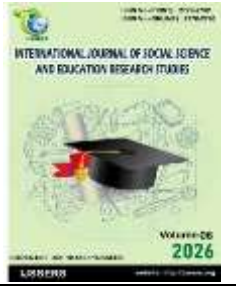
International Journal of Social Science and Education Research Studies

ISSN(print): 2770-2782, ISSN(online): 2770-2790

Volume 06 Issue 03 March 2026

DOI: https://doi.org/10.55677/ijssers/V06I03Y2026-08, Impact Factor: 7.573

Page No : 289-299



Factors Influencing Governmental Management of Green Credit in Vietnam's Commercial Banking Sector

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ABSTRACT

This study investigates the effectiveness of state management of green credit in Vietnam's commercial banks through a structural model based on survey data from 335 respondents. The findings reveal that all factors positively influence management effectiveness, with the data system having the most substantial impact, followed by inspection and supervision mechanisms, and the institutional and legal framework. Meanwhile, international standards, strategic commitment to green credit, and appraisal governance capacity show more minor yet positive effects. The results highlight the importance of enhancing data infrastructure, improving supervision quality, and consolidating institutional coordination to strengthen policy implementation and promote sustainable finance in Vietnam.

Published Online: March 19, 2026

KEYWORDS:

Green Credit; Commercial Banking, State Management; SEM, Vietnam

1. INTRODUCTION

In recent years, climate change, environmental pollution, and resource depletion have become serious challenges to the socio-economic development of many countries, including Vietnam. According to the Vietnam Country Climate and Development Report (CCDR) released by the World Bank (WB) in 2022, Vietnam is among the five countries most severely affected by climate change. The economic loss caused by climate change could reach up to 3.2% of GDP per year if no effective response measures are taken. In this context, sustainable development has become imperative, requiring countries to renew their growth models, transition toward a green economy, and use financial resources efficiently. Green credit is one of the key instruments of green finance, guiding investment flows into environmentally friendly sectors such as renewable energy, clean production, waste treatment, energy efficiency, and climate-change adaptation. Green credit is not only an inevitable trend but also an essential component of Vietnam's strategy to implement its international commitments, notably the pledge to achieve net-zero emissions by 2050 announced by the Prime Minister at COP26.

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Cite this Article: Nguyen, T.L. (2026). Factors Influencing Governmental Management of Green Credit in Vietnam's Commercial Banking Sector. International Journal of Social Science and Education Research Studies, 6(3), 289-299

In recent years, the Government of Vietnam has introduced various orientations and policies to encourage the development of green credit. Specifically, Decision No. 403/QD-TTg dated March 20, 2014 of the Prime Minister assigned the State Bank of Vietnam (SBV) to lead the action "*Improve institutions and strengthen financial-credit capacity of commercial banks to serve green growth for the period 2013–2020*," with three main tasks: (i) review, adjust, and improve financial and credit institutions to align with green growth objectives; (ii) organize training to strengthen capacity for commercial banks and financial institutions in green finance and credit; (iii) develop banking-financial services that support enterprises in implementing green growth. The Law on Environmental Protection 2020 (effective from January 1, 2022) for the first time provides an official definition of green credit in Clause 20, Article 3, establishing an essential legal basis for implementation. Article 149 stipulates that green credit is credit extended to the following investment projects: (i) efficient use of natural resources; (ii) climate-change response; (iii) waste management; (iv) pollution treatment and environmental quality improvement; (v) restoration of natural ecosystems; (vi) nature conservation and biodiversity; (vii) generating other environmental benefits.

The banking sector contributes significantly to green growth by encouraging financial investment in environmentally friendly projects. Accordingly, the green credit model is regarded as a distinctive financial instrument of material importance in controlling enterprises'

environmental protection behavior and preventing the uncontrolled development of polluting, environmentally harmful businesses. In addition, Directive No. 03/CT-NHNN dated March 24, 2015 of the State Bank of Vietnam requires credit institutions to strengthen lending activities aligned with environmental-protection criteria and climate-change response. Decision No. 1604/QD-NHNN dated August 7, 2018 approved the Scheme on Developing Green Banking in Vietnam, and more recently Circular No. 17/2022/TT-NHNN dated December 23, 2022 guides the management of environmental risks in credit granting by credit institutions (CIs) and foreign bank branches.

