INTRODUCTION

1. Rationale of the Study

In the context of increasingly deep international economic integration, small and medium-sized enterprises (SMEs) play a pivotal role in promoting economic growth, creating employment opportunities, and maintaining social stability in Vietnam. Despite accounting for a significant proportion of the total number of enterprises and making substantial contributions to the country's Gross Domestic Product (GDP), SMEs continue to encounter considerable difficulties in accessing bank credit due to their limited scale, constrained financial capacity, and relatively low level of information transparency. For commercial banks, lending to SMEs represents not only an opportunity to expand their lending portfolios and market share but also a source of considerable credit risk. Consequently, loan quality has become a critical determinant of banking performance and sustainable development.

Furthermore, the Fourth Industrial Revolution and the accelerating trend of digital transformation in the banking sector have fundamentally reshaped lending activities through the application of advanced technologies such as Artificial Intelligence (AI), Big Data analytics, Robotic Process Automation (RPA), and Early Warning Systems (EWS). These technological innovations provide significant opportunities to enhance credit appraisal, loan management, and risk control, thereby improving the overall quality of lending. Nevertheless, the effective integration of digital technologies into loan quality management remains constrained by both theoretical and practical challenges.

As one of Vietnam's leading state-owned commercial banks, VietinBank has identified SMEs as a strategic customer segment. However, its SME lending activities continue to face several limitations, particularly in terms of loan portfolio structure, credit risk assessment, and the application of digital technologies in lending operations. Therefore, examining the quality of SME lending at VietinBank within the context of digital transformation is both theoretically and practically significant. Such research contributes to enriching the theoretical foundation of loan quality, provides empirical evidence for evaluating current practices, and proposes feasible solutions to enhance lending effectiveness, strengthen credit risk management, and promote the sustainable development of both VietinBank and the SME sector.

2. Literature Review

2.1. Review of International Studies Related to the Dissertation

This section reviews ten international studies relevant to the dissertation topic. These studies are classified into two main groups: (i) studies on loan quality, and (ii) studies on lending to small and medium-sized enterprises (SMEs).

2.2. Review of Domestic Studies Related to the Dissertation

The review of domestic literature covers eight studies, which are also categorized into two groups: (i) studies on loan quality, and (ii) studies on lending to small and medium-sized enterprises (SMEs).

2.3. Review of Studies Related to VietinBank

This section reviews five previous studies conducted at VietinBank in recent years in order to identify the research gap addressed by this dissertation.

2.4. Research Gap

A review of both international and domestic studies indicates that the quality of SME lending has been examined from various perspectives, including loan quality, lending efficiency, credit risk management, and access to bank credit. However, three major research gaps remain.

First, regarding the theoretical framework and analytical model, previous studies have primarily assessed loan quality using traditional financial indicators such as the non-performing loan (NPL) ratio, overdue loans, loan recovery capability, and lending profitability. Meanwhile, key elements of digital transformation—including data analytics, process automation, AI-based credit scoring, digital loan monitoring, and real-time risk warning systems—have not been fully incorporated into existing analytical frameworks. Although several studies have discussed technologies such as Artificial Intelligence (AI), Big Data, electronic Know Your Customer (e-KYC), and Open APIs, these technologies have generally been examined in isolation rather than being integrated into a comprehensive model that explains the relationship between the level of digital transformation and the quality of SME lending.

Second, regarding the scope of research, domestic studies have mainly focused on lending activities or digital transformation at the industry level or across multiple commercial banks. Case studies conducted at individual banks remain limited. In particular, no previous study has systematically investigated the impact of digital transformation on the quality of SME lending at VietinBank based on the bank's internal data, resulting in a significant gap in empirical evidence.
Third, regarding research methodology, although various approaches—including regression analysis, Structural Equation Modeling (SEM), Data Envelopment Analysis (DEA), and mixed qualitative–quantitative methods—have been widely employed, previous studies have not developed a comprehensive measurement scale that adequately captures the dimensions of digital transformation in lending activities. Moreover, inconsistencies in research models and measurement variables have limited the comparability of empirical findings. Accordingly, this dissertation builds upon previous methodologies while developing and validating a measurement scale for digital transformation using Exploratory Factor Analysis (EFA) and other appropriate quantitative techniques to refine the proposed research model within the Vietnamese banking context.

2.5. Research Questions

1. What theoretical foundation and analytical framework are appropriate for evaluating the quality of lending to small and medium-sized enterprises in the context of digital transformation in commercial banks?
2. What is the current status of SME lending quality at Vietnam Joint Stock Commercial Bank for Industry and Trade (VietinBank) during the period 2021–2025, and what factors influence its lending quality?
3. How does digital transformation affect the quality of lending to SMEs at Vietnam Joint Stock Commercial Bank for Industry and Trade (VietinBank), and through what mechanisms does this impact occur?
4. What solutions and policy recommendations should be proposed to enhance the quality of SME lending at Vietnam Joint Stock Commercial Bank for Industry and Trade (VietinBank) in the coming years?

3. Research Objectives and Research Tasks

3.1. Research Objective

The primary objective of this dissertation is to propose feasible solutions to improve the quality of lending to small and medium-sized enterprises (SMEs) at VietinBank through 2035. To achieve this objective, the dissertation pursues three major research tasks: (i) to review, systematize, and clarify the theoretical foundations of SME lending quality; (ii) to analyze and evaluate the current status of SME lending quality at VietinBank during the period 2021–2025, identifying the key achievements, limitations, and their underlying causes; and (iii) to propose a comprehensive system of solutions and policy recommendations to enhance the quality of SME lending at VietinBank in the coming years.

