# ACADEMY OF FINANCE

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## NGUYEN THUY LINH

# "IMPROVING CREDIT RISK MANAGEMENT CAPACITY AT VIETNAM TECHNOLOGICAL AND COMMERCIAL JOINT STOCK BANK"

**Chuyên ngành: Banking - Finance**

**Code : 9.34.02.01**

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## THESIS ABTRACT

**Hà Nội, 2020**

Reviewer 1……………………………………………………

Reviewer 2……………………………………………………

Reviewer 3……………………………………………………


**The thesis will be defended in front of the Judging Council**

**at Academy of Finance**

At: …….date ……month…..…year……..

# PREFACE

## 1. The necessity of the thesis

In any stage of development, lending is one of commercial banks' core activities. Credit risk is one of the most significant risks, considering that interest income is the main source of income that commercial banks collect. In the context of today's competition and integration, one of the essential factors contributing to the existence and development of a commercial bank is its ability to manage risks, especially credit risk, in a comprehensive and systematic manner. However, the effectiveness of credit risk management is directly affected by the risk management capability of commercial banks. Therefore, in theory, commercial banks have to improve credit risk management capacity.

In reality, since Vietnam's accession to the World Trade Organization (WTO), the credit activity of the banking system has faced great risks due to high inflation, overly speculative growth of real estate and stock markets, weaknesses in management of State-Owned Enterprises (SOE), and changes in natural disasters and epidemics in agricultural production. Credit activity is also affected by international financial crises and European countries debt crisis. Due to the impact of these objective factors, along with the weakness in credit risk management capacity of commercial banks, the bad debt ratio of the banking industry increased and was slowly resolved. This high bad debt issue requires commercial banks to improve credit risk management capacity toward sustainable development.

Established over 27 years ago, Vietnam Technological and Commercial Joint Stock Bank (Techcombank) has achieved considerable achievements, especially in credit risk management. As of December 31, 2019, Techcombank is a local bank that maintains its leading capital position in the Vietnamese commercial banking system with a capital adequacy ratio under Basel II reaching 15.5% and a relatively low Non-Performing Loan (NPL) ratio at 1.3%. However, while still under control, Techcombank's NPL ratio demonstrated volatility during the period of 2014 – 2019. At several occasions, the bad debt formulation rate was high, showing some limitations in risk management although Techcombank is one of the recent pioneers in advanced risk management. As the financial market being heavily influenced by macro-economics, studying risk management activities of Techcombank is necessary and practical.

From aforementioned reasoning, I chose the topic: "Improving the capacity of credit risk management at Vietnam Technological and Commercial Joint Stock Bank" for my doctoral disertation.

## 2. Literature Review

## 2.1. International Literature Review

- The Basel Committee on Banking Supervision published Basel Accord I (1988) that sets minimum capital standards for internationally active banks to promote financial stability by adopting a relatively simple approach to credit risk with the potential to distort incentives for bank risk-taking. The New Capital Adequacy Framework Basel II (2004) proposes a significant refinement of regulatory and supervisory practice and encourages increased attention to risk management practices in supervisory agencies and financial institutions and improved disclosure and market discipline.

The Basel III framework was formed in 2010 to deal with the global financial crisis. Basel III is a landmark achievement that helps protect financial stability and promote sustainable economic growth. The higher levels of capital, combined with a global liquidity framework, will significantly reduce the probability and severity of banking crises. The Framework sets out higher and better-quality capital, better risk coverage, the introduction of a leverage ratio as a backstop to the risk-based requirement, measures to promote the build up of capital that can be drawn down in periods of stress, and the introduction of two global liquidity standards.

The Basel Banking Supervisory Committee has also set out a set of principles to be followed in risk management in the "Credit risk management principles" - this is also a document that deals with the risk management capacity through the introduction of principles in risk management.

- Glen Bullivant (2005) in "Credit Management" has covered all aspects of credit management. The main content is that cash flow, cash flow management, improved profit issues , enhanced by many compatible plans. All important credit control issues are covered in detail. However, the author focuses on the theoretical aspect of credit management, not to mention the practical basis of credit risk management activities.

- Glen Bullivant et al. (2004) in "Effective credit control & debt recovery handbook - Tottel Publisher" have shown that poor credit management and bad debt are often linked with commercial banks failure. Therefore, it is important, according to the author, to ensure that there is a system that keeps credit risk at low levels and at the same time understands the debt collection procedure in case of non-payment. This book is updated with the latest legal issues and provides practical information on all aspects of credit control and debt collection. However, the book does not mention the specific characteristics of risk management in emerging markets like Vietnam.

- Joel Besis in "Risk management in banks" has introduced the concepts, general theory of credit risk, risk management, proposing a risk assessment model. He develops some concepts related to credit risk management such as credit portfolio risk; credit portfolio management; and systematize risk management methods, quantify credit risk such as credit rating system; statistical models and scoring; credit risk data. However, the research only addresses credit quality, developing and synthesizing credit risk management processes as part of the dialectical relationship with credit risk management capacity.

- Anthony Saunders & Linda in "Credit Risk Measurement" (2002) focus on analyzing the content of portfolio risk measurement, which constitutes the management of asset portfolios of commercial banks. The highlight of the book is an in-depth analysis of the nature of risk measurement methods through statistical models. The authors explore the technicality of the methods, variables, the dependence of variables related to credit activity data, in order to make forecasts, calculate the probability of occurrence of risk to improve the capacity of risk management, risk management of banks. However, the work does not cover the other contents of portfolio management / loan portfolio management, but only limits on risk and measures risk.

- Frey, R., and McNeil, A in "VaR and expected shortfall in portfolios of dependent credit risks: Conceptual and practical insights" (2002) describe concepts of credit risk, develop and apply credit risk model in credit risk management. The study mainly focus on theoretical overview rather than mentioning the application in specific cases of commercial banks.

- Shelagh Heffernan in "Modern Bank" (2005) specifies the contents of credit risk and risk management techniques, international regulations on risk management (Basel I and Basel II).