However, in practice, green-credit activities at commercial banks in Vietnam still face numerous difficulties. According to statistics from the SBV's Department of Credit for Economic Sectors, by 2023 more than 60% of commercial banks had a proportion of green-credit lending; notably, around 30% of banks had green-credit outstanding as much as VND 1,000 billion, and 31% of banks had outstanding up to VND 100 billion. Thus, about 60% of banks had green-credit outstanding, accounting for 0.02% to 15% of their total loan portfolios. The rollout of green credit remains constrained by the lack of a specific legal framework, the absence of unified criteria for identifying green projects, and the lack of incentives and state support mechanisms. Many banks remain concerned about the risks of lending to green projects due to information gaps, a lack of tools to assess environmental effectiveness, and uncertainties about capital recovery. One of the main reasons is that the current government management of green credit still has many shortcomings. New policies are essentially indicative and are not accompanied by mandatory provisions or clear inspection and supervision mechanisms.

From the above analysis, it is evident that a systematic and comprehensive study of the factors affecting the effectiveness of government management of green credit in commercial banks in Vietnam is essential. This study will clarify the theoretical and practical foundations of green credit, analyze and evaluate the factors influencing the effectiveness of government management of green credit in commercial banks, and thereby propose solutions to improve mechanisms and policies, enhance management effectiveness, and promote the sustainable development of green credit in Vietnam.

2. THEORETICAL FRAMEWORK AND RESEARCH MODEL

2.1. Definition of Green credit

Sustainable development has emerged as a new development paradigm that integrates business and production with nature conservation and improvements in environmental and social quality. Accordingly, green credit plays a vital role in the successful implementation of this development-oriented strategy. Although it has been examined in numerous studies in recent years, the concept of green credit has not been formally and uniformly defined, and various approaches appear across studies and reports. Hamamoto (2006) showed that green credit policies provide preferential financing for environmentally friendly enterprises while restricting or increasing lending rates for firms that pollute natural resources, which is regarded as an indirect step toward a sustainable transition to a green economy. Li, W., Cui, G., & Zheng, M. (2022) consider green credit a form of environmental management in the financial sector and an innovative solution to address environmental problems.

From the perspective of the United Nations Environment Programme (UNEP, 2016), green credit refers to credit that supports production and business projects that do not cause environmental risks or are intended to protect the environment, thereby contributing to overall ecological protection. Subsequently, the Green Loan Principles (GLP, 2018), developed by the Loan Market Association and the Asia Pacific Loan Market Association, define green loans as any type of loan made available exclusively to finance or refinance, in whole or in part, new and/or existing eligible green projects. Under GLP (2018), priority areas for the use of green credit include renewable energy, green transportation, the development of environmentally friendly technologies, sustainable public governance, sustainable agriculture forestry fisheries, and pollution prevention and control.

In Vietnam, Article 149 of the Law on Environmental Protection 2020 (effective from January 1, 2022) defines green credit as credit granted to the following investment projects: (i) efficient use of natural resources; (ii) climate-change response; (iii) waste management; (iv) pollution treatment and environmental quality improvement; (v) restoration of natural ecosystems; (vi) nature conservation and biodiversity; (vii) generating other environmental benefits.

In general, green credit can be understood as credit flows that restrict lending to production and business activities causing ecological environmental pollution, and instead direct capital toward green, renewable, and circular projects. Promoting green credit should go hand in hand with policies that support enterprises in transitioning to sustainable business and production models. In addition, it is necessary to raise corporate awareness and management capacity, encourage the application of modern science and technology, and establish transparent and efficient financial mechanisms. For the banking sector, green credit is regarded as an essential financial instrument that helps control enterprises' environmental behavior and curb the expansion of polluting, environmentally harmful firms.

2.2. Research model

2.2.1. Endogenous factors

a) Institutional and legal framework

In the state management of green credit, the institutional and legal framework plays a central role as the foundation for orienting, regulating, and controlling the operations of commercial banks. Under North's (1990) institutional perspective, institutions are understood as the system of formal and informal rules that govern the behavior of actors in the economy. In the field of green credit, the institutional and legal framework encompasses the complete set of regulations, strategies, policies, mechanisms, and technical standards promulgated by the state to encourage and supervise credit activities aimed at sustainable development objectives. This is not only a body of legal norms but also a tool to ensure coherent operation between regulatory agencies and the banking system, thereby enhancing administrative effectiveness and controlling environmental–social risks in financial activities.

