of the head office professionals and 71 samples of the branches in the SPSS. The statistic analysis results are shown in the following tables and in chapter 2 of the thesis.

Logistic regression analysis steps

As for the considerable amount of the input variables, the choosing of the variablesthat represent each composition (T24/CIC/BCTC (from the Balance sheet)/BCTC (from the Income statement)/financial statement ratio) is executed by means of independent logistic regression for each composition and choosing of the best-representative variablesbefore carrying out multiple-variable regression for each model.

PhD student chooses SPSS 22.0 to analyze the mentioned data because of its superior functions: convenience for qualitative and quantitative analysis of descriptive statistics by means of qualitative questions (questionnaire), comparison of the average values of the sample groups, reliability analysis of the questionnaire, analysis of the discovery factors...Additionally, it can analyze samples at considerable size, and its data input and coding mechanism are appropriate for the aim of the study and compatible to other software including Excel. Plus, it produces results of tables and graphs that are scientific and graphical. The presenting and printing of the results are very convenient using SPSS 22.0.

2.3 ASSESSMENT OF THE CURRENT SITUATION OF THE PREVENTION AND MITIGATION OF CREDIT RISK AT BIDV

2.3.1 Achieved results

- Credit growth is as planned.

- The mechanism framework, credit prevention and mitigation policies system is developed.

- The managerial department for credit risk is formed.

- The internal credit rating system is well-developed and properly adopted.

- The Basel II standards are implemented in the prevention and mitigation of credit risk.

2.3.2 Downsides

- Incomprehensive credit risk prevention and mitigation strategy.

- Incomprehensive credit risk prevention and mitigation model.

- Risky credit-granting procedure.

-Incompleted early-predicting credit risk system.

- Asynchronous credit risk measurement system.

2.3.3 Causes of the downsides

2.3.3.1 Subjective causes

- The prevention and mitigation of credit risk have not been priotized in banking management.

- The authorization delagation documents are asynchronous.

- The credit officers lack of professional knowledge.

- Database, IT system, credit information system do not meet the requirements.

- Risk assessment tools are incompleted and qualitative.

2.3.3.2 Objective causes

- Customers.

- Banking and economic environment.

- Incomprehensive regulation and directive papers of the commercial bank.

CONCLUSION OF CHAPTER 2

Based on the basic issues of prevention and mitigation of credit risk in chapter 1, PhD student assesses the current situation of credit risk management at BIDV from 2014 to 2018. In order to correctly assess the credit risk management at BIDV, PhD student combines the results of the questionnaire, professional consultant and secondary data collection from the year 2014 to 2018 at BIDV on: credit risk strategy, credit risk prevention and mitigation models and procedures. The assessment results of chapter 2 are the basis for the solutions of chapter 3.

CHAPTER 3
SOLUTIONS FOR THE PREVENTION AND MITIGATION OF CREDIT RISK AT BIDV

3.1 DIRECTION FOR CREDIT RISK PREVENTION AND MITIGATION AT BIDV UNTIL THE YEAR 2030

The direction is based on developmental direction of business activity, credit and the prevention and mitigation of credit risk at BIDV in order to reccommend

suitable solutions.

3.2 SOLUTIONS FOR THE IMPROVEMENT OF CREDIT RISK PREVENTION AND MITIGATION AT BIDV

3.2.1 Development and completion of the credit risk management strategy

3.2.1.1 General strategy

In order to mitigate credit risk at BIDV, the essential solution is to develop and complete the credit risk management strategy. According to the requirements of Basel II Committee, the organization structure of the commercial bank needs changes to better manage credit risks. The banks need to appoint a department of credit risk management made of professionals who have in-depth understanding of various types of risk aiming to assess the bank's risks comprehensively. Every branch in the bank system has to develop a credit risk management strategy based on performance analysis, assess risks related to lending as well as the bank's risk-bearing capacity.

3.2.1.2 Specific strategy

* Credit risk dispersion

In the credit growth strategy, the diversification of credit-granting jobs aims at credit risk dispersion, avoiding the heavy concentration on a job to ultimately mitigate possible risk. It means that the dispersion of credit risk will greatly lower the loss if risks arise.

* Customer strategy development

Appropriate customer selection strategy is one of the necessary tools for credit risk mitigation. The development of a customer strategy will assist BIDV in classifying customers, selecting profitable customers with sound financial status, possible business options, credibility and willingness to pay debts.

3.2.2 Completion of the credit risk prevention and mitigation

3.2.2.1 General principle

The bank must develop a risk management structure that is appropriate with the size and characteristics of the business, but at the same time ensures the effectiveness of supervision and credit management execution in accordance with international practices.

3.2.2.2 Implementation of credit-approval concentration model

The selection of the system of credit-approval concentration model and credit risk dispersion supervision on the whole system aims at improving the speed of credit approval and ensuring the service quality, improving competitiveness, ensuring risk control, competitiveness and independence of the following steps:

customer development, credit-granting inspection and credit appraisal.