3.2.Research Objectives

- To systematize the theoretical foundations of the quality of lending to small and medium-sized enterprises (SMEs) in commercial banks.
- To analyze and evaluate the quality of SME lending at VietinBank during the period 2021–2025.
- To propose solutions and policy recommendations to improve the quality of SME lending at VietinBank through 2035.

4. Research Object and Scope

4.1. Research Object

The research object of this dissertation is the quality of lending to small and medium-sized enterprises (SMEs) within the operations of commercial banks. Specifically, the study focuses on: (i) the theoretical foundations of SME lending quality in commercial banks; (ii) the current status of SME lending quality at VietinBank; (iii) the impact of digital transformation and technological factors on lending quality; and (iv) solutions to improve SME lending quality under current economic and technological conditions.

4.2. Research Scope

(1) Scope of Content: The dissertation focuses on examining the quality of lending to SMEs from the perspective of commercial banks.

(2) Geographical Scope: The research is conducted primarily at VietinBank, covering its nationwide banking system. In addition, the dissertation refers to and compares practices at selected domestic and international commercial banks in order to draw relevant lessons and best practices.

(3) Time Scope: The empirical analysis is based mainly on data covering the period from 2021 to 2025. The theoretical literature and previous studies reviewed in the dissertation are selected from recent years to ensure the currency and relevance of the research, particularly in the context of digital transformation.

5. Research Methodology

The dissertation employs a combination of qualitative and quantitative research methods to ensure scientific rigor, systematic analysis, and methodological appropriateness for addressing the research objectives and the specific characteristics of the study.

6. Contributions of the Dissertation

First, theoretical and methodological contributions: The dissertation develops a theoretical framework and analytical model for evaluating the quality of lending to small and medium-sized enterprises (SMEs) by integrating both traditional lending quality indicators and digital transformation factors. This integrated approach contributes to enriching the theoretical foundation and improving the framework for assessing lending quality in commercial banks.

Second, empirical contributions: The dissertation provides empirical evidence on the quality of lending to SMEs at Vietnam Joint Stock Commercial Bank for Industry and Trade (VietinBank) during the period 2021–2025. It examines the current status of SME lending quality, identifies the key influencing factors, and evaluates the impact of digital transformation on lending quality within the operational context of Vietnamese commercial banks.

Third, practical and policy contributions: Based on the research findings, the dissertation proposes a comprehensive set of solutions and policy recommendations aimed at improving the quality of SME lending at Vietnam Joint Stock Commercial Bank for Industry and Trade (VietinBank). The findings also provide useful references for commercial banks and regulatory authorities in refining lending policies and promoting digital transformation in banking operations.

7. Structure of the Dissertation

In addition to the Introduction, Conclusion, References, and Appendices, the dissertation is organized into three chapters:

Chapter 1: Theoretical Foundations of Lending Quality for Small and Medium-Sized Enterprises in Commercial Banks

Chapter 2: Current Status of Lending Quality for Small and Medium-Sized Enterprises at VietinBank
Chapter 3: Solutions for Improving the Quality of Lending to Small and Medium-Sized Enterprises at VietinBank

CHAPTER 1
THEORETICAL FOUNDATIONS OF LENDING QUALITY FOR SMALL AND MEDIUM-SIZED ENTERPRISES IN COMMERCIAL BANKS

1.1. Overview of SME Lending by Commercial Banks

1.1.1. Small and Medium-Sized Enterprises (SMEs)

1.1.1.1. Definition of SMEs

Small and medium-sized enterprises (SMEs) are business entities legally registered in accordance with applicable laws and regulations. Based on prescribed criteria, SMEs are classified into three categories: micro enterprises, small enterprises, and medium-sized enterprises, according to their average annual number of employees and either total capital or annual revenue.

1.1.1.2. Characteristics of SMEs

As business entities, SMEs possess the general characteristics of enterprises. In addition, they exhibit several distinctive features: (i) relatively small production and business scale with limited financial capacity; (ii) lean organizational structures characterized by high flexibility but relatively limited managerial capability; (iii) constrained business strategies, technological capabilities, and competitive capacity; and (iv) business performance that is highly influenced by changes in the external business environment.

1.1.2. Lending to Small and Medium-Sized Enterprises

1.1.2.1. Definition

Lending to small and medium-sized enterprises refers to a credit-granting activity of commercial banks whereby a bank transfers to an SME the right to use a specified amount of capital for an agreed period under a loan agreement. The borrower is obligated to repay both principal and interest in accordance with legal regulations and the contractual agreement between the parties. The purpose of such lending is to meet the financing needs of SMEs for their production and business activities.

1.1.2.2. The Role of Bank Loans for SMEs

Bank financing plays an important role in supporting SMEs by: (i) supplementing financial resources for production and business operations; (ii) promoting technological innovation, improving productivity, and enhancing competitiveness; (iii) strengthening financial resilience and risk management capacity; (iv) fostering innovation and sustainable development; and (v) contributing to economic growth and the development of the SME sector.

1.1.2.3. Characteristics of Lending to SMEs

Lending to SMEs has several distinctive characteristics: (i) loan amounts are generally relatively small; (ii) SMEs typically have simple organizational and managerial structures; (iii) commercial banks often apply higher lending interest rates than those offered to large enterprises due to higher perceived credit risk; and (iv) SME lending is generally supported and encouraged by government policies.