According to Ehlers, Gao, and Packer (2021), when criteria are transparent and measurable, capital flows are more efficiently steered toward green activities, contributing to the net-zero goal. Bolton et al. (2020) also argue that a sound legal framework helps central banks identify and respond to systemic climate risks. Finally, a robust legal framework strengthens international integration, meeting global investors' transparency requirements and standards such as IFRS or CBAM, thereby opening access to concessional finance for green projects. From the synthesis of theory and international practice, a complete, transparent, and feasible institutional and legal framework is not only the foundation for developing green credit but also a prerequisite for improving the effectiveness of state management in this field. Based on this foundation, the research hypothesis is proposed as follows:

H1: The institutional and legal framework has a positive effect on the effectiveness of state management of green credit in commercial banks.

b, Inspection and supervision mechanisms

In the state management of green credit, inspection and supervision mechanisms ensure the enforceability of the institutional framework, helping the State maintain order, transparency, and efficiency in allocating credit to environmentally friendly activities. According to the Bank for International Settlements (Basel Committee on Banking Supervision, 2022), supervision is not only about detecting violations but is also a process of risk prevention that helps credit institutions improve governance capacity. Inspection mechanisms include activities to verify, appraise, and assess whether a project or loan meets green criteria; supervision refers to monitoring compliance with legal regulations, early risk detection, and timely intervention. Accordingly, inspection and supervision are pivotal in ensuring that resources are allocated for the intended purposes, limiting mislabeling ("greenwashing"), and strengthening banks' accountability.

In Vietnam, inspection and supervision mechanisms for green credit are being progressively improved in line with international practice. Circular No. 17/2022/TT-NHNN requires credit institutions to establish processes for identifying, assessing, and monitoring environmental–social risks in credit granting and to report implementation results to the supervisory authority. In addition, Decision No. 21/2025/QĐ-TTg promulgates environmental criteria and a mechanism for certifying investment projects under the green taxonomy, serving as a standardized inspection tool to verify and supervise the "greenness" of projects. This mechanism provides the State Bank with a unified basis for examination, reconciliation, and disclosure of green-credit data. In the future, as green-credit data and reporting systems are completed, applying a climate risk–based supervisory model will help Vietnam improve forecasting capacity and policy responses. Thus, inspection and supervision mechanisms are not merely technical tools but the foundation for strengthening the effectiveness and efficiency of state management, ensuring that green credit is implemented transparently, with the right objectives, and sustainably. Based on this foundation, the research hypothesis is proposed as follows:

H2: Inspection and supervision mechanisms have a positive effect on the effectiveness of state management of green credit in commercial banks.

c, Data system

The data system in green credit is understood as the entirety of rules, standards, tools, and technical infrastructure serving the collection, storage, processing, analysis, and disclosure of information related to credit-granting activities with environmental–social elements. Beyond a repository of raw data, this system also comprises classification standards, authentication mechanisms, and methods of information sharing among banks, regulators, enterprises, and investors. Berg, Kölbel, and Rigobon (2022) show that discrepancies among existing ESG datasets can reach up to 60%, leading to distortions in risk assessment and credit ratings, thereby underscoring the urgent need for a unified data system. Christensen, Hail, and Leuz (2021) also affirm that mandating ESG disclosure improves transparency, comparability, and reliability of information while helping regulators and investors make more accurate decisions.

Structurally, a green-credit data system typically consists of four functional layers: (1) definitions and data-classification standards; (2) collection and processing mechanisms that allow quantitative and qualitative data to be stored using uniform templates; (3) verification and assurance systems that ensure accuracy and prevent fraud in green data; and (4) disclosure and data-sharing mechanisms that support transparency, remote supervision, and policy research. When these four components are designed coherently, data becomes the bridge between policy, markets, and supervision enabling the State to clearly perceive the overall picture of green credit

and intervene with the proper focus. From the foregoing theoretical and practical analysis, it can be affirmed that the data system is an indispensable foundation for improving the effectiveness of state management in green credit. When data are standardized, complete, and transparent, the State can implement risk-based supervision, promulgate evidence-based policies, and strengthen banks' accountability. Conversely, a lack of data leads to inconsistent policies, reactive supervision, and difficulty in evaluating the effectiveness of green investment. Hence, the following research hypothesis is proposed:

H3: A complete, standardized, and verifiable data system has a positive effect on the effectiveness of state management of green credit in commercial banks.

2.2.2. Exogenous factors

a) Governance capacity for credit appraisal in commercial banks

The governance capacity for credit appraisal in commercial banks is the ability to organize, operate, and control the entire process of evaluating, approving, and monitoring credit to ensure that funding is aligned with sustainable development orientation and system safety. In green credit, this capacity is understood as the bank's level of readiness and effectiveness in integrating environmental and social factors into project appraisal and risk management. It is the direct bridge between state policy and banks' implementation behavior, reflecting internal institutional capacity to translate regulations into concrete action.

According to Weber (2012), banks with rigorous appraisal processes significantly reduce moral hazard and enhance control over credit risk. Goss and Roberts (2011) show that firms failing to meet social responsibility tend to face higher borrowing costs, indicating that strong appraisal capacity helps banks more accurately identify and price non-financial risks. Delis, De Greiff, and Ongena (2024) also demonstrate that banks with solid appraisal capacity can incorporate climate risk into lending rates, thereby redirecting capital flows toward sustainability. These results indicate that appraisal capacity not only determines credit quality but also contributes to more effective implementation of green finance policies. Thus, the higher the appraisal capacity, the better compliance, data transparency, and supervisory capability, thereby mitigating risks, directing capital toward green activities, and improving regulatory effectiveness.

