

FACTORS INFLUENCING ACCESS TO GREEN FINANCE AMONG SMALL AND MEDIUM-SIZED LOGISTICS ENTERPRISES IN DONG NAI PROVINCE

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ABSTRACT

This study aims to identify the factors influencing access to green finance among small and medium-sized logistics enterprises (SMEs) in Dong Nai Province, Vietnam. Primary data were collected from 480 owners and managers of logistics SMEs operating in the province. The study employed a five-point Likert scale with 18 observed variables measuring five independent constructs and 3 observed variables measuring access to green finance. Quantitative research methods were employed, including reliability testing using Cronbach's Alpha, exploratory factor analysis (EFA), and multiple regression analysis to examine the direction and magnitude of the impacts of various factors on firms' access to green finance. The empirical results reveal that five factors exert a positive influence on logistics SMEs' access to green finance, namely: (1) awareness of green finance, (2) policies and institutional framework, (3) financial capacity, (4) managerial capability, and (5) environmental capability. Among these factors, managerial capability is identified as the most influential determinant. The findings provide empirical evidence to support policy formulation and managerial strategies aimed at enhancing green finance accessibility for logistics SMEs in the context of sustainable development.

Keywords: Green finance, logistics enterprises, SMEs, Dong Nai Province.

1. INTRODUCTION

In the context of increasingly complex climate change, environmental degradation, and the depletion of natural resources, the transition toward green growth and sustainable development is no longer a voluntary option but has become an inevitable requirement for all countries and economic sectors. In Vietnam, the development of a green economy, a circular economy, and the commitment to achieving net-zero greenhouse gas emissions by 2050 have been identified by the Government as long-term strategic objectives. Within this framework, green finance plays a pivotal role as a key instrument in facilitating this transition.

The logistics sector is widely recognized as one of the major contributors to energy consumption and greenhouse gas emissions, particularly through transportation, warehousing, and distribution activities. In Dong Nai Province-one of the most important industrial and logistics hubs in Vietnam's Southern Key Economic Region-the rapid expansion of industrial parks, inland container depots, logistics facilities, and transportation networks has significantly contributed to local economic growth. However, this rapid development has also exerted considerable pressure on the ecological environment. Consequently, promoting investment by logistics enterprises in green transportation modes,

energy-efficient technologies, and environmentally friendly operational models has become an urgent requirement to achieve the province's sustainable development goals.

In this context, green finance is regarded as a crucial resource that enables logistics enterprises, especially small and medium-sized enterprises (SMEs), to access capital for implementing green investment projects. In recent years, the Vietnamese Government has introduced various policies to promote green finance, including green credit schemes, green bonds, credit guarantee funds, and interest rate incentives for environmentally friendly projects. Nevertheless, in practice, access to green finance among logistics SMEs remains limited, as evidenced by low access rates, small loan sizes, complex procedures, and stringent requirements imposed by financial institutions.

Logistics SMEs in Dong Nai Province commonly face multiple barriers, such as limited financial capacity, a lack of collateral, insufficient awareness and understanding of green finance, and inadequate compliance with environmental, social, and governance (ESG) criteria required by financial institutions. In addition, inconsistencies in policy frameworks and support mechanisms at the local level, along with limitations in the implementation capacity of green finance instruments by commercial banks, further constrain enterprises' access to green capital.

Against this background, a systematic examination of the factors influencing access to green finance among small and medium-sized logistics enterprises in Dong Nai Province is both academically necessary and practically significant. This study aims to identify and clarify the key determinants affecting enterprises' access to green finance, thereby providing a scientific basis for proposing appropriate policy recommendations for enterprises, financial institutions, and local government authorities in promoting green and sustainable logistics development in Dong Nai Province.

Although previous studies have examined factors influencing access to green finance among small and medium-sized enterprises (SMEs), most existing research has primarily focused on SMEs in general, manufacturing enterprises, or sustainable finance at the macroeconomic level. Empirical evidence specifically addressing logistics SMEs remains limited, particularly in the context of developing economies such as Vietnam. Moreover, few studies have investigated green finance accessibility within Dong Nai Province, one of the most important industrial and logistics centers in the Southern Key Economic Region. In addition, prior studies have not sufficiently emphasized the industry-specific characteristics of logistics enterprises, including high energy consumption, transportation-related carbon emissions, environmental compliance requirements, and the need for sustainable logistics operations.