1.1.2.4. Classification of Lending to SMEs

Commercial banks classify SME lending according to various criteria depending on their management, reporting, and analytical objectives. In practice, banks may combine multiple classification criteria to identify and manage different categories of SME borrowers more effectively.

1.2. Lending Quality for SMEs in Commercial Banks

1.2.1. Definition

The quality of lending to SMEs reflects the effectiveness, safety, and sustainability of commercial banks' lending activities to SME customers. It encompasses not only compliance with banking regulations and prudent risk management but also the integration of digital transformation initiatives to enhance lending efficiency and support sustainable development.

1.2.2. Criteria for Evaluating SME Lending Quality

This dissertation identifies three groups of criteria for assessing the quality of SME lending:

(i) criteria measuring the safety of SME lending activities;

(ii) criteria measuring the efficiency of lending activities; and

(iii) criteria evaluating the level of digital transformation in lending operations.

1.2.3. Factors Affecting SME Lending Quality

The dissertation identifies two groups of factors influencing SME lending quality:

(i) external (objective) factors; and
(ii) internal (subjective) factors.

1.3. International and Domestic Experiences in Improving SME Lending Quality and Lessons for VietinBank

This section reviews the experiences of domestic and international commercial banks in improving the quality of lending to SMEs. Based on these experiences, the dissertation draws practical lessons and policy implications that may serve as valuable references for enhancing SME lending quality at VietinBank.

Chapter 1 Summary

Chapter 1 establishes a comprehensive theoretical foundation for the quality of lending to small and medium-sized enterprises (SMEs) in commercial banks. It clarifies the concepts, characteristics, and roles of SMEs, while analyzing the nature of SME lending and the specific requirements associated with this customer segment. The chapter also identifies the criteria for evaluating lending quality and examines the factors influencing lending quality from the perspectives of banks, enterprises, and the broader economic environment, with particular emphasis on the role of digital technologies in enhancing lending performance. Furthermore, the chapter reviews domestic and international experiences and derives practical lessons that provide useful references for improving SME lending quality at VietinBank.

CHAPTER 2

CURRENT STATUS OF LENDING QUALITY FOR SMALL AND MEDIUM-SIZED ENTERPRISES AT VIETINBANK

2.1. Overview of VietinBank

This section provides an overview of the establishment and development of Vietnam Joint Stock Commercial Bank for Industry and Trade (VietinBank), its organizational structure, and its business performance during the period 2021–2025. This overview serves as the foundation for analyzing the current status of SME lending quality presented in Section 2.2.

2.2. Current Status of Lending Quality for Small and Medium-Sized Enterprises at VietinBank

2.2.1. Overview of SME Lending at VietinBank

2.2.1.1. Number of Borrowing Enterprises and Lending Volume

Figure 2.5. SME Borrowing Activities at VietinBank during the Period 2021–2025

Source: [12], [13], [14], [15]

Figure 2.5 illustrates the growth trend of SME lending activities at VietinBank and the relationship between lending scale and the expansion of the SME customer base during the period 2021–2025.

Biểu đồ 2. 6: Dư nợ bình quân doanh nghiệp nhỏ và vừa tại Ngân hàng thương mại cổ phần Công thương Việt Nam giai đoạn 2021-2025

Nguồn: [12], [13], [14], [15].

Figure 2.6 illustrates the upward trend in the average outstanding loan balance to small and medium-sized enterprises (SMEs) at VietinBank, as well as changes in the bank's lending structure and lending orientation during the period 2021–2025.

Bảng 2.2: Doanh số cho vay doanh nghiệp nhỏ và vừa của Ngân hàng thương mại cổ phần Công thương Việt Nam theo thời hạn cho vay

Đơn vị: tỷ đồng, %

Chỉ tiêu	2021		2022		2023		2024		2025	
	Số tiền	Tỷ trọng	Số tiền	Tỷ trọng	Số tiền	Tỷ trọng	Số tiền	Tỷ trọng	Số tiền	Tỷ trọng
Cho vay ngắn hạn	680.022,831	60,71	768.841,671	60,82	956.804,155	65,50	1.131.645,052	66,23	1.306.500	67,00
Cho vay trung hạn	62.825,173	5,61	78.959,98	6,25	81.937,114	5,61	94.589,115	5,54	107.250	5,5%
Cho vay dài hạn	377.215,081	33,68	416.374,992	32,94	422.023,339	28,89	482.474,422	28,24	536.250	27,5%
Tổng cộng	1.120.063,09	100%	1.264.176,64	100%	1.460.764,608	100%	1.708.708,589	100%	1.950.000	100%

Nguồn: [12], [13], [14], [15].

During the period 2021–2025, SME lending activities at VietinBank experienced significant growth in both scale and structure, reflecting the bank's strategic focus on the SME segment, which accounts for approximately 97% of all enterprises in Vietnam.

2.2.1.2. Current Lending Policy for SMEs

VietinBank's lending policy for SMEs is developed in strict compliance with the regulations of the State Bank of Vietnam (SBV), while aligning with Basel-based risk management standards and the bank's long-term development strategy. During the period 2021–2025, VietinBank continued to identify SMEs as a key customer segment and introduced lending policies aimed at expanding access to credit while maintaining prudent risk control. The bank's lending policy has gradually shifted from the traditional collateral-based lending model toward a cash flow- and business performance-based credit assessment approach.

2.2.1.3. Current SME Lending Process

The SME lending process at VietinBank follows an integrated and standardized framework comprising the following stages: customer acquisition, document collection, credit appraisal, loan approval, loan disbursement, and post-disbursement monitoring. This standardized process is implemented consistently across the entire banking system to ensure operational consistency and effective credit risk management.