- Peter S. Rose in "Commercial Banking Administration" (2002) closely analyzes the bank's risks including credit risk and measures to prevent and limit risks.

- H.Greuning & S.Bratanovic in "Analyzing Banking Risk, A framework for Assessing Corporate Governance and Financial Risk" (2009). This publication aims to complement existing methodologies by establishing a comprehensive framework for the credit risk management of banks, not only by using financial data, but also by considering corporate governance. It argues that each of the key players in the corporate governance process is responsible for some component of financial and credit risk management. The book also considers the partnership approach and the emerging framework for corporate governance and credit risk management, as well as the identification and allocation of tasks as part of

the risk management process. The framework for risk management is further discussed, in which credit risk management capacity bases on a number of factors.

- Y.Y. Haimes in "Risk modeling, evaluation and management - Risk modeling, assessment, and management" (2016) present (i) Basic theory of risk modeling, risk assessment and risk management; (ii) Advanced material to enhance Risk Filtering, Ranking, and Management.

- Michael Ong in "Internal Credit Risk Models, Capital Allocation and Performance Measurement", (2005), studies in detail how to approach and build credit rating models, specifically: meaning and components of credit risk, methods of measuring debt solvency; building credit risk measurement model; approaches to internal rating models in assessing credit risk (Monte Carlo, RAPM, RAROC models). Credit measurement models aim to build and manage credit portfolios and determine expected / unintended losses for banks, thereby making decisions on capital allocation and bank ranking. This is the basis for the author to build capacity factors on the construction and operation of measurement tools, risk management capacity according to the credit portfolio for commercial banks.

## 2. Vietnam Literature Review.

Up to now, there have been many Vietnamese thesiss and researches on credit risk and credit risk management. However, there are very few studies on credit risk management capacity of commercial banks.

Researchers and academics have constantly updated the general theory of credit risk management in the Vietnam commercial banking system. At the same time, Vietnam commercial banks' risk management activities have been recorded over time in order to look for solutions to improve credit risk management activities of these banks.

- Doctoral thesis of Economics, "Improving risk management capacity at AgriBank" by Ta Dinh Long (2016) clarifies the concept of risk management capacity and criteria for assessing risk management capacity in Vietnam commercial banks and at AgriBank, had a view to assess the risk appetite of credit risk assessment criteria, thereby offers recommendations to improve the risk management capacity.

- Doctoral thesis of economics: "Improving risk management capability under international practices in Vietnamese commercial banks" by Nguyen Thi Van Anh (2016) studied, identified and synthesized 8 groups of factors affecting credit risk management in commercial banks. These factors have previously only been assessed separately and have not been identified in the overall relationship of the Risk Management Capacity Framework. The author conducts a survey of asymptotic reality and readiness to apply

Basel II of the group of 10 local commercial banks, making comments related to the status of credit risk management, liquidity risk management capacity. However, the thesis refers to the risk management capability of the Vietnam commercial banking system rather than to a specific commercial bank.

• In the Proceedings of the Spring Economic Forum 2013, the paper "Restructuring commercial banks - Improving risk management capacity", Le Xuan Nghia (2011) has shown that the weakness of commercial banks is mostly due to poor management and executive capacity, IT system and risk management process. According to the research results, commercial bank restructuring is essential as a part of economic restructuring. These are profound insights and close to the actual practice of risk management in Vietnam commercial banks.

• In Finance Magazine, No 2 - November 2018 (693) "Regarding credit risk governance at commercial banks in Vietnam", Do Doan Trang studied the operation credit risk management of 17 commercial banks in the system of Vietnamese commercial banks, thereby analyzing the status of credit risk management activities of the Vietnamese banking system, drawing some limitations disclosing in credit risk management to propose a system of 7 solutions to improve the effectiveness of credit risk management activities in Vietnamese commercial banks.

• Workshop of Vietnam State Bank and German Bank Giz (2011) addresses the importance of technology and infrastructure not only to maximize profits and increase business performance, but also to ensure sustainable development. The role as well as the impact of the IT infrastructure element in the assessment of risk management capacity are analyzed but in the framework of the Workshop cannot clarify the actual situation, specific solutions to improve information technology infrastructure capacity of banks, the relationship between information technology infrastructure capacity and other capabilities in risk management capacity.

• The Doctoral thesis of economics "Managing credit risk for businesses at Vietnamese commercial banks" by Nguyen Thi Gam, National Economics University (2020). By traditional scientific methods and quantitative methods of regression models, the Pooled OLS model, performing a test of choice between Pooled OLS and FEM fixed impact model; model of random effects of REM, ... The thesis introduces the concept of credit risk management for businesses at Vietnamese commercial banks, draws the current picture of Vietnamese commercial banks in the period of 2012-2017 on the orientation of restructuring the commercial banks phase 2 of the Government to suggest solutions and

recommendations to the Government and the State Bank to enhance credit risk management for businesses.

- The Doctoral thesis of economics, "Risk management solutions at VietinBank" by Nguyen Nhu Duong (2019) applies basic theoretical knowledge of risk management in accordance to Basel 2 Accord to analyze and assess the status of credit risk management at Vietnam Joint Stock Commercial Bank for Industry and Trade (VietinBank) and apply the econometric model to assess the effectiveness of risk management activities of VietinBank.

- The Doctoral thesis of economics "Credit risk management at Military Commercial Joint Stock Bank" (MB) by Nguyen Quang Hien, 2016 clarifies the theory of credit risk and credit risk management in the context of increasing competition pressure in business activities of commercial banks. The thesis systematically assesses all of MB's credit risk in the period of 2011-2015 and MB's practice of credit risk management in the same period, thereby assessing the achivements as well as limitations in credit risk management to offer recommendations for the risk management in MB. The thesis does not research on risk management capability. On the other hand, the scope of the study is MB.