H4: The governance capacity for credit appraisal in commercial banks has a positive effect on the effectiveness of state management of green credit.

b) Strategy and commitment to green-credit development in commercial banks

The strategy and commitment to green-credit development reflect the vision, orientation, and level of readiness of commercial banks to embed environmental–social factors into business strategy, risk management, and portfolio construction. This factor demonstrates banks' proactive role in implementing the national green-growth policy and the degree to which sustainable-development objectives are internalized in operational strategy. According to the World Bank (2021), a green strategy is not only about regulatory compliance but also a tool for creating competitive advantage, enhancing reputation, expanding access to international capital, and attracting responsible investors. Therefore, a clear strategy and commitment to green credit are prerequisites for ensuring alignment between macro-level policies and micro-level conduct of financial institutions. According to Scholtens (2017) argues that banks with firm sustainability commitments tend to achieve better outcomes in risk governance and market value. Hence, the following research hypothesis is proposed:

H5: The strategy and commitment to green-credit development in commercial banks have a positive effect on the effectiveness of state management of green credit.

c) International standards and policies on green credit

In the context of globalization and complex climate change, international integration has become a crucial driver helping countries their institutions and improve the effectiveness of state management of green credit. Participation in global agreements and commitments such as the Paris Agreement (2015), the 2030 Agenda for Sustainable Development, and net-zero pledges has laid the groundwork for the banking system to adjust governance models, products, and investment strategies toward greening.

Faruq and Chowdhury (2025) indicate that adopting big data and international ESG standards in banking across developing countries significantly increases the ability to attract green capital and reduces credit-risk costs. Zhou et al. (2024) further find that compliance with global ESG norms helps banks lower funding costs, improve asset quality, and enhance international creditworthiness. These findings suggest that international integration is both a driver of development and a benchmark for assessing each country's green-credit management capacity. Integration is not passive; it is an active process of learning, improvement, and alignment with global trends in green finance and sustainable development.

H6: International factors and integration have a positive effect on the effectiveness of state management of green credit in commercial banks.

3. METHODOLOGY

To serve the research objective on the effectiveness of state management of green credit in commercial banks in Vietnam, primary data were collected through surveys and expert consultations. Primary data collection was conducted via a questionnaire survey using Google Forms. The questionnaires were sent to managers at the State Bank of Vietnam, executives and specialists of commercial banks, and finance experts–banking, green credit, and environmental management. The survey aimed to gather

these stakeholders' assessments, views, and practical experiences regarding factors affecting the effectiveness of state management in implementing green credit. Based on the theoretical model and research hypotheses, the author designed specific measurement scales for each influencing factor and developed the official survey questionnaire. A total of 350 questionnaires were administered, yielding 335 valid responses, a rate of 95%.

After selecting an appropriate survey sample, the study processed and analyzed the data using quantitative software such as Excel, SPSS 20.0, and AMOS 24.0. By measuring and testing the relationships among the factors in the model, the study identifies the factors affecting the effectiveness of digital transformation policy application through sequential steps: reliability testing of the measurement scales (Cronbach's Alpha), exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and, finally, structural equation modeling (SEM).

4. RESULT AND DISCUSSION

4.1. Cronbach's Alpha reliability testing

To ensure the reliability of the measurement scale and assess internal consistency, the research team conducted Cronbach's Alpha testing for all components of the hypothesized model. The results show that the Cronbach's Alpha values of all latent variables exceed 0.6, indicating high internal consistency among the observed items (Table 1). Therefore, the scale is considered reliable and suitable for subsequent analyses. The detailed results of Cronbach's Alpha testing are presented below.

Table 1. Reliability testing results of the measurement scale

No.	Code	Correlation coefficient	Cronbach's Alpha if item deleted
(1) Factor "Institutional and policy framework" Cronbach's Alpha = 0.824			
1	TCPL4	,435	,860
2	TCPL1	,679	,772
3	TCPL2	,709	,759
4	TCPL3	,834	,684
(2) Factor "Inspection and supervision mechanisms" Cronbach's Alpha = 0.730			
5	KDGS4	,578	,612
6	KDGS2	,514	,692
7	KDGS3	,579	,612
(3) Factor "Data system" Cronbach's Alpha =0.752			
8	HTDL1	,624	,618
9	HTDL2	,562	,690
10	HTDL3	,555	,697
(4) Factor "Governance capacity for credit appraisal in commercial banks" Cronbach's Alpha = 0.875			
11	NLQT1	,629	,877
12	NLQT2	,759	,828
13	NLQT3	,842	,793