3.2.2.3 Possible risk measurement models for BIDV

Reality shows that if only the qualitative model is implemented, credit risk will not be correctly measured, the effect of capital and macro-variables could not be calculated and the risk will be imprecisely predicted. Especially in special cases, the level of risk will not be determined if the bank does not base on experiences. Therefore, it is necessary to implement both qualitative and quantitative models.

The assessment and quatification of credit risk and the loss caused by it are not simple. As a result, most commercial banks in Vietnam have not developed an effective credit risk measurement model. In order to maintain its competitiveness and sustainable development, BIDV needs to determine and study a suitable credit risk measurement model. It is possible to study the following models: 6C-based quality model; credit loss forecasting model; Logistic regression analysis for customer rating.

3.2.3. Completion of the rules on the prevention and mitigation of credit risk

In order to ensure the credit performance effectiveness, transparency, easy responsibility delegation, the banks must inspect, standardize, develop rules and procedures of credit risk prevention and mitigation, including:

-Rules on credit products, collaterals, customers, geographical locations, economic jobs that are allowed to grant credits or abstained from doing so.

-. Procedures on credit appraisal, management and credit filing.

- Rules on decentralization of authority of credit appraisal, including the authority to appraise credit in special circumstances.

-. Manuals for each method and form of credit-granting

- Credit lines and credit-granting limitations in accordance with legal regulations and credit risk management strategy.

- Rules on the decentralization of authority of risk provision and the use of the provision for credit risk according to legal regulations.

- Rules on the determination of credit-granting interest.

- Rules on the role and responsibility of each individual and department related to credit granting and management.

-. Rules on doubtful debt management.

- Rules on the internal credit rating system.

- Especially, with the implementation of IT in bank and credit risk management, the rules and procedures on credit activities that need inspection and adjusting in

order to meet the requirements of the IT system, aiming at automatical information update, analysis, assessment and presentation.

3.2.4 Improvement of credit risk appraisal quality

3.2.4.1 Improvement of the information collection and procession quality

Having precise and sufficient information about customers in time is complicated and has an important role in improving lending service quality.

- Developing and completing the system of information collection and procession on the economy, market and customer so that risk forecasting can be made in time.

- It is essential to include direct interview, personal papers verification, media, credit organization that provided services for the customers,... in customer appraisal procedure as it assists the bank in the verification of working style, management ability, honesty, personality of the customer.

- Credit officers are the ones who usually make contact with customers.

3.2.4.2 Improvement of credit risk identification

After identifying the risk, the managers continue with the next steps. This is one of the most important content of the prevention and mitigation of credit risk. In order to identify a risk, it is necessary to consider signs of credit risk, then carry out risk analysis, assessment and realization of its nature, the impact factors and their level of impact on the risks.

On the basis of credit risk signs, the credit risk management departments assesses, comments on and presents the results to department that is directly responsible for credit risk to solve the problem in time. Credit risk signs might originate from the customers or the bank itself. This process is executed in the whole procedure of credit granting to customers, from providing services, appraising and approving loans, supervising to settling doubtful debts.

3.2.4.3 Improvement of customer evaluation quality

* Completion of the content and procedure of financial analysis

Nowadays BIDV has the regulation paper for credit-granting procedure for the whole system and based on which, the appraisal departments of each branch can develop an united appraisal procedure for credit appraisal.

* Requirements for the use of the internal credit-rating system

Despite being simple and having many flaws, this credit risk qualitative measurement method partly assists risk managers in acquiring an overview on the current risk level of the bank, suitable to most Vietnamese commercial banks' current technology level. However, for the highest effectiveness level,

3.2.4.4 Improvement of the credit approval

The bank must have a credit approval approval procedure from the highest to the lowest level of authority. The credit approval procedure must be written in papers in accordance with the requirements and regulations. Based on the size of the bank and the complexity of the credit, the credit approval procedure must listed the requirements on the essential credit appraisal information needed for credit approval in detail.

3.2.5 Effective control after disbursement of funds

3.2.5.1. Effective control after disbursement of funds

Despite credit appraisal and reappraisal of the projects, credit risk still arises after credit granting. After credit granting, credit risk does not only come from ineffective choice of business, customers using loans for wrong purposes but also comes from the bank which could not control the cash flow after determining the business choice, leading to the situation in which customers use money from business choice for intransparent and ineffective purposes.

3.2.5.2 Enhancement of credit inspection and supervision

a. Credit risk supervision

The subject of credit risk supervision is the current performance of the customer's business and their fulfillment of the requirements signed in the credit contract. In order to fast and effectively carry out the supervision, the bank needs to rely on tools such as: risk signs, graphs showing the business's financial indicators, risk rating and collateral rating. The supervision of credit is executed at different levels.

b. Risk rating

BIDV needs to develop a risk rating system for credit portfolios. It assists the bank in loan pricing, early identification of misfunction loans that might cause considerable loss for the bank. There might be customers who are at the same level of risk after risk rating but the bank can decide on the loans and supervision differently based on the quality of collateral- the second repayment source of customers.