2.2.2. Current Status of SME Lending Quality at VietinBank During the Period 2021–2025: Qualitative Assessment

2.2.2.1. Appropriateness of the SME Lending Policy

During the period 2021–2025, VietinBank progressively adjusted its lending policies to improve enterprises' access to bank credit, with SMEs identified as one of its priority customer segments. This orientation is reflected in the continuous growth of lending activities and the substantial share of loans in the bank's total assets. VietinBank's outstanding customer loans remained at a high level and increased steadily throughout the period, demonstrating the bank's strategic emphasis on lending activities.

2.2.2.2. Quality of the Lending Process

The lending process at VietinBank is standardized in accordance with the bank's internal governance framework and fully complies with the regulations of the State Bank of Vietnam. During the period 2021–2025, VietinBank enhanced its lending procedures by strengthening the application of digital technologies and reducing loan processing time, thereby improving operational efficiency.

2.2.2.3. Credit Appraisal and Credit Risk Management Capacity

VietinBank's credit appraisal and risk management capabilities are considered relatively strong compared with those of other Vietnamese commercial banks. This is evidenced by the bank's consistent implementation of asset classification, adequate loan loss provisioning, and compliance with prevailing regulatory requirements. VietinBank has continuously maintained a substantial level of credit risk provisions, reflecting its prudent approach to credit risk management.

2.2.2.4. Application of Technology in Lending Activities

During the period 2021–2025, VietinBank accelerated digital transformation across its banking operations, including lending activities. The adoption of technologies such as the Core Banking system, loan management systems, and data analytics tools has significantly improved operational efficiency and enhanced lending management.

2.2.2.5. Customer Satisfaction Among SMEs

The satisfaction level of SME customers can be indirectly reflected in the scale and growth rate of VietinBank's SME lending portfolio. The steady increase in outstanding loans to business customers over the study period indicates that VietinBank has maintained customer confidence and long-term relationships with its SME clients.

2.2.2.6. Compliance and Internal Control

VietinBank is recognized as one of the Vietnamese commercial banks with a robust internal control system and a high level of regulatory compliance. Audited financial statements indicate that the bank consistently complies with regulations relating to asset classification, loan loss provisioning, and information disclosure.

2.2.2.7. Diversification and Suitability of Credit Products

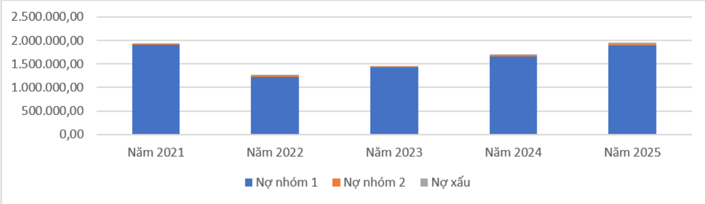
During the period 2021–2025, VietinBank developed a wide range of lending products for corporate customers, including short-term loans, medium- and long-term loans, trade finance, and supply chain financing solutions. These products have enhanced the bank's ability to satisfy the financing needs of SMEs.

2.2.3. Current Status of SME Lending Quality at VietinBank During the Period 2021–2025: Quantitative Assessment

Overdue Loan Ratio and Non-Performing Loan (NPL) Ratio of SME Loans at VietinBank During the Period 2021–2025

Figure 2.7. SME Lending Volume by Loan Classification at VietinBank, 2021–2025

Unit: VND billion



Source: [12], [13], [14], [15]

Bảng 2.4: Doanh số cho vay doanh nghiệp nhỏ và vừa theo nhóm nợ tại Ngân hàng thương mại cổ phần Công thương Việt Nam giai đoạn 2021 - 2025

Đvt: tỷ đồng,%

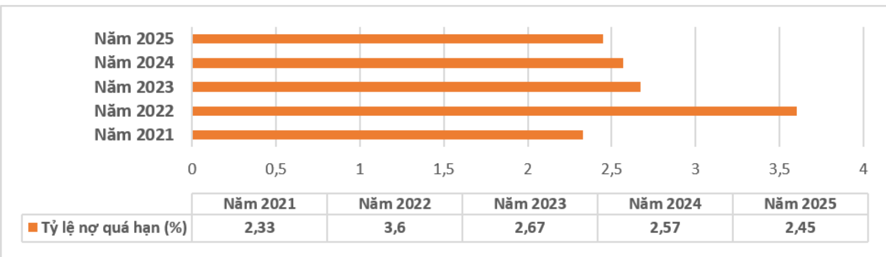
Chỉ tiêu	2021		2022		2023		2024		2025	
	Số tiền	Tỷ trọng	Số tiền	Tỷ trọng	Số tiền	Tỷ trọng	Số tiền	Tỷ trọng	Số tiền	Tỷ trọng
Nhóm 1	1.093.965,567	97,67%	1.218.719,546	96,40%	1.421.723,848	97,33%	1.664.709,576	97,43%	1.895.400	97,20%
Nhóm 2	11.846,029	1,06%	29.747,561	2,35%	22.645,316	1,55%	23.147,823	1,35%	29.250	1,50%
Nợ xấu	14.251,489	1,27%	15.709,536	1,24%	16.395,444	1,12%	20.851,19	1,22%	25.350	1,30%
Tổng	1.120.063,085	100%	1.264.176,643	100%	1.460.764,61	100%	1.708.708,59	100%	1.950.000	100%

Nguồn: [12], [13], [14], [15].