14	NLQT4	,706	,850
(5) Factor "Strategy and commitment to green-credit development in commercial banks" Cronbach's Alpha = 0.834			
15	CLCK1	,632	,805
16	CLCK2	,623	,810
17	CLCK3	,727	,761
18	CLCK4	,680	,783
(6) Factor "International standards and policies on green credit" Cronbach's Alpha = 0.710			
19	TCCS1	,522	,631
20	TCCS2	,551	,615
21	TCCS3	,514	,636
22	TCCS4	,402	,701
(7) Factor "Effectiveness of state management of green credit in commercial banks" **Cronbach's Alpha = 0.754**			
23	HQQL1	,603	,649
24	HQQL2	,653	,589
25	HQQL3	,500	,760

Source: *Summary of the authors' analysis*

4.2. Exploratory factor analysis (EFA)

Extraction of explained variance (% Cumulative variance): The results show that the Total Variance Explained and the Cumulative % reach a cumulative value of 68.445%, which is greater than 50% and meets the standard. From these magnitudes, the report concludes that the constituent measurement variables of the factors explain 68.445% of the variation of the factors. The results are presented in the tables below. After conducting the KMO and Bartlett's Test, the study proceeded to examine factor loadings to assess the correlation between the observed variables of the factors affecting investment attraction for Vietnam's energy transition projects.

After two rounds of EFA with matrix rotation, five observed variables that did not meet statistical criteria were removed from the model. The remaining variables all have factor loadings greater than 0.50, satisfying the requirements for convergent validity and discriminant validity of the scales. The analysis results show that six independent factors were formed, comprising 25 measurement variables, fully reflecting the core aspects that affect the effectiveness of state management of green credit in commercial banks. This confirms that the selected observed variables are closely related and theoretically appropriate, contributing to a comprehensive depiction of the conceptual structure under study. The table below presents in detail the EFA results for the independent variables in the research model.

Table 2. Final results of Exploratory Factor Analysis (EFA)

Rotated Component Matrix

Rotated Component Matrix[a]							
	Component						
	1	2	3	4	5	6	7
NLQT3	,900						

NLQT2	,852						
NLQT4	,843						
NLQT1	,777						
CLCK3		,850					
CLCK4		,822					
CLCK1		,796					
CLCK2		,773					
TCPL3			,902				
TCPL2			,837				
TCPL1			,828				
TCPL4			,636				
KDGS3				,816			
KDGS4				,798			
KDGS2				,719			
HTDL1					,837		
HTDL3					,780		
HTDL2					,763		
HQQL2						,845	
HQQL1						,824	
HQQL3						,722	
TCCS3							,803
TCCS2							,778
TCCS1							,715

Source: *Summary of the authors' analysis*

4.3. Confirmatory factor analysis (CFA)

The CFA results show that all observed variables in the model have positive factor loadings, are highly statistically significant ($p < 0.001$), and are all greater than 0.5, indicating that the variables adequately reflect the latent constructs. All Critical Ratio (C.R.) values exceed the 1.96 threshold, confirming convergent validity and the reliability of the scales. Accordingly, the scales used in the research model meet the requirements for both convergent and discriminant validity, demonstrating close relationships between the observed variables and the latent factors. This result simultaneously confirms that the structure of six independent factors and one dependent factor is consistent with the theoretical model, ensuring reliability and consistency for the subsequent structural equation modeling (SEM) stage.

The measurement model exhibits a very good fit to the survey data. The fit indices, Chi-square = 346.210, df = 231, Chi-square/df = 1.499 < 3, GFI = 0.923, CFI = 0.962, RMSEA = 0.039, and PCLOSE = 0.990 are all within favorable acceptance thresholds as recommended by Hair et al. (2019). This indicates a high level of model fit, small estimation errors, and good generalizability. The regression paths between observed variables and latent factors have high loadings (> 0.7) and are statistically significant, reflecting strong convergent validity and internal reliability. The correlations among the factors are all positive, showing same-direction relationships and logical linkages among elements in the model, while still ensuring discriminant validity

between measured constructs. Overall, the CFA confirms that the six independent factors (TCPL, KDGS, HTDL, NLQT, CLCK, TCCS) and the single dependent factor (HQQL) are well specified, stable, and possess strong measurement validity, providing a reliable basis for the subsequent SEM analysis