This study contributes to the existing literature by extending the analytical framework of green finance accessibility to the context of small and medium-sized logistics enterprises in Dong Nai Province. The study provides additional empirical evidence regarding the roles of awareness of green finance, policy and institutional environment, financial capacity, managerial capability, and environmental capability in influencing enterprises' access to green finance. Furthermore, the findings contribute to the growing body of research on sustainable logistics development and green transition in emerging economies, while also offering practical implications for policymakers, financial institutions, and logistics enterprises in promoting sustainable and environmentally responsible business practices.

2. THEORETICAL BACKGROUND

2.1. Literature Review

Previous studies indicate that firms' access to green finance is simultaneously influenced by multiple groups of factors, which is consistent with approaches commonly

adopted in studies on organizational intention and behavior [1], [8]. These determinants can generally be classified into four main groups.

First, the perception-related factors reflect firms' level of awareness and understanding of green finance, including knowledge of environmental standards and certifications, as well as procedures and eligibility conditions for accessing green financial instruments. Numerous studies have emphasized that limited awareness and insufficient understanding constitute major barriers preventing small and medium-sized enterprises from effectively accessing green finance mechanisms [5].

Second, the institutional environment factors refer to the policy framework, government support mechanisms, and regulatory requirements imposed by financial institutions. Studies grounded in institutional theory suggest that policy clarity, consistency, and the degree of support provided by local authorities significantly influence firms' access to green finance [3], [6], [10].

Third, firm-specific characteristics encompass managerial vision and commitment to sustainable development, openness to innovation, and the level of financial transparency. From the perspective of the resource-based view (RBV), enterprises with strong managerial capabilities and transparent financial information are more likely to gain a competitive advantage in accessing green financial resources [2], [11].

Fourth, implementation capacity factors reflect firms' ability to meet environmental technical standards and credit requirements, particularly in terms of collateral availability. Previous research has shown that constraints related to technical capacity and collateral remain primary reasons why small and medium-sized logistics enterprises encounter difficulties in accessing green finance [4], [12].

Overall, the literature suggests that access to green finance among logistics SMEs is shaped by the combined effects of perception, institutional environment, firm-specific characteristics, and implementation capacity. This theoretical foundation provides an important basis for developing an analytical framework tailored to the context of Dong Nai Province.

2.2. Empirical Studies Applying Analytical Models

Nguyen Thi Thu Hang and Tran Thi Thanh Thuy (2019), in their study examining factors influencing access to green credit among small and medium-sized enterprises in Vietnam, found that access to green finance is primarily affected by: (i) firms' financial capacity, (ii) transparency of accounting and financial information, (iii) firms' awareness of green finance, and (iv) commercial banks' credit policies [9].

Pham Quang Trung et al. (2020), focusing on the role of green finance in sustainable enterprise development in Vietnam, highlighted the importance of the institutional and policy environment. Their findings indicate that factors such as: (i) the legal framework for green finance, (ii) preferential credit mechanisms, (iii) the guiding role of the State, and (iv) the implementation capacity of financial institutions exert significant influence on firms' access to green finance [10].

Le Thi Kim Oanh and Nguyen Hoang Minh (2021), in their study titled "*Factors Affecting Access to Credit of Small and Medium-Sized Enterprises toward Sustainable Development*", demonstrated that access to green finance is influenced by five main groups of factors: (i) firm characteristics, (ii) managerial capacity of business owners, (iii) collateral availability, (iv) bank–enterprise relationships, and (v) compliance with environmental standards [11].

Nguyen Van Phuc and Tran Quoc Khanh (2022), examining green credit for logistics enterprises in Southern Vietnam, identified several key determinants of access to green

finance, including: (i) managerial awareness and commitment to sustainable development, (ii) firms' capacity to meet environmental technical standards in logistics operations, (iii) banks' green credit appraisal procedures, and (iv) support from local authorities [12].

Tran Thi Thu Hien et al. (2023), in their study "*Access to Green Finance among Small and Medium-Sized Enterprises in the Context of Green Transition in Vietnam*", classified the influencing factors into four principal groups: (i) awareness and understanding of green finance, (ii) policy and institutional environment, (iii) firm-specific characteristics, and (iv) capacity to implement green projects [13].