During the period 2021–2025, the outstanding SME loan portfolio by loan classification at VietinBank presents a generally positive picture of lending quality while also reflecting changes in the economic environment and the specific characteristics of the SME segment. Outstanding Group 1 (performing) loans increased steadily from VND 1,093,966 billion in 2021 to VND 1,664,710 billion in 2024, and further to VND 1,895,400 billion in 2025. Throughout the period, Group 1 loans consistently accounted for approximately 96.4%–97.4% of the total outstanding SME loan portfolio, reaching 97.2% in 2025. This indicates that the vast majority of VietinBank's SME loans remained in the performing category, reflecting the bank's sound lending quality and prudent credit risk management.

Figure 2.8. Overdue Loan Ratio of SMEs at VietinBank During the Period 2021–2025

Unit: (%)



Source: [12], [13], [14], [15]

During the period 2021–2025, the overdue loan ratio of SMEs at VietinBank fluctuated noticeably, reflecting both changes in the macroeconomic environment and the effectiveness of the bank's credit risk management. Specifically, the overdue loan ratio increased from 2.33% in 2021 to a peak of 3.60% in 2022, indicating the challenges faced by SMEs in the post-COVID-19 period, when business operations were disrupted, cash flows weakened, and debt repayment capacity deteriorated.

Loan Recovery Ratio

Table 2.5. Recovery of Non-Performing SME Loans at VietinBank During the Period 2020–2024

Year	Amount Recovered (VND billion)	Total Non-Performing Loans (VND billion)	Recovery Ratio (%)
2021	3.245	14.251,489	**22,78**
2022	5.362	15.709,536	**34,13**
2023	4.671	16.395,444	**28,49**
2024	8.481	20.851,19	**40,67**
2025	**9.250**	**25.350**	**36,49**

Source: [12], [13], [14], [15]

The recovery of non-performing SME loans at VietinBank during the period 2021–2025 reflects the distinctive characteristics of lending to the SME segment. Given their relatively limited capital base, constrained financial management capacity, and greater vulnerability to economic shocks, SMEs have consistently represented a higher-credit-risk customer segment within commercial banks' lending portfolios. At VietinBank, the period from 2021 to 2022 demonstrates that non-performing SME loans continued to be affected by the prolonged consequences of the COVID-19 pandemic, thereby limiting the effectiveness of debt recovery efforts. In 2021, the amount of recovered non-performing loans reached **VND 3,245 billion**, corresponding to a recovery ratio of **22.78%**. This result reflects the fact that many SMEs had not yet fully restored their cash flows, and a considerable number of loans still required debt restructuring.

Credit Risk Provision Ratio

Table 2.6. Credit Risk Provisions for SME Loans at VietinBank During the Period 2021–2025

Year	Credit Risk Provisions (VND billion)	Total Outstanding Loans (VND billion)	Provision Ratio (%)
2021	**17.814**	1.120.063	**1,59%**
2022	**18.852**	1.264.177	**1,49%**
2023	**18.855**	1.460.765	**1,29%**
2024	**22.936**	1.708.709	**1,34%**
2025	**30.420**	1.950.000	**1,56%**

Based on the data presented in **Table 2.6**, credit risk provisions for SME loans at VietinBank exhibited certain fluctuations during the period 2021–2025. These changes reflect the bank's flexible adjustments to its loan loss provisioning policy in response to the continuous expansion of its SME lending portfolio.

2.2.3.2. Profitability of SME Lending at VietinBank During the Period 2021–2025

Table 2.7. Profitability of SME Lending at VietinBank During the Period 2021–2025

Year	Total Outstanding SME Loans (VND billion)	Lending Profitability Ratio (%)	Interest Income (VND billion)
2021	1.120.063	7,50%	**84.005**
2022	1.264.177	8,20%	**103.662**
2023	1.460.765	8,80%	**128.548**
2024	1.708.709	7,20%	**123.027**
2025	1.950.000	7,60%	**148.200**

Source: [12], [13], [14], [15]

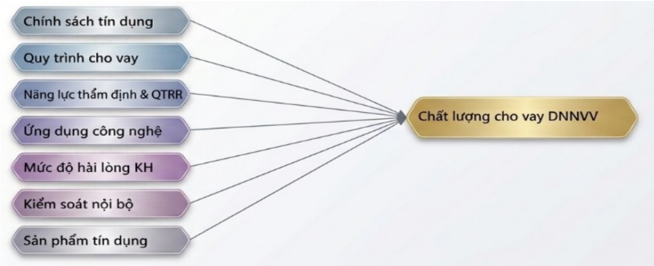
Interest income generated from lending to SMEs at VietinBank exhibited a positive growth trend during the period 2021–2023, increasing from approximately **VND 84,005 billion** in 2021 to **VND 128,548 billion** in 2023. This growth reflects VietinBank's expansion of its SME lending portfolio while effectively capitalizing on the post-COVID-19 recovery of the business sector.

2.3. Analysis of Factors Affecting the Quality of SME Lending at VietinBank Using a Quantitative Model

2.3.1. Model Selection

This section presents the survey objectives, the development of the research hypotheses, and the research data employed in the empirical analysis based on the proposed research model.

Figure 2.5. Research Framework



Based on the relevant economic theories, previous studies, and the findings of the qualitative research, this dissertation develops seven research hypotheses to examine the effects of the proposed factors on the quality of lending to small and medium-sized enterprises (SMEs), as follows:

H1: The appropriateness of the lending policy has a positive effect on the quality of lending to SMEs.