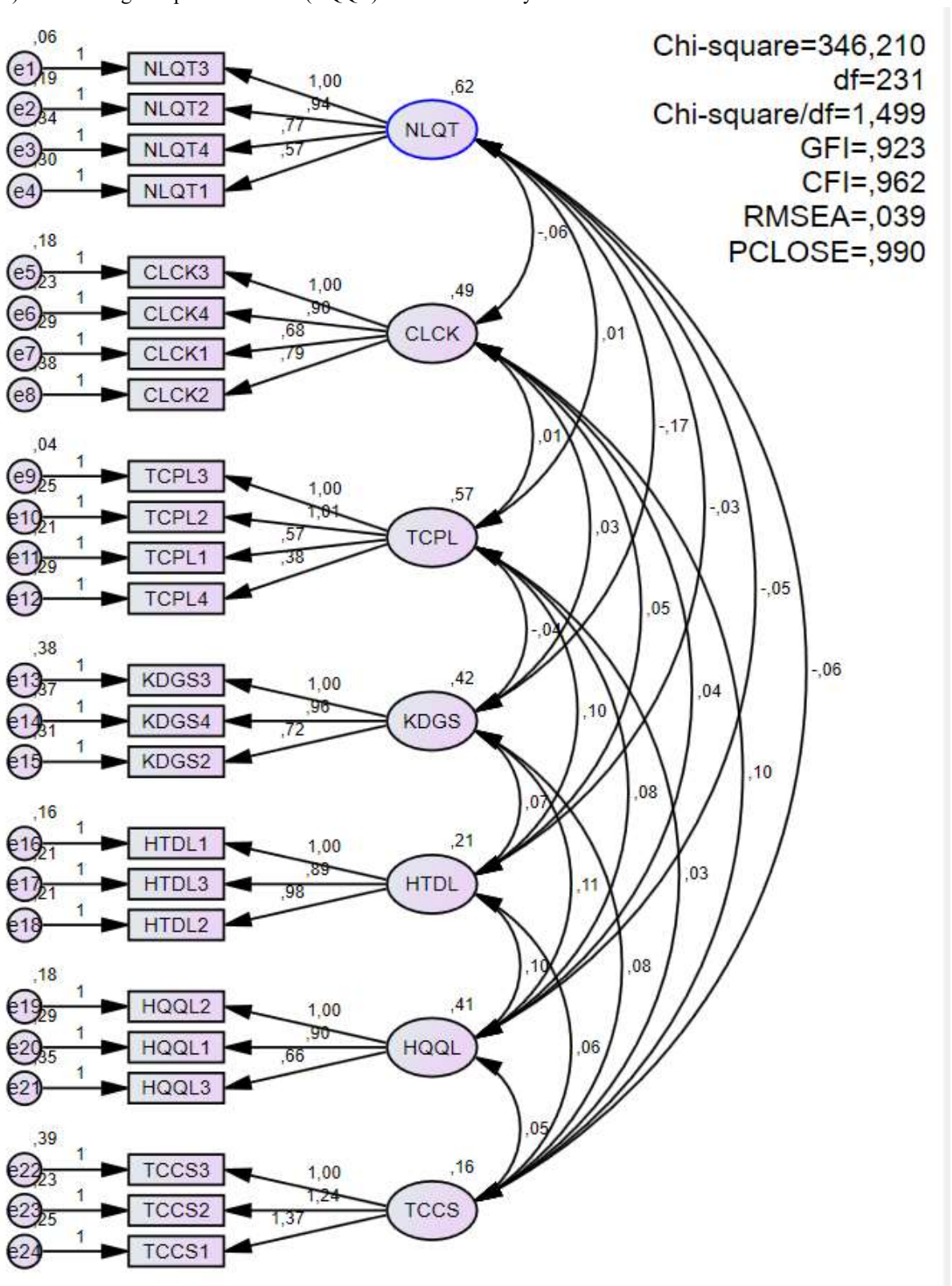

Figure 1. Confirmatory Factor Analysis (CFA) Model

Source: *Summary of the authors' analysis*

4.4. Hypothesis testing

After confirming the overall model fit, the author entered all satisfied observed variables and latent constructs into the SEM to test the hypotheses. The structural equation modeling (SEM) results (Figure 4.12) show that the research model fits the survey data very well. The fit indices meet

recommended thresholds: Chi-square = 346.210, df = 231, Chi-square/df = 1.499 < 2, GFI = 0.923, CFI = 0.962, RMSEA = 0.039, and PCLOSE = 0.990. This indicates that the specified SEM is consistent with the empirical data, yields small estimation errors, and has high explanatory power.