- The Doctoral thesis of economics "Credit risk management under Basel II at Agribank" by Tran Thi Viet Thach, 2016 analyzes and clarifies the benefits and conditions for commercial banks when implementing credit risk management under Basel II. The thesis examines risk management experiences in compliance with Basel II in some domestic and foreign commercial banks. The thesis analyzes and assesses the status of credit risk management at Agribank to offer solutions and conditions for the implementation of Basel II in credit risk management in Agribank. The thesis does not study the aspect of risk management capacity. On the other hand, the thesis studies on the risk management activities of Agribank, a State-Owned Commercial Bank.

- Research paper, "Analysis of enterprise credit by logistic model" by Hoang Tung published in Science and Technology magazine, University of Danang No. 2 (43) - 2011 This research paper has given an analytical model for calculating enterprise credit ratios through financial indexes in financial statements and listed indexes, publicized on the stock market of listed enterprises. The work has suggested quantitative credit risk research directions for subsequent works. However, this work has only focused on researching and evaluating financial indicators but not non-financial indicators which are the indicators to evaluate the operational effectiveness of commercial banks.

- The Doctoral thesis of economics, "Preventing and limiting credit risks at Joint Stock Commercial Bank for Investment and Development of Vietnam" by Tran Khanh Duong (2019) systematized credit risk prevention and regulations on credit risk management under Basel Accord in Vietnam, analyzing the status of credit risk and credit risk prevention at BIDV to give practical solutions to improve, prevent and limit credit risks in BIDV. The study mostly uses traditional research methods, not yet incorporating the use of modeling and quantitative methods.

**3. Reasearch Gaps and Research Question:**

*Reasearch Gaps:*

Studies related to credit risk, credit risk management and credit risk management capacity have contributed significantly to improving the risk management ability of commercial banks, however, the previous research still has some gaps as follows:

Firstly, theoretically, there are many aspects related to credit risk and risk management, however, the research projects focusing on the analysis of "risk management capability" are still limited. The research on the framework or analysis of "credit risk management capacity" at commercial banks is only suggestive, or from the approach of state-owned commercial banks. Many researches on credit risk and risk management are still only qualitative, they do not mention risk management modeling or risk mesuring tools, as well as losses and bank risk tolerance.

Secondly, in reality, the financial - banking sector is changing drastically over time, especially in the period of 2016-2019, which make the previous research papers less updated.

Additionally, researchers have not done any specific research topics on improving risk management capacity at Techcombank, while risk management and credit risk management capacity are burning issues and receive much attention from Techcombank executives as well as other banks' executives. Based on the collected data, this thesis focuses on analyzing the current status of risk management capacity of Techcombank in the period of 2014 - 2019, thereby building a model to assess risk management capacity of Techcombank and proposing solutions associated with Techcombank orientations in the risk management activities.

*Research questions:*

To solve the aforementioned research gaps, the research questions are:

(1) What are the theoretical framework of risk management capacity and content of risk management capacity? What are the factors in the framework of risk management capacity?

(2)    What is the current status of risk management capability of Techcombank? The extent of the influence of the components on the risk management capacity? Which factors were assessed to have the most important influence level as well as the order of the influence of each factor on Techcombank's risk management capacity?

(3)    What measures should Techcombank take to improve risk management capability in the context of using risk management under international practices?

### 4. Research objectives

Proposing solutions and recommendations to improve the risk management capacity at Techcombank

### 5. Research subject and scope

*Research subjects:* Risk management capacity at commercial banks.

*Research scope:*

- Regarding the content: The thesis focuses on researching the risk management capability at commercial banks

- Regarding space: The thesis focuses on researching at Techcombank.

- Regarding time: The thesis analyzes the current situation of risk management capacity at Techcombank for the period of 2014 - 2019. The solution will be implemented according to the roadmap to 2030.

### 6. Research method

To achieve the research objectives and answer the aforementioned questions, the thesis uses a combination of the following methods:

**- Statistical method:** Collecting primary and secondary data related to credit risk management at Techcombank over time from internal reports, reports of State Bank of Vietnam and direct observation at the Department transaction, some branches.

**- Interview method:** Interview, consult experts, credit officers and managers at some Techcombank branches (directly, via email) for the process of researching and completing the thesis.

**- Survey and questionnaire method**: Distributing the survey of risk management capacity at branches to get more information for evaluating credit risk control at Techcombank branches. The branches were carefully selected to ensure the diversity of branches, including large city, rural areas, different NPL ratio level (high vs. low) branches.

**- Experimental method:** Based on the results of the questionnaire survey and expert interviews, the author processes data on excel and SPSS software, analyzes the

reliability of each constituent element as well as measurement criteria to quantify the factors of the risk management capacity framework of Techcombank.

**- Methods of comparing, analyzing and summarizing:** Through statistics, the thesis compares, analyzes and synthesizes data of Techcombank, evaluates and analyzes the current situation of credit risk and risk management capacity at Techcombank from 2014 to 2019 .

**- Logical method:** From the theoretical and practical basis issues, especially the shortcomings and causes at Techcombank on credit risk management, the author can infer logical arguments to propose solutions and recommendations to enhance risk management at Techcombank.

## 7. Main achievements

The completion of the above thesis has the following scientific and practical significance:

- Systematizing the theoretical foundations on risk management, credit risk management with new changes when banks are implementing Basel II Accord, studying lessons to improve the risk management capacity of some commercial banks in the world and in Vietnam, thereby drawing some valuable lessons to improve the risk management capacity for Techcombank.

- The author has used the basic theoretical knowledge of risk management and risk management capability to approach international practices and current regulations in Vietnam to fully and comprehensively analyze and assess current situation of risk management capacity at Techcombank in the period of 2014 - 2019. With rich, updated and clearly-originated data sources, the thesis has pointed out the achievements, limitations and causes of the credit risk management capacity at Techcombank.

- Proposing new solutions to improve the risk management capacity at Techcombank such as: Enhancing the management and governance capacity; Improving capacity to build and operate credit risk measurement tools; Improving capacity to control credit risk; Enhancing the capacity to handle credit risk and proposing recommendations to improve the risk management capacity at TechcomBank by 2030.