3.2.6 Assisting solutions

3.2.6.1 Pricing and effective use of collateral

It is necessary for BIDV to separate the collateral pricing department from the risk appraisal department as at the moment the credit officers who are responsible for the loans are also in charge of collateral appraisal. As a result, due to the dispersed asset pricing, there will be a number of officers who do not have in-depth understanding of the case or not knowing that the asset price would be set higher

than the market price, or officers who are under the pressure of the assigned business target have decide on a price that is higher than the asset's actual value. All of these things would cause great losses for the bank if the customer cannot make repayments. The pricing of an asset must be carried out carefully, if the asset is of high value, it is essential to hire a reliable and experiencesd independent pricing unit. For assets of specific use, it is advised to consider the potential factor of the profession of the owner business. For machinery and devices, technological production line of an international business, it is necessary to avoid the case in which the business changes or overstates the price.

3.2.6.2 The execution of risk provision according to legal regulations

- The bank must regularly classify assets, making risk provision for business activity, especially credit activity in order to actively handle the risk that might arise, allowing sound financial status of the bank.

- The classification of assets and making risk provision in banking activity of the credit organization is executed in accordance to the regulations of the National bank- currently Circular 02/2013/TT-NHNN on 21st January 2013.

- In long term, the bank must develop policies for risk provision and a system for internal credit rating based on the evaluation of the financial status and repayment capacity of the customer as well as the bank's financial status. This way correctly expresses the nature of loss and risk provision of banking activity because it reflects the quality and the loss probability of the asset, allowing the bank to respond to risk in time.

3.2.6.3 The decentralization of credit-decision making authority and effective settlement of doubtful debt

a. Decentralization of credit-decision-making authority

The decentralization of credit authority is of utmost importance to a commercial bank. In term of effectiveness, an appropriate procedure of decentralization of credit authority helps the bank to improve credit quality and reduce credit risk.

b. Effective settlement of doubtful debt

Based on the credit status of BIDV, it can be seen that the number of high risks from doubtful debt is inconsiderable. Therefore, the suitable risk mitigation method for BIDV would be concentrating on effective settlement of current overdue debt, bad debt, off-balance sheet debt. BIDV needs to supervise bad debt effectively by means of doubtful debt analysis together with periodic bad debt classification. In order to settle a bad debt in time and effectively, the risk warning and detection of bad debt steps play an important role, directly affecting the debt settlement process

afterwards.

3.2.6.4 Improvement of the quality of the workforce and professional ethics

In the current situation ò banks providing the same financial services and fierce competition among banks, the high quality workforce will determine the growth of the bank. BIDV is a big sized bank that attracts high quality qualified and experiencesd workforce. In terms of credit, in order to mitigate risk, it is unquestionable for customer management officers to be proficient in credit operations as they are the bridge between customers and the bank, as a result, the better the officer is in their work, the better they are at identifying and exploiting chances to increase profits and prevent possible risks.

3.2.6.4 Implementation of IT in the prevention and mitigation of credit risk

Information technology is a espcially important factor in improving the performance of the bank as it improves the quality of the working environment, increses working and transaction processing speed with higher safety level thanks to the decrease in manual intervention, thus improving service quality.

One of the important solutions of the prevention and mitigation of credit risk is the development of an early credit risk warning based on IT. Based on regularly updated customer data, credit portfolios and credit information of the bank, together with the market information and algorithms, the system will produce risk warnings on each loan issued, credit portfolio, and the whole banking system for managers and executives to deliver reponses in time.

3.3 RECOMMENDATIONS

In order for the mentioned solutions to be best implemented, the thesis presents a number of recommendations to the government and the National Bank.

CONCLUSION OF CHAPTER 3

In chapter 3 of the thesis, based on the directions of business performance development and the prevention and mitigation of credit risk at BIDV in the next time period, PhD student suggests a system of solutions based on scientific aruguments, performance ability and National Bank's guideline. The PhD student at the same time makes a number of recommendations to the government with an aim to create advantageous business environment and legal corridor as well as assist BIDV in the implementation process to ensure the feasibility of the solutions

CONCLUSION

The prevention and mitigation of credit risk in order to maximize the correlation between profit and risk has always been the target that BIDV and other commercial banks aim at. However, this is a tricky problem for commercial banks, requiring implement various synchronized solutions. The thesis has completed with the following main contents:

- The first content is the systematization and completion of theoretical basis for the prevention and mitigation of credit risk of commercial banks ; the experiencess of credit risk prevention and mitigation at various countries' banks from which lessons for Vietnamese commercial bank are drawn.

- The second content is the study on the current situation of credit risk prevention and mitigation at BIDV in the past period in terms of scale and quality indicators. On that basis, the PhD student evaluates the achieved results, presents a number of insufficiencies and their causes;

- The final content is the suggestion of a number of direct and indirect solutions, and recommendations for the effective credit risk prevention and mitigation at BIDV in the next time period.

With the basic content of the thesis, the PhD student hopes that the study results of the thesis would have specific contribution on the completion of theoretical basis of effective credit risk prevention and mitigation at Vietnamese commercial banks generally and BIDV specifically.