H2: The quality of the lending process has a positive effect on the quality of lending to SMEs.

H3: Credit appraisal and credit risk management capability has a positive effect on the quality of lending to SMEs.

H4: The level of technology application in lending activities has a positive effect on the quality of lending to SMEs.

H5: SME customer satisfaction has a positive effect on the quality of lending to SMEs.

H6: The level of regulatory compliance and internal control has a positive effect on the quality of lending to SMEs.

H7: The diversity and suitability of lending products have a positive effect on the quality of lending to SMEs.

2.3.2. Questionnaire Design

This section presents the survey questionnaire and the 21 measurement scales used to measure the research constructs.

2.3.3. Survey Implementation

2.3.3.1. Selection of Survey Respondents

Sample size: A total of 320 questionnaires were distributed.

Survey respondents: The respondents included loan officers, credit risk management officers, corporate relationship managers, and branch managers working at VietinBank branches.

2.3.3.2. Survey Period and Data Collection Method

Survey period: From March 2025 to June 2025.

Data collection method: The questionnaires were administered using two approaches: (i) direct distribution at VietinBank branches, and (ii) email distribution to relevant bank staff. In total, **320 questionnaires** were distributed.

2.3.4. Survey Results

2.3.4.1. Summary of Survey Responses

A total of 320 questionnaires were distributed, of which 286 were returned. After data screening, 258 valid questionnaires were retained for subsequent analysis.

The valid questionnaires were coded and entered into the Statistical Package for the Social Sciences (SPSS) for further statistical analysis. The descriptive statistics of the sample are presented in detail in the Appendix of the dissertation.

2.3.4.2. Reliability Assessment Using Cronbach's Alpha

All 20 observed variables representing the seven independent constructs, together with the observed variables measuring the dependent variable, satisfied the required reliability criteria and were therefore considered suitable for Exploratory Factor Analysis (EFA).

2.3.4.3. Exploratory Factor Analysis (EFA)

a) Exploratory Factor Analysis of the measurement scales for the factors affecting the quality of SME lending.

b) Exploratory Factor Analysis of the measurement scale for SME lending quality.

2.3.4.4. Descriptive Statistics of the Regression Variables

Prior to conducting the regression analysis to test the proposed hypotheses and evaluate the adequacy of the research model, descriptive statistical analysis was performed by calculating the mean values of the observed variables and the underlying constructs.

The descriptive statistics indicate that the mean values of most variables range from 4.29 to 4.72, corresponding to the levels of "Agree" to "Strongly Agree" on the five-point Likert scale. These findings suggest that the respondents generally held positive perceptions of the factors influencing the quality of SME lending at VietinBank.

Among the independent variables, Credit Appraisal and Credit Risk Management Capability (C) recorded the highest mean score (4.72), indicating that respondents regarded it as the most critical factor in enhancing SME lending quality. In contrast, SME Customer Satisfaction (E) obtained the lowest mean score (4.29). Although this score still reflects a favorable evaluation, it suggests that there remains room for improvement.

Compared with the dependent variable, SME Lending Quality (mean = 4.58), the independent variables exhibited relatively small variations in their mean values, indicating a high degree of consistency in respondents' evaluations across the proposed constructs. This finding further supports the suitability of the selected variables for regression analysis to assess their effects on the quality of SME lending.

2.3.4.5. Evaluation of the Model Fit

The results of the multiple linear regression analysis indicate that the research model achieved an R^2 of 0.714 and an adjusted R^2 of 0.706. These findings demonstrate that the model has relatively high explanatory power, with 70.6% of the variation in SME lending quality (H) being explained by the independent variables included in the model, namely: A (Lending Policy), B (Lending Process), C (Credit Appraisal and Credit Risk Management Capability), D (Technology Application), E (Customer Satisfaction), F (Internal Control), and G (Lending Products).

Overall, the multiple regression model is statistically significant and provides an appropriate basis for further analyzing the individual effects of each explanatory variable through the regression coefficient analysis presented in the subsequent section.

2.3.4.6. Model Validation

The overall significance of the regression model was examined using the F-test in the analysis of variance (ANOVA). The calculated F-statistic was 178.632, which was used to test whether SME lending quality has a linear relationship with the independent variables included in the model. Since the significance level was Sig. = 0.000 < 0.05, the regression model is considered statistically significant and well suited to the research data.

Accordingly, the proposed multiple regression model satisfies all diagnostic requirements and provides a reliable basis for subsequent analysis and interpretation of the research findings.

a) Multicollinearity and autocorrelation diagnostics.

b) Heteroscedasticity test.

2.3.4.7. Results of the Research Model Estimation

The empirical findings provide an important foundation for proposing solutions to improve the quality of SME lending at VietinBank, as presented in the subsequent chapters of the dissertation.

2.3.4.8. Hypothesis Testing

a) Hypothesis testing using Analysis of Variance (ANOVA).

b) Hypothesis testing using one-sample mean tests.

2.4. Evaluation of the Current Status of SME Lending Quality at VietinBank

2.4.1. Key Achievements

The analysis identifies the following major achievements:

1. Stable growth in outstanding SME loans.
2. Effective control of lending quality.
3. Diversified financial support to meet SMEs' funding needs.
4. A sound balance between credit growth and risk management.
5. Extensive application of digital technologies throughout the lending process.
6. Effective management and recovery of non-performing loans.