## 8. Structure of the thesis

In addition to the introduction, conclusion, the thesis is divided into three chapters:

Chapter 1: Basic theory of credit risk management capacity of commercial banks

Chapter 2: Current situation of risk management capacity at Techcombank

Chapter 3: Solutions to improve the risk management capacity at Techcombank

# CHAPTER 1

# BASIC THEORETICAL CAPACITY OF CREDIT RISK MANAGEMENT OF COMMERCIAL BANK

## 1.1. Overview of credit risk management

## 1.1.1. Credit risk

### 1.1.1.1 Definition of credit risk

Credit risk of commercial banks is the risk arising due to the customer's failure to strictly comply with their debt payment obligations as committed to the bank.

### 1.1.1.2. Credit risk classification

In this content, the thesis refers to 2 ways to classify credit risk.

- Cause-based classification specifies transaction risk and portfolio risk.

- Subject-based classification specifies objective risk and subjective risk.

### 1.1.1.3. Impact of credit risk

Credit risk adversely affects bank's operating activities as well as puts weight on the economy.

### 1.1.2 Concept of credit risk management

Credit risk management is understood as the process of identifying and analyzing risk factors, measuring the level of risk, thereby selecting measures to manage credit activities to limit and eliminate risks in the credit process to ensure capital safety and maximize profits for commercial banks.

### 1.1.3. Principles of credit risk governance

The principles of credit risk management have been proposed by the Basel Committee with 17 basic principles in risk management, focusing on 4 contents: Establishing an appropriate credit environment; Reasonable credit granting process; An effective credit management, a complete control process.

### 1.1.4. Content of credit risk management

Regarding the contents of credit risk management, the thesis deals with the following issues: (i) Develop credit risk strategies, policies and processes; (ii) Identify credit risk; (iii) Measure credit risk; (iv) Accept, mitigate and refuse; (v) Manage and control credit risk and (vi) Complete credit strategies, policies and processes.

## 1.2. Credit risk management capacity of commercial banks

## 1.2.1. Concept of credit risk management capacity

Credit risk management capacity of commercial banks is the bank's resources in order to create the ability and conditions for commercial banks to perform credit risk management activities, minimize losses that may occur to commercial banks.

### 1.2.2. The meaning of enhancing credit risk management capacity

Improving the capacity of credit risk management has great significance, stemming from the characteristics of the banking business sector is a special type of business, with many potential risks; Business performance of commercial banks depends on the level of credit risk and the enhancement of risk management capacity is a prerequisite and indispensable factor to improve the effectiveness of credit risk management.

### 1.2.3. Framework of credit risk management capacity of commercial banks

Executive management capacity: The management capacity of commercial banks depends on two aspects: Capacity to develop strategies, improve credit processes and policies; Capacity to build organizational structure of risk management.

Capacity to build and operate credit risk measurement tools: Capacity to measure credit risk is the ability to quantify the level of risks as well as to know the probability of occurrence of risks and the extent of losses when risks occur to consider its ability to accept it.

Credit risk control capacity: Capacity to build and improve the credit risk prevention system and the ability to comply with safety limits

Credit risk handling capacity: Credit risk handling capacity is understood as the ability of a commercial bank to respond in the event of credit risk in order to minimize and offset the damage caused to commercial banks.

Human resource capacity: Human resource capacity is the training and assessment of human resource capacity to ensure that human resources in commercial banks learn and upgrade the necessary skills / thinking in the process of credit risk management.

Capacity to build and apply management information systems and information infrastructure: Information management systems and information technology infrastructures are a set of scientific methods, technical means and tools. technology to support risk management.

### 1.2.4. Criteria reflect the credit risk management capacity of commercial banks

Criteria for risk assessment of credit risk management capacity can be divided into three main groups: criteria for size, speed and credit structure, criteria for operational safety, criteria for profitability.

**1.3. Experience in improving credit risk management capacity of some commercial banks and lessons for Technological and Commercial Joint Stock Bank.**

In this content, the thesis deals with the experiences of Citibank,Vietinbank, Agribank and draws 6 lessons of reference for Techcombank.

## CONCLUSION OF CHAPTER 1

For the purpose of forming a theoretical framework for the entire thesis, chapter 1 of the thesis presented and clarified the following issues:

- Systematize, clarify the theoretical basis for credit risk, risk management of commercial banks: concept, content, principles of credit risk management

- Develop the concept of credit risk management capacity and analyze the contents of risk management capacity, thereby building a framework of risk management capacity to serve as a basis for analyzing the current situation of risk management capacity of Techcombank in Chapter 2.

- Studying experiences on credit risk management capacity of domestic and foreign commercial banks from which to draw experience lessons on credit risk management capacity for Techcombank.

The research results in chapter 1 are the basis for the author to survey, analyze and objectively assess the current situation of risk management capacity at Techcombank presented in chapter 2 of the thesis.

# CHAPTER 2
# CURRENT SITUATION OF CREDIT RISK MANAGEMENT CAPACITY AT VIETNAM TECHNICAL COMMERCIAL BANK

## 2.1. Credit risk management at Vietnam Technological and Commercial Joint Stock Bank

In this section, the disertation presents the history of establishment and development, organizational structure and current status of business results of TechcomBank from 2014 to 2019.