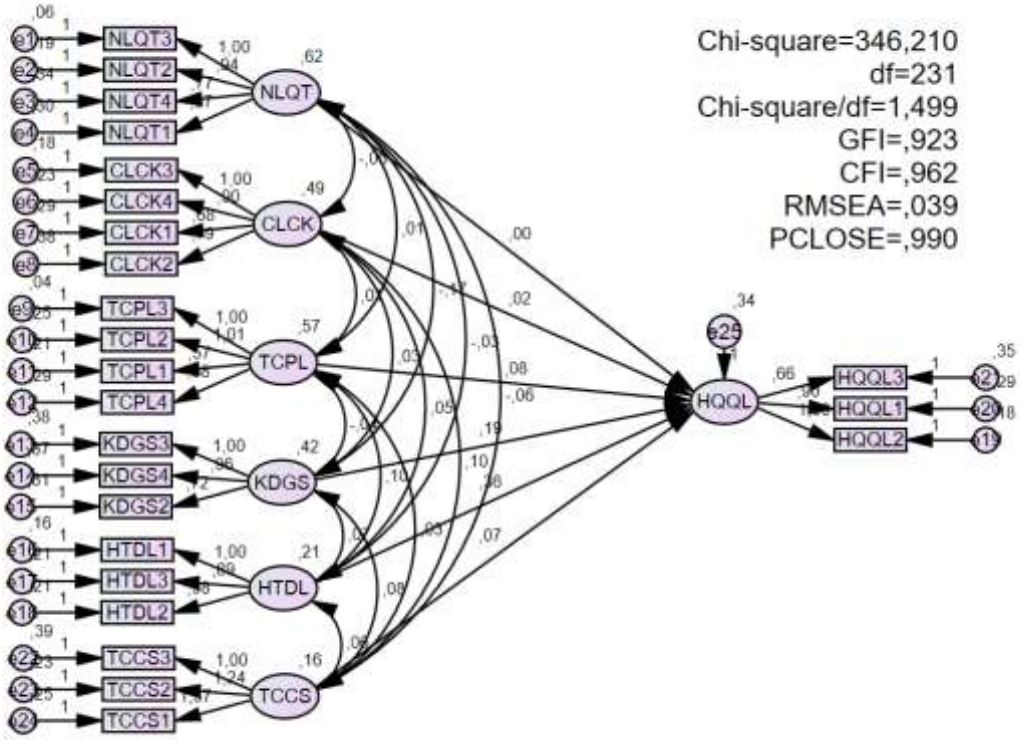

Figure 2. Structural Equation Modeling (SEM) Model
Source: *Summary of the authors' analysis*

After confirming the overall model fit, the author entered all satisfied observed variables and latent constructs into the SEM to test the hypotheses. The results are presented through the Regression Weights and the Standardized Regression Weights tables. The standardized coefficients are shown below; all coefficients are positive, indicating that the effects among factors are in the same direction.

Table 3: Results of hypothesis testing

Hypothesis	Description	Standardized Estimate (β)	Result
H1	The institutional and legal framework has a positive effect on the effectiveness of state management of green credit in commercial banks	,100	Supported
H2	Inspection and supervision mechanisms have a positive effect on the effectiveness of state management of green credit in commercial banks	,192	Supported
H3	A complete, standardized, and verifiable data system has a positive effect on the effectiveness of state management of green credit in commercial banks	,262	Supported
H4	The governance capacity for credit appraisal in commercial banks has a positive effect on the effectiveness of state management of green credit	,001	Supported

H5	The strategy and commitment to green-credit development in commercial banks have a positive effect on the effectiveness of state management of green credit	,017	Supported
H6	International factors and integration have a positive effect on the effectiveness of state management of green credit in commercial banks	,100	Supported

The standardized regression results in Table 3 reflect the magnitude of each factor's influence on the effectiveness of state management of green credit in commercial banks (HQQL). Among the six factor groups tested, the Data System (HTDL) exerts the strongest effect with β = 0.262, underscoring the central role of data digitization and interoperability in green-credit management. When national databases and sectoral banking data are standardized, unified, and effectively shareable, regulators can monitor, analyze, issue early warnings, and accurately assess green-credit portfolios. This not only enhances transparency and reliability across the system but also supports evidence-based policymaking while providing the basis for auditing and supervising compliance with green criteria in credit activities.

Ranked second is the Inspection and Supervision Mechanisms (KDGS) with β = 0.192, indicating that regulatory effectiveness depends closely on supervisory capacity and quality of enforcement. A scientific, transparent, and independent supervisory mechanism helps ensure compliance with green criteria, limit fraud risks, and strengthen accountability among commercial banks when implementing green-credit packages. A well-functioning inspection system also facilitates early detection of deviations in lending, capital use, or reporting, thereby helping regulators adjust policies in a timely manner toward sector-wide sustainability and transparency.