2.4.2. Limitations

Despite these achievements, several limitations remain:

1. Limitations in the credit appraisal process.
2. Collateral requirements remain relatively rigid.
3. Lending procedures have not yet been sufficiently streamlined.
4. Interest rate policies and funding costs lack flexibility.
5. The growth rate of SME lending slowed during the period 2022–2023.
6. Digital transformation in lending activities has not yet been fully implemented.

2.4.3. Causes of the Limitations

Subjective causes include: (i) VietinBank's credit appraisal practices still rely heavily on traditional assessment methods. (ii) The bank's lending policy remains highly conservative and continues to depend significantly on collateral. (iii) Lending procedures remain relatively complex and have not yet been fully digitalized. (iv) Interest rate policies and the structure of lending products are not sufficiently flexible. (v) The application of digital technologies in lending activities remains incomplete.

Objective causes include: (i) Vietnamese SMEs generally have small operational scales, limited financial capacity, and relatively low levels of information transparency. (ii) Vietnam's credit information infrastructure and financial data market have not yet developed in a comprehensive and integrated manner. (iii) The legal framework governing collateral and cash flow-based lending remains incomplete.

(iv) The macroeconomic environment during the period 2022–2023 was characterized by significant adverse fluctuations, which negatively affected SME business performance and credit quality.

Chapter 2 Summary

Chapter 2 provides a comprehensive empirical assessment of the quality of lending to small and medium-sized enterprises (SMEs) at VietinBank. The analysis evaluates both qualitative and quantitative aspects of SME lending quality, identifies the key factors influencing lending performance through empirical modeling, and highlights the major achievements, existing limitations, and their underlying causes. These findings provide an important practical foundation for developing the solutions and policy recommendations presented in Chapter 3.

CHAPTER 3
SOLUTIONS TO IMPROVE THE QUALITY OF LENDING TO SMALL AND MEDIUM-SIZED ENTERPRISES AT VIETINBANK

3.1. Strategic Orientation for Improving SME Lending Quality at VietinBank

This section discusses the macroeconomic context affecting the quality of lending to small and medium-sized enterprises (SMEs), VietinBank's business development strategy, the objectives for improving SME lending quality, and the strategic orientation for enhancing the quality of SME lending at VietinBank through 2035.

3.2. Solutions to Improve the Quality of SME Lending at VietinBank

3.2.1. Improving Lending Policies through Digitalization and Customer Personalization

In the context of digital transformation, improving lending policies through digitalization and customer personalization is a key solution for enhancing SME lending quality at VietinBank. The regression results show that the Lending Policy factor has a standardized Beta coefficient of 0.142, indicating a moderate but significant influence. However, during 2021–2025, VietinBank's lending policies remained largely collateral-based, limiting access for SMEs with strong business potential but insufficient collateral.

VietinBank should gradually shift to a cash flow- and data-driven lending model by utilizing data from electronic invoices, payment accounts, POS systems, tax records, and accounting software to assess borrowers' financial capacity. Lending policies should also be tailored to industry, enterprise size, risk profile, and customer behavior. Furthermore, the bank should integrate AI, Big Data, e-KYC, OCR, and RPA into credit scoring, process automation, and loan approval, while adopting risk-based pricing and developing an integrated digital financial ecosystem. These measures will improve lending quality, expand market share, and strengthen VietinBank's competitiveness.

3.2.2. Applying Artificial Intelligence and Big Data in Credit Appraisal

Applying Artificial Intelligence (AI) and Big Data to credit appraisal is a key solution for improving SME lending quality. The Technology Application factor has a standardized Beta coefficient of 0.204, confirming its strong influence on lending quality through enhanced data analysis, risk prediction, and faster credit appraisal.

Since VietinBank's appraisal process still relies heavily on financial statements and collateral, the bank should develop an AI- and Big Data-based credit assessment system using information from electronic invoices, tax authorities, banking transactions, POS systems, and digital platforms to build comprehensive borrower profiles.

In addition, VietinBank should implement automated credit scoring and real-time early warning systems to improve appraisal accuracy and reduce non-performing loans. Continued investment in data infrastructure, human resources, and information security will provide the foundation for an intelligent credit appraisal system and stronger long-term competitiveness.

3.2.3. Enhancing the Intelligent Credit Risk Management System

As SME lending becomes increasingly complex, establishing an intelligent credit risk management system is essential. The research results indicate that Credit Appraisal and Credit Risk Management Capability has the highest standardized Beta coefficient (0.292), making it the most influential factor affecting lending quality.

VietinBank should move from a reactive to a proactive risk management approach by implementing an Early Warning System (EWS) that utilizes transaction histories, financial statements, cash flow data, electronic invoices, and e-commerce information to detect early signs of credit deterioration. The bank should also develop real-time loan monitoring systems and apply AI to predict default risk, classify borrowers, and support lending decisions.

Moreover, VietinBank should establish a centralized data platform, strengthen its risk management framework in line with Basel II and Basel III, and continue investing in technology, human resources, and data security. These initiatives will reduce non-performing loans, improve lending quality, and support sustainable development.

3.2.4. Human Resource Development

Human resources constitute a critical factor in determining the quality of SME lending at VietinBank. The research findings indicate that the factors exerting the strongest influence on lending quality are closely associated with employees' professional competencies and their ability to utilize digital technologies effectively. Therefore, developing a digitally competent workforce is a prerequisite for the successful implementation of technological innovations and advanced risk management solutions.