Overall, previous empirical studies consistently indicate that access to green finance among SMEs is influenced by organizational capability, financial conditions, environmental compliance, and institutional support. However, empirical evidence focusing specifically on logistics SMEs in Dong Nai Province remains limited. Therefore, this study extends previous research by examining the determinants of green finance accessibility in the context of logistics enterprises operating in a major industrial and logistics hub in Vietnam.

3. RESEARCH HYPOTHESES

The research hypotheses are developed based on a comprehensive review of prior studies examining the factors influencing access to green finance among small and medium-sized enterprises (SMEs). Drawing on theoretical perspectives and empirical evidence discussed in the literature review [1], [13], this study proposes an analytical framework to examine the relationships between key determinants and SMEs' access to green finance.

Accordingly, the research model incorporates five independent variables, including awareness of green finance, policy and institutional environment, financial capacity, managerial capability, and environmental capability, which are hypothesized to have direct effects on enterprises' access to green finance.

Based on the proposed research framework (Figure 1), the following hypotheses are formulated in the context of small and medium-sized logistics enterprises (SMEs) in Dong Nai Province.

H1: Awareness of green finance positively affects logistics SMEs' access to green finance. In the logistics sector, enterprises with a higher level of understanding of green finance mechanisms, environmental standards, and sustainable logistics practices are more likely to identify and utilize green financial instruments to support green transportation and environmentally friendly operations.

H2: The policy and institutional environment positively influences logistics SMEs' access to green finance. Given that logistics activities are closely associated with environmental regulations, transportation standards, and carbon emission control, supportive government policies and a transparent institutional framework play an important role in facilitating enterprises' access to green financial resources.

H3: Financial capacity positively affects logistics SMEs' access to green finance. Due to the capital-intensive nature of logistics operations, enterprises with stronger financial capacity and higher financial transparency are more capable of satisfying financial institutions' appraisal requirements for green financing programs.

H4: Managerial capability positively affects logistics SMEs' access to green finance. In the logistics sector, managerial capability is particularly important because enterprise managers are required to understand sustainable logistics strategies, environmental compliance requirements, and green investment planning in order to effectively access green financial resources.

H5: Environmental capability positively affects logistics SMEs’ access to green finance. Logistics enterprises with stronger environmental capability, including the adoption of green technologies, energy-efficient transportation systems, and environmentally friendly operational practices, are more likely to meet the environmental criteria imposed by financial institutions for green finance approval.

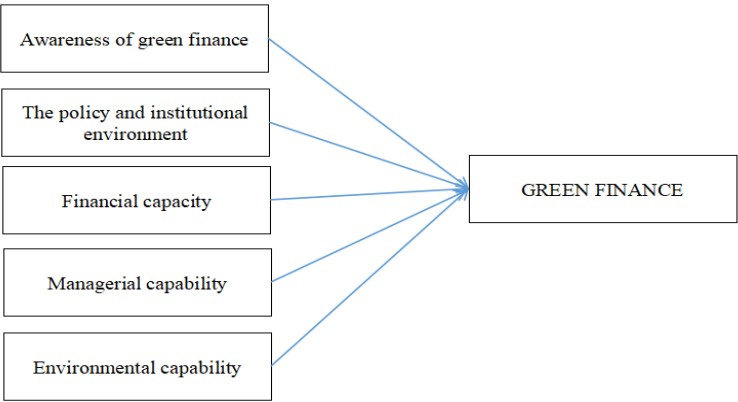


Figure 1. Proposed Research Model

Source: Developed by the Authors

4. RESEARCH METHODOLOGY

This study adopts a mixed-methods approach, combining qualitative and quantitative research methods to enhance the comprehensiveness and reliability of the research findings.

4.1. Qualitative Research

The qualitative phase was conducted through expert discussions. The selected experts included lecturers and researchers specializing in finance and logistics, as well as managers with substantial practical experience in logistics enterprises. The primary objective of the qualitative study was to review, refine, and finalize the set of observed variables, ensuring their relevance to the characteristics of the logistics sector and the specific context of green finance access among small and medium-sized enterprises in Dong Nai Province. The outcomes of the qualitative analysis provided the foundation for developing the structured questionnaire used in the subsequent quantitative phase.