## 2.2. Credit risk management capacity at Vietnam Technological and Commercial Joint Stock Bank

### 2.2.1. Status of credit risk management capacity at Vietnam Technological and Commercial Joint Stock Bank through credit risk management capacity indicators

### 2.2.1.1. Credit quality indicators

**Figure 2.3: Credit outstanding and Techcombank's credit structure 2014 – 2019**
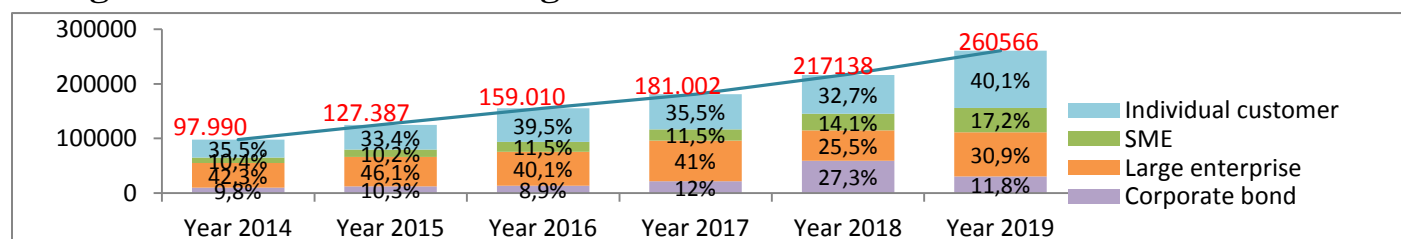


Credit balance and credit balance structure: Along with changes in credit growth rate of Techcombank from 2014 to 2019, Techcombank's credit structure also changed significantly. The proportion of credit to the retail sector including individual customer and SMEs tends to increase, individual customer always maintain at an average of 36.12% of total outstanding loans, SMEs average 29.06%, and large enterprise are about 30%

## 2.2.2.2 Criteria reflecting capital use safety:

• **Overdue debt ratio:**

**Table 2.4: Ratio of overdue debt of Techcombank from 2014 to 2018**

*Unit: billion dong; %*

| Debt Group | 2015 | Propotion | 2016 | Propotion | 2017 | Propotion | 2018 | Propotion | 2019 | Propotion |
|---|---|---|---|---|---|---|---|---|---|---|
| Standard debts | 108.012 | 96,76 | 138.204 | 96,91 | 155.932 | 96,94 | 154.548 | 96,63 | 225.601 | 95,24 |
| Special mentioned loans | 1.751 | 1,57 | 2.166 | 1,52 | 2.333 | 1,45 | 2.588 | 1,62 | 2.123 | 2,38 |
| Sub-standard debts | 309 | 0,28 | 397 | 0,28 | 575 | 0,36 | 237 | 0,15 | 218 | 0,66 |
| Doubtful debts | 537 | 0,48 | 475 | 0,33 | 456 | 0,28 | 863 | 0,54 | 305 | 0,41 |
| Potentially irrecoverable debts | 1.016 | 0,91 | 1.375 | 0,96 | 1.553 | 0,97 | 1703 | 1,06 | 2.554 | 1,31 |
| VAMC Bonds | 0 | 0 | 2.922 | | 0 | 0 | 0 | 0 | 0 | 0 |
| Total credit outstanding | 112.200 | 100 | 142.600 | 100 | 160.849 | 100 | 159.939 | 100 | 230.805 | 100 |
| Overdue debts | 3.613 | 3,24% | 4.413 | 3,09 | 4.917 | 3,06 | 5391 | 3,37 | 3.828 | 4,76 |

*(Source:[20])*

The overdue debt ratio of Techcombank was always maintained at a stable level during 2014 - 2018, of which the attention should be controlled at less than 2.5%.

• **NPL ratio:**

**Table 2.5: Techcombank's bad debt ratio from 2014 to 2019**

*Unit:%*

| Item | Year 2014 | Year 2015 | Year 2016 | Year 2017 | Year 2018 | Year 2019 |
|---|---|---|---|---|---|---|
| **NPL ratio** | 2,38 | 1,67 | 1,57 | 1,61 | 1,75 | 1,33 |
| **Increase/Decrease** | | - 1,27 | - 0,1 | - 0,04 | - 0,14 | - 0,42 |

*(Source: [20])*

In the period of 2014-2019, NPL ratio decreased significantly, maintaining at <3%.

• **Lending / deposits ratio:** Techcombank maintained at a safe level compared to the SBV's 85% limit throughout 2014-2019. In 2018, this ratio was 65.5%, much lower. compared to the average of 84,65% group of commercial banks.

• **The ratio of short-term capital used for medium and long-term loans:**
This ratio of Techcombank is always within the permitted limits of the State Bank in each period, but this ratio is always significantly higher than the industry average in the period of 2014 - 2019.

• **Minimum capital adequacy ratio**

In 2019, Techcombank officially meet the requirements of Decision No. 41/2016 / TT-NHNN by the State Bank of Vietnam from July 1, 2019. The CAR calculation method according to Circular 41/2016 is more stringent, involving operational risks and market risks, requiring a minimum CAR of 9%. Applying this Circular, Techcombank's CAR rate is 15.5%.

**2.2.2.3 Profit criteria**

Net interest income: Techcombank's net interest income grew sharply and was relatively stable in the period of 2014 - 2019.

Net profit before tax (PBT): Techcombank's PBT maintained a high and sustainable growth throughout the period of 2014 - 2019 with an average growth of 59.19% over the period.

Profit after tax: Techcombank's net profit after tax increased continuously in the period of 2014 - 2019, maintaining the leading position of profitability in the Vietnam commercial banking system. In 2019, net profit after tax continued to stabilize at a growth rate of 21.19%.

Return on assets (ROA) and return on capital (ROE): Overall, the period 2014 - 2019 marked a dramatic change of Techcombank on the ROA and ROE charts of the banking industry. In 2014-2015, Techcombank's ROA are only 0.6% and 0.82%, lower than the industry average (0.7%; 0.83%). By 2018, Techcombank's ROA is 2.86%, higher than the average of the banking industry (2.04%). Techcombank is one of the two most efficient banks in the region, with Bank Central Asia of Indonesia (3.28%). In 2019, Techcombank's ROA ratio has slightly increased compared to 2018 (2.27%), is higher than the industry average (2.01%).