VietinBank should strengthen training programs in digital skills, data analytics, credit scoring systems, and data-driven decision-support tools. At the same time, lending officers should be provided with a deeper understanding of SME characteristics and business operations in order to conduct more comprehensive borrower assessments. Furthermore, the bank should establish a team of data specialists, promote collaboration among business, risk management, and information technology departments, and develop effective mechanisms for attracting and retaining talent in the fields of Artificial Intelligence (AI) and Big Data. These initiatives will serve as a critical foundation for improving credit appraisal quality and supporting sustainable development.

3.2.5. Improving the Lending Process for SME Customers

Improving the SME lending process is an essential requirement for VietinBank. The empirical results indicate that the Lending Process factor has a standardized Beta coefficient of 0.151, demonstrating a significant influence on lending quality. Although the bank has introduced several technological platforms, the lending process has not yet been fully digitalized, resulting in relatively lengthy processing times.

To address this issue, VietinBank should develop a comprehensive end-to-end digital lending model, integrating technologies such as electronic Know Your Customer (e-KYC), Optical Character Recognition (OCR), Robotic Process Automation (RPA), digital signatures, and electronic contracts to automate the entire lending process, from application intake and credit appraisal to loan disbursement and post-disbursement management.

In addition, the bank should implement Straight-Through Processing (STP) for standardized loan products and develop an advanced Customer Relationship Management (CRM) system to enhance customer management and service delivery. The digitalization of lending processes will help reduce operating costs, shorten approval times, improve customer experience, and ultimately enhance the quality of SME lending.

3.2.6. Developing a Financial Ecosystem and Expanding SMEs' Access to Credit

Developing a Digital Lending Ecosystem

In the context of digital transformation, VietinBank should develop an integrated digital financial ecosystem to improve SME lending quality. The empirical results show that the Lending Products factor has a standardized Beta coefficient of 0.145, confirming the importance of designing products that meet SMEs' financing needs.

VietinBank should integrate with e-commerce platforms, Enterprise Resource Planning (ERP) systems, Point-of-Sale (POS) systems, electronic invoicing platforms, and tax authorities to utilize real-time business data. Based on these data, the bank can expand Supply Chain Finance (SCF), factoring, and digital lending products while establishing a dedicated digital banking platform for SMEs.

Expanding SMEs' Access to Credit

VietinBank should broaden SMEs' access to finance by promoting cash flow-based lending, unsecured lending, and value chain financing instead of relying mainly on collateral. The bank should also strengthen cooperation with credit guarantee funds, expand supply chain financing, support SMEs in improving financial management, and introduce preferential lending programs to broaden its customer base and enhance lending quality.

3.3. Policy Recommendations

3.3.1. Recommendations to the State Bank of Vietnam

To improve SME lending quality, the State Bank of Vietnam (SBV) should:

(i) Complete the legal framework for cash flow-based and digital lending.

(ii) Enhance the national credit information system (CIC).

(iii) Maintain flexible and stable monetary policies.

(iv) Modernize banking supervision using a risk-based approach.

(v) Continue promoting digital transformation across the banking sector.

3.3.2. Recommendations to the Government

The Government should:

(i) Improve the legal framework supporting SME development.

(ii) Strengthen the national credit guarantee system.

(iii) Accelerate the National Digital Transformation Program.

(iv) Promote priority industries and SMEs' participation in value chains.

(v) Maintain macroeconomic stability and a favorable business environment.

3.3.3. Recommendations to Relevant Ministries and Government Agencies

Relevant ministries should:

(i) Improve SME accounting and financial reporting standards.

(ii) Promote e-commerce and support SMEs' participation in supply chains.

(iii) Strengthen national digital infrastructure and data security.

(iv) Enhance inter-agency cooperation in data sharing and enterprise support.

Chapter 3 Summary

Chapter 3 proposes practical and integrated solutions to improve SME lending quality at VietinBank. Effective implementation of these measures will strengthen lending performance, support the sustainable development of SMEs, and contribute to VietinBank's competitiveness and Vietnam's economic growth.

CONCLUSION

This dissertation provides a comprehensive assessment of SME lending quality at VietinBank, covering the theoretical framework, empirical analysis, and strategic solutions for improving lending quality through 2035.

(i) Chapter 1 establishes the theoretical foundation of SME lending quality, including its concepts, evaluation criteria, influencing factors, and relevant domestic and international experiences.

(ii) Chapter 2 analyzes the current status of SME lending quality at VietinBank during 2021–2025. The findings show notable improvements in lending scale, lending policies, and digital technology application. However, challenges remain, including fluctuations in non-performing loans, limited access to digital lending for some SMEs, and incomplete digitalization of credit risk management. The empirical analysis confirms that lending quality is influenced by bank-specific, enterprise-specific, and macroeconomic factors.

(iii) Chapter 3 proposes strategic solutions centered on three priorities: transitioning from collateral-based lending to cash flow- and data-driven lending, developing a digital lending ecosystem, and strengthening proactive credit risk management. It also recommends reducing non-performing loans, shortening approval time, expanding digital lending, and improving loan loss coverage.

Finally, the dissertation presents policy recommendations to the State Bank of Vietnam, the Government, and relevant ministries to support the effective implementation of these solutions.

AUTHOR'S PUBLICATIONS RELATED TO THE DISSERTATION

1. Dinh Le Hanh (2025). *Solutions to Enhance Small and Medium-Sized Enterprises' Access to Bank Credit in Vietnam*. Journal of Accounting and Financial Research, No. 302 (Issue 2, February 2025).
2. Dinh Le Hanh (2026). *Application of Artificial Intelligence (AI) and Big Data in SME Credit Appraisal at VietinBank*. Journal of Accounting and Financial Research, No. 310 (Issue 2, April 2026).