4.2. Quantitative Research

The quantitative research was carried out using a structured questionnaire survey. The survey respondents consisted of owners, senior executives, or managers of small and medium-sized logistics enterprises operating in Dong Nai Province. A total of 480 valid questionnaires were collected, ensuring that the sample size satisfied the requirements for statistical analysis.

The collected data were processed and analyzed using statistical software. The analytical techniques employed included reliability testing of measurement scales using Cronbach’s Alpha, exploratory factor analysis (EFA) to assess the convergent and discriminant validity of the constructs, and multiple regression analysis to examine the magnitude and direction of the effects of the proposed factors on logistics SMEs’ access to green finance in Dong Nai Province.

5. RESEARCH RESULTS

5.1. Reliability Analysis of Measurement Scales (Cronbach's Alpha)

The reliability of the measurement scales was assessed using Cronbach's Alpha coefficients. According to prior studies, a scale is considered reliable when Cronbach's Alpha exceeds 0.6 and the corrected item–total correlation is greater than 0.3. The results of the reliability analysis are presented in Table 1.

Table 1. Reliability Test of Measurement Scales

Observed variable	Scale mean if item deleted	Scale variance if item deleted	Corrected item–total correlation	Cronbach's Alpha if item deleted
Awareness of green finance (NTTCX): Cronbach's Alpha = 0.846				
NTTCX1	12.46	7.82	0.672	0.812
NTTCX2	12.38	8.05	0.701	0.804
NTTCX3	12.52	7.64	0.734	0.792
NTTCX4	12.41	7.98	0.689	0.807
The policy and institutional environment (CSTC): Cronbach's Alpha = 0.881				
CSTC1	15.62	10.41	0.756	0.851
CSTC2	15.48	10.96	0.803	0.834
CSTC3	15.55	10.18	0.778	0.844
CSTC4	15.60	10.72	0.741	0.857
Financial capacity (NLTC): Cronbach's Alpha = 0.872				
NLTC1	11.84	6.92	0.708	0.842
NLTC2	11.76	7.11	0.745	0.831
NLTC3	11.92	6.85	0.781	0.819
Managerial capability (NLQT): Cronbach's Alpha = 0.889				
NLQT1	12.18	7.34	0.764	0.858
NLQT2	12.24	7.11	0.792	0.846
NLQT3	12.10	7.56	0.735	0.867
NLQT4	12.32	7.29	0.781	0.851
Environmental capability (NLMTTr): Cronbach's Alpha = 0.864				
NLMTTr1	11.68	6.48	0.721	0.833
NLMTTr2	11.74	6.72	0.758	0.821
NLMTTr3	11.62	6.91	0.694	0.847
ACCESS TO GREEN FINANCE (TCTX): Cronbach's Alpha = 0.815				
TCTX1	7.42	4.86	0.651	0.763
TCTX2	7.36	4.72	0.689	0.732
TCTX3	7.48	4.91	0.623	0.781

Source: Author's calculations

The results indicate that all measurement scales exhibit Cronbach's Alpha values greater than 0.8, reflecting a high level of internal consistency and reliability. In addition, all

observed variables show corrected item–total correlation coefficients exceeding 0.6, which is well above the recommended threshold in quantitative research.

No observed variable has a corrected item–total correlation below 0.3, nor does the removal of any item lead to a substantial increase in the Cronbach’s Alpha of its corresponding scale. Therefore, all 18 observed variables measuring five independent factors (awareness of green finance, policy and institutional environment, financial capacity, managerial capability, and environmental capability), together with three observed variables measuring access to green finance, meet the reliability requirements and are retained for subsequent analyses, including exploratory factor analysis (EFA) and multiple regression analysis.

5.2. Exploratory Factor Analysis (EFA)

Exploratory factor analysis (EFA) was conducted to examine the underlying structure of the measurement scales and to assess the convergent properties of the observed variables. Principal Component Analysis (PCA) with Varimax rotation was employed to ensure relative independence among the extracted factors.

Table 2. Results of Exploratory Factor Analysis

Variable	Factor				
	1	2	3	4	5
NLQT2	0.891				
NLQT3	0.867				
NLQT1	0.812				
NLQT4	0.764				
NTTCX3		0.874			
NTTCX2		0.846			
NTTCX4		0.821			
NTTCX1		0.768			
CSTC3			0.832		
CSTC1			0.801		
CSTC2			0.776		
CSTC4			0.742		
NLTC2				0.889	
NLTC3				0.861	
NLTC1				0.794	
NLMTr2					0.882
NLMTr3					0.857
NLMTr1					0.803
Total variance explained (%)	26.412	44.085	61.973	72.846	81.392
Eigenvalues	6.985	4.632	3.917	2.845	2.114
KMO = 0.862			Sig. = 0.000		

Source: Author’s calculations

The exploratory factor analysis (EFA) confirms that the dataset is appropriate for factor analysis. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy is 0.862, exceeding the recommended threshold of 0.6, while Bartlett’s Test of Sphericity is

statistically significant ($p < 0.05$), indicating sufficient correlations among the observed variables. The EFA extracts five factors with eigenvalues greater than 1, with the fifth factor having an eigenvalue of 2.114. These five factors collectively explain 81.392% of the total variance, substantially exceeding the commonly accepted threshold of 50% in social science research and indicating strong explanatory power.

All observed variables have factor loadings above 0.7, with no significant cross-loadings, demonstrating satisfactory convergent validity and a clear factor structure. Specifically, NLQT1–NLQT4 load on Managerial Capability (NLQT), NTTCX1–NTTCX4 load on Awareness of Green Finance (NTTCX), CSTC1–CSTC4 load on Policy and Institutional Environment (CSTC), NLTC1–NLTC3 load on Financial Capacity (NLTC), and NLMTr1–NLMTr3 load on Environmental Capability (NLMTr).

Overall, the EFA results confirm the five-factor measurement structure of the research model, comprising Managerial Capability, Awareness of Green Finance, Policy and Institutional Environment, Financial Capacity, and Environmental Capability. All measurement scales meet the required criteria regarding factor extraction, factor loadings, convergent validity, and factor structure. Therefore, the measurement scales are considered reliable and appropriate for subsequent multiple regression analysis to examine the proposed research hypotheses.

5.3. Common Method Bias Test

Since all variables in this study were collected from the same respondents using a self-reported questionnaire, Harman's single-factor test was conducted to assess the potential issue of common method bias (CMB).

The exploratory factor analysis results indicate that the first factor accounts for 26.412% of the total variance, which is below the threshold of 50% suggested by Harman's single-factor criterion. Therefore, common method bias is not considered a serious concern in this study, and the data are deemed appropriate for subsequent statistical analyses.

5.4. Multiple Regression Analysis Results

To evaluate the overall suitability of the regression model, ANOVA analysis and residual diagnostic tests were conducted. The ANOVA results show that the regression model is statistically significant ($F = 42.781$; $\text{Sig.} = 0.000 < 0.05$), indicating that the independent variables jointly explain variations in logistics SMEs' access to green finance in Dong Nai Province.

Residual diagnostic tests were also performed to verify the assumptions of multiple regression analysis. The histogram and Normal P–P Plot of standardized residuals indicate that the residuals are approximately normally distributed. In addition, the scatterplot of standardized residuals does not reveal any clear heteroscedasticity pattern. Therefore, the assumptions of normality and homoscedasticity are considered satisfied, confirming the suitability of the regression model for hypothesis testing.

Table 3A. ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	186.524	5	37.305	42.781	0.000
Residual	413.276	474	0.872		
Total	599.800	479			

Source: Author's calculations

The regression model demonstrates satisfactory explanatory power, with an R^2 value of 0.621 and an Adjusted R^2 value of 0.614. This indicates that approximately 62.1% of the variation in logistics SMEs' access to green finance is explained by the independent variables included in the model [5].

To evaluate the magnitude and direction of the effects of the proposed factors on access to green finance among small and medium-sized logistics enterprises in Dong Nai Province, a multiple regression analysis was conducted. The dependent variable is access to green finance (TCTX), while the independent variables include awareness of green finance (NTTCX), policy and institutional environment (CSTC), financial capacity (NLTC), managerial capability (NLQT), and environmental capability (NLMTr). The regression results are presented in Table 3B.

Table 3B. Results of Multiple Regression Analysis

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	VIF	Tolerance
	B