**2.2.2. Current situation of Credit risk management capacity according to elements of Credit risk management capacity framework at Vietnam Technological and Commercial Joint Stock Bank**

**2.2.2.1. Executive management capacity**

Capacity in developing strategies, completing credit processes and policies: Recognizing the essential role of credit risk management for the operation of the whole bank, Techcombank has developed a credit risk management strategy for the whole system based on Principles: Safety in lending activities; Diversify loan portfolio; Simple and convenient process; Commitment to investment in human and system development; Prudent policies with a long-term vision.

Capacity of building a model of risk management: Techcombank applies a centralized risk management model with an independent separation between three functions: business, risk management and operations.

**2.2.2.2. Capacity to build and operate credit risk measurement tools**

Internal Credit Rating system: Currently Techcombank has a system of software programs to support centralized credit approval at Head Office with centralized credit rating. The Internal Credit Rating system of Techcombank is divided into 2 subjects: Corporate Customer and Individual customer

Credit risk measurement model: Techcombank always strives to build credit risk measurement models that meet Basel II standards. In September 2012, anticipating the inevitable trend of Basel II application in Vietnam, Techcombank soon established a Basel II project team headed by a foreign expert with experience in implementing Basel II in Asia. In 2019, Techcombank has implemented projects including: Internal assessment of capital adequacy (ICAAP), Endurance test, Capital planning to further improve and approach Basel II standards.

**2.2.2.3. Capacity to control credit risk**

**• Credit risk control system**

Techcombank has invested in Switzerland's T24 core banking system since 2000 and continues to upgrade until now. Customer data system as well as accounting system and database of this bank are confirmed to meet international standards. Since 2009, Techcombank has hired the world's leading consultant McKinsey to restructure the system, and strategic partner HSBC has been very active in upgrading the risk management system. With that support, Techcombank has introduced risk management framework under the model of "Three Lines of Defence" and "enterprise risk management". After strictly complying with Three Lines of Defence model at Techcombank, the safety standards have been complied with and gradually approached the world's advanced management standards, in particular, created a culture of consciousness. Each individual must comply with the regulations, procedures and has a sense of responsibility to

assess, detect risks and prevent arising risks. This means that risk management is carried out by the whole system, not just the responsibilities of the Risk Management Division.

### 2.2.2.4. Capacity to handle credit risk

Debt classification: Debt classification of deposits and credit extension to other credit institutions, purchase and entrustment to buy unlisted corporate bonds, customer loans and credit entrustments of Techcombank shall be implemented in accordance with Quantitative methods are prescribed in Article 10 of Circular 02/2013 / TT-NHNN

Provisions for credit risk: Total provisioning for customer loans of Techcombank grew steadily, in line with the growth rate of outstanding loans in the period of 2014 - 2018, with an increase in provisioning with the compound annual growth rate (CAGR) being 25.6%. Interest income is expected to decrease at a CAGR of 19.75%.

Techcombank is a pioneer commercial bank in Vietnam in applying the standard of IFRS Financial Statements 9 from 01/01/2018, accordingly, the credit loss model in IFRS 9 requires Techcombank to make provision for future losses (ECL), instead of criticizing the provision for losses incurred. This change has a significant impact on Techcombank's debt provisioning.

### 2.2.2.5. Capacity to build and apply management information systems and IT infrastructure

In order to manage the information system, Techcombank has selected Temenos core T24 banking system since 2001 and officially used throughout the system from 12 years in 2003. In 2018 - 2019, Techcombank is also implementing Business Credit Decision Engine project. At the same time, Techcombank is implementing the Risk data mart project to standardize in terms of risk data, create a reliable data source and provide automation tools to support the system of risk management reports. The evaluation of capital and assets helps Techcombank to make effective and proactive management decisions in risk management.

### 2.2.2.6. Human resource capacity

Techcombank always focuses on improving its human resources because the staff is a competitive advantage and creates a sustainable value for the bank. Techcombank leaders once affirmed that good personnel is one of the core factors that make the bank's success, investing in people is a strategic investment and Techcombank always gives highest priority to this goal. The improvement of Techcombank's human resources quality focuses on the following: Recruitment; Human resource training; Assessing the quality of human resources.

### 2.2.3. Using econometric model to study the influence of factors in the credit risk management capacity framework at Vietnam Technological and Commercial Joint Stock Bank

#### 2.2.3.1. Theorical basis

Based on the summary of previous published studies on the components of credit risk management capacity and the proposed elements of credit risk management framework of Basel

presented in Chapter 1, the disertation has built a research hypothesis assessing the influence of 6 elements

The disertation uses SPSS software, a statistical software commonly used for sociological and econometric survey studies to encode and process data.

**2.2.3.2. Scale design**

The scales of the elements in the model use a rating scale from 1 to 5. The scale used in the questionnaire to measure variables in the research model consists of 19 criteria of 6 factors.

**2.2.3.3. Experimental data**

**• Primary data source:**

The survey was conducted in 2018 and 2019. The questionnaire is designed to show the measures of the variables, based on a scale of 1-5. Interview sample of 300 credit risk officers and professional staff at Techcombank in Hanoi, Hai Phong, Thai Binh, Da Nang, Ho Chi Minh City via email and interview. This reliable data is directly interviewed through open-ended questions and evaluated based on scales (Appendix 03).

**• Secondary data source:**

Techcombank Report: This source of data is mainly from published reports of Techcombank. In addition, the author has access to some of Techcombank's internal documents on risk management.

**2.2.3.4. Descriptive statistics**

The sample is 300 leaders / officers in the operations related to credit risk. The questionnaire was distributed to 300 leaders / officers of Techcombank with a total of 200 complete responses (account for 67% of the questionnaire distributed).

**2.2.3.5. Preliminary data analysis and test hypotheses**

Primary data: Based on the results of the 200 questionnaire collected, I processed the data, and imports on SPSS software, performing reliability analysis of each element. I also used descriptive statistical techniques to determine the influence of factors / factor groups in credit risk management capacity.

Secondary data: Based on reports of Techcombank, opinions of banking experts combined with quantitative research results to offer appropriate recommendations.

**2.2.3.6. Assess the reliability and value of the scale**

The disertation uses Cronbach's alpha reliability testing and EFA discovery factor analysis

**2.2.3.7. Descriptive statistics**

The average of most variables revolves around the value of 4.3, which shows how well the variables correspond to each other

**2.2.3.8. Assess the relevance of the model**

Results of linear regression analysis show that the model has $R2 = 0.812$ and adjusted $R2 = 0.806$. The appropriateness of the model is 81.2%, or in other words 81.2% of the variation of the Risk Management Capacity is explained by 6 elements.

### 2.2.3.9. Testing the suitability of the model

Use the F test in the analysis of variance with the value $F = 162,331$ to test the hypothesis of the conformity of the regression model.

### 2.2.3.10. Results of running the research model

**Table 2.30: Regression analysis**

| Model | | Unstandardized Regression coefficient | | Standardized Regression coefficient | t | Sig. | Multicollinearity | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | Constants | .685 | .214 | | 3.18 | .002 | | |
| | A | .052 | .035 | .057 | 1.19 | .002 | .748 | 1.345 |
| | B | .867 | .034 | .934 | 27.5 | .000 | .745 | 1.349 |
| | C | .007 | .033 | .008 | .187 | .008 | .348 | 2.968 |
| | D | .021 | .032 | .035 | .658 | .004 | .334 | 2.987 |
| | E | .017 | .018 | .024 | .784 | .000 | .975 | 1.034 |
| | F | .045 | .018 | .076 | 2.54 | .013 | .977 | 1.021 |

*Dependent Variable: Credit risk management capability*

The analysis results of regression coefficients show the Sig. value and independent variables: A, B, C, D, E, F, which proves that these factors are 95% significant in the model and affect the credit risk management capacity.

After running the model results, the factors affecting the risk management capacity, the regression coefficients of the variables are positive, including: A, B, C, D, E, F. The regression equation of the model showing the relationship between factors affecting the risk management capacity is:

$$G = 00,684 + 0.051 * A + 0.869 * B + 0.006 * C + 0.02 * D + 0.015 * E + 0.047 * F$$

### 2.2.3.11. Testing regression hypotheses

Testing regression hypotheses with variance analysis and testing regression hypotheses with overall average test.

### 2.3. Assess the current situation of credit risk management capacity at Vietnam Technological and Commercial Joint Stock Bank

### 2.3.1. Achievements

Through the study, 7 achievements were as follows: Risk management model is increasingly being completed; Credit policy mechanisms have been issued in accordance with regulations; The business process is clearly and tightly regulated; The credit rating system is increasingly being improved; Debt quality is high and credit structure is

coherent; Credit checking and control has been constantly strengthened and the 3 defensive model has brought about clear results.

### 2.3.2. Limitations

The six limitations are: The risk appetite of the bank is not specific; Techcombank still use traditional risk management tools; Techcombank's credit risk control capacity focused primarily on credit risk; Capacity to handle risks, classify debts and make risk provisions are based on certain criteria; insuffient human resources in both quantity and quality, limited information technology and IT infrastructures.

### 2.3.3. The causes of the limitations

### 2.3.3.1. Subjective causes

Subjective reasons include: Internal Audit does not have a good combination; Credit officers do not comply well with the regulations; Techcombank's IT platform, information system, database are not synchronized, and not yet meet requirements; Lack of high quality human resources both in terms of quantity and quality.

### 2.3.3.2. Objective reasons

Objective reasons include: Unstable legal environment; Many units have not implemented well the accounting regime; The policy of the State Bank is not stable.

## CONCLUSION OF CHAPTER 2

By analyzing the current status of credit risk management and credit risk management capacity of Techcombank, Chapter 2 of the thesis has solved the following issues:

Firstly, research and explore the characteristics, development process and business results, the current status of credit risk management and the current credit risk capacity status of Techcombank from 2014 to 2019.

Secondly, I have calculated, synthesized and processed data from which to assess the current status of risk management capacity of Techcombank.

Thirdly, I described the research method, the questionnaire design process, as well as the sampling method to collect data and process data on SPSS software. I presented the research results through the analyzed data, thereby concluding on the impact of the factors of credit risk management capacity framework.

Fourthly, the thesis shows the results, limitations and causes of credit risk management capacity of Techcombank in the period of 2014 - 2019.

These studies are the practical basis for me to offer some solutions to improve the risk management capacity of Techcombank in the future.

# CHAPTER 3

## SOLUTIONS TO IMPROVE CREDIT RISK MANAGEMENT AT VIETNAM TECHNICAL COMMERCIAL BANK

**3.1. Orientation to improve credit risk management capacity at Vietnam Technological and Commercial Joint Stock Bank until 2030.**

In this content, based on the orientation of business development, the orientation of credit activity development, the orientation to improve the risk management capacity of Techcombank toward 2030, the thesis proposes appropriate solutions.

**3.2. Solutions to improve credit risk management capacity at Vietnam Technological and Commercial Joint Stock Bank**

The proposed solutions are based on each of the components of credit risk management framework mentioned in Chapter 1 and the current situation of 6 capacity factors at Techcombank mentioned in Chapter 2 to improve the risk management capacity at Techcombank.

**3.2.1. Improve management capacity in compliance with international practices and Basel II standards**

Executive management capacity at Techcombank includes the ability to develop appropriate credit strategies / policies and restructure the organizational structure. In order for Techcombank to improve the management capability to comply with Basel II as well as international practices and standards, the following solutions should be implemented: Establishing and improving Techcombank's risk appetite statement; Completing risk management culture; Completing the system of legal documents and Restructuring risk management system.

**3.2.2. Improve capacity to build and operate credit risk measurement tools**

According to the survey results after being processed by SPSS, the linear regression equation presented in Chapter 2, the capacity to build and operate measurement tools has a significant influence on the risk management capability. To build a quantitative credit risk tools / models that meet international standards and bank expectations, the model cannot be built independently, but must be designed as an inseparable component of the overall credit risk management model. The solution to be implemented are: Completing the Internal Credit Rating system; Completing forecasting model and quantifying credit risk; Fully utilizing the system of reports / forecast results from the model of forecasting and quantifying credit risk in order to manage risk; Improving the quality of human resources.

### 3.2.3. Completing the last line of defense in the model of three lines of defense to improve credit risk control capacity

To enhance the capacity to control credit risk, Techcombank needs to increase the ability of the internal audit system in compliance with Basel II Accord. TechcomBank needs to complete the internal audit system: (i) TechcomBank's model of internal audit should be built in accordance with the size of the bank; (ii) The internal audit method should be standardized on risk-oriented through the identification and assessment of key risks in Techcombank's operations; (iii) There should be an assessment of the current situation of the internal audit department in compliance with Vietnamese law and international practices; (iv) Techcombank's internal audit staff needs to be strengthened to fully meet the requirements of internal audit; (v) It is necessary to consider investing in software and tools supporting internal audit, building an early warning system to help internal auditors detect abnormal signs in time.

### 3.2.4. Improve the capacity of dealing with credit risk, apply risk dispersion tools such as derivative instruments, credit insurance

Regarding debt classification, currently Techcombank's debt classification mainly uses quantitative methods, which based on the number of overdued days to classify debts into the corresponding groups.

However, sometimes, this method is mechanical, leading to misclasifying debts. Therefore, Techcombank should strengthen the application of qualitative debt assessment. With qualitative methods, Techcombank needs to apply measures to strictly control loans after disbursement to promptly detect, handle and respond in case of default risks.

In order to hedge risk, Techcombank also needs to consider the application of modern risk dispersion tools such as the use of securitization products and derivative tools: Credit option contracts; Bond options contract; Credit swap. In addition to derivative products, Techcombank should also consider the spread of risks through credit insurance products.

### 3.2.5. Improve the quality of human resources

Firstly, Techcombank need to improve the accessibility, understanding of credit risk management practices, the ability to develop credit policies and procedures in comply with international practices and the bank's conditions. In order to realize these capabilities, Techcombank needs to build a team of officers and experts with high banking expertise, and access to econometric models according to international practices. Techcombank

needs periodic skill training for all departments in order to build a highly qualified human resources.

Secondly, Techcombank needs to improve employee capabilities, especially those who are in charge of assessing the compliance in credit risk management and credit risk management processes.

Thirdly, Techcombank needs to apply advanced human resource management, build a capacity framework for each staff position with specific and clear criteria for recruiting and evaluating competencies.

Fourthly, Techcombank needs to develope awareness of corporate culture, apply remuneration policies and personnel policies to conserve and attract high quality human resources.

Fifthly, Techcombank needs to develope human resources with sufficient qualifications and ethical qualities. In recruiting, the bank should be using and training human resources in accordance with the capacity; There should be reasonable and satisfactory remuneration policies for employees: professional ethics must be considered as a prerequisite criterion in the selection process.

### 3.2.6. Strengthening the capacity to build and apply management information systems and informatics infrastructure.

Modern risk management methods require the use of complex quantitative models, large databases, high accuracy, and ability to analyze risks in real time. Investment in IT infrastructure and building of customer information system and synchronous database are contributing to strengthening credit risk management capacity and risk management capacity for banks.

During the investment process, Techcombank needs to have a specific implementation plan, develop the IT system reaching 3 specific goals: Increasing the capacity to provide high-quality products and services; Providing continuous and timely business management information; Ensuring bank system safety.

Determining software investment is important and decisive to the efficiency of IT investment. Along with the investment in banking technology, it is necessary to regularly train credit officers and appraisers to be proficient in IT skill.

### 3.3. Recommendations

In order to implement the proposed solutions well, the thesis mentioned some recommendations to the Government and the State Bank of Vietnam.

# CONCLUSION OF CHAPTER 3

Based on the theoretical framework of Chapter 1, the results of the survey on the influence of factors in the risk management capacity framework and the current status of risk management capacity at Techcombank, chapter 3 of the thesis has proposed a number of solutions to improve high capacity to manage credit risk at Techcombank. Solutions are presented to provide Techcombank with scientific and practical basis and in accordance with the risk management orientation and Techcombank's business strategy.

In addition, the thesis presents the conditions for implementation of the proposed solutions with some recommendations to the State management agencies and the State Bank to support commercial banks, including Techcombank, to enhance the credit risk management capability.

# CONCLUSION

With the goal of improving credit risk management capacity toward sustainable growth at TechcomBank, by using a combination of research methods based on theory and practice, the thesis has solved the following issues. :

Firstly, systematizing the theoretical foundations of risk management, the risk management capability of commercial banks,studying experience in improving the risk management capacity of some commercial banks in the world and Vietnam, thereby drawing some valuable lessons for TechcomBank.

Secondly, using the theoretical knowledge of credit risk management and risk management capacity to analyze, evaluate current situation of risk management capacity at TechcomBank for the period of 2014 – 2019 and pointing out the achievements, limitations and causes of the limitations.

Thirdly, proposing new solutions and recommendation improve the risk management capacity at TechcomBank until 2030

Under the guidance of my instructors, I have completed this thesis in the most complete and meaningful way. However, due to inadequate research knowledge and experience, the thesis cannot avoid certain limitations, I am expected to receive suggestion from scientists and reader to improve the thesis.

Sincerely thank you!

# LIST OF PUBLISHED WORKS RELATED TO THE TOPIC

**1.** Nguyen Thuy Linh (2019) **"**Bad debts in Vietnamese banks: Analysis and recommendations", Journal of Finance & Accounting Research, No. 01(5) – 2019, p.28

**2.** Nguyen Thuy Linh (2020) **"**Restructuring to improve the capacity of credit risk management towards sustainable development of the banking system", Journal of Finance & Accounting Research, No. 01 – 2020, p. 93