The Institutional and Legal Framework (TCPL) continues to show a positive effect with β = 0.100, affirming the foundational role of institutions in orienting, regulating, and providing the legal corridor for green-credit activities. A stable legal framework, synchronized across Government, the State Bank, and relevant ministries, facilitates policy implementation, reduces legal risks for commercial banks, and builds confidence among investors and enterprises in accessing green capital. Institutional improvement also includes preferential policies on taxes, interest rates, credit guarantees, and environmental-risk assessment regulations, thereby encouraging capital to flow into green, clean, and sustainable sectors.

The three remaining factors: International standards and policies on green credit, Strategy and commitment to green-credit development in commercial banks, and Governance capacity for credit appraisal in commercial banks, all have positive effects on regulatory effectiveness but to a lesser degree. This indicates that, although Vietnam has begun to align with international green-finance standards, the localization of these standards into the legal framework and operational mechanisms remains limited. In addition, green-credit strategies in many commercial banks are still largely directional and not yet fully integrated into long-term growth strategies, leading to modest practical impact. Furthermore, appraisal governance capacity for green credit remains a weakness in the banking system, requiring stronger investment in workforce training, operational guidance, and decision-support technologies.

5. CONCLUSION

The study has systematized the theoretical foundations and developed an empirical model assessing the effectiveness of state management of green credit in commercial banks in Vietnam. Based on survey data and SEM analysis, six influencing factors were identified, all showing positive effects. Among these, the data system has the strongest impact, confirming that standardized, transparent, and interoperable data infrastructure is the cornerstone of effective supervision and policy enforcement. The inspection and supervision mechanism and the institutional and legal framework also play decisive roles in ensuring transparency, accountability, and compliance. Meanwhile, international standards, banks' strategic commitments, and appraisal governance capacity show positive yet moderate influences, highlighting that Vietnam is still in the process of institutional adaptation and capacity enhancement toward full integration with global green-finance standards.

From these findings, several policy implications can be drawn. The government should prioritize building a unified green-credit data platform, harmonizing legal frameworks, and strengthening environmental-risk supervision to ensure consistency and reliability in implementation. For commercial banks, developing a clear green-credit strategy, improving appraisal governance, and investing in human resource training are essential to operationalize sustainability goals and align with state policies. These measures will not only enhance management efficiency but also reinforce the credibility and resilience of Vietnam's banking sector in promoting sustainable finance and the national green-growth agenda.

REFERENCES

1. Bolton, J. (2020). John Bolton: The Scandal of Trump's China Policy. The New York Times.

2. Berg, F., Kölbel, J. F., & Rigobon, R. (2022). Aggregate confusion: The divergence of ESG ratings. Review of Finance, 26(6), 1315-1344.
3. Basel Committee on Banking Supervision (2022). *Principles for the effective management and supervision of climate-related financial risks.* Basel: Bank for International Settlements. Retrieved from https://www.bis.org/bcbs/publ/d532.htm Bank for International Settlements
4. Christensen, H. B., Hail, L., & Leuz, C. (2021). Mandatory CSR and sustainability reporting: Economic analysis and literature review. Review of accounting studies, 26(3), 1176-1248.
5. Delis, M. D., Greiff, K. D., Iosifidi, M., & Ongena, S. (2024). Being stranded with fossil fuel reserves? Climate policy risk and the pricing of bank loans. *Financial markets, institutions & instruments*, *33*(3), 239-265.
6. Ehlers, T., Gao, D., & Packer, F. (2021). A taxonomy of sustainable finance taxonomies. BIS Papers, (118).
7. Goss, A., & Roberts, G. S. (2011). The impact of corporate social responsibility on the cost of bank loans. Journal of banking & finance, 35(7), 1794-1810.
8. Faruq, A. T. M., & Chowdhury, M. A. R. (2025). Financial Markets and ESG: How Big Data is Transforming Sustainable Investing in Developing countries. *arXiv preprint arXiv:2503.06696*.
9. Hamamoto, M. (2006). Environmental regulation and the productivity of Japanese manufacturing industries. Resource and energy economics, 28(4), 299-312.
10. Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, *31*(1), 2-24.
11. North, D. C. (1990). Institutions, institutional change and economic performance. Cambridge University.
12. Scholtens, B. (2017). Why finance should care about ecology. *Trends in ecology & evolution*, *32*(7), 500-505.
13. United Nations Environment Programme Finance Initiative. (2023–2024). *Banking on Green Buildings*; *Energy Efficiency Finance capacity-building materials.* Geneva: UNEP FI. Retrieved from https://www.unepfi.org
14. Zhou, J., Lei, X., & Yu, J. (2024). ESG rating divergence and corporate green innovation. *Business Strategy and the Environment*, *33*(4), 2911-2930.
15. Weber, O. (2012). Environmental credit risk management in banks and financial service institutions. *Business Strategy and the Environment*, *21*(4), 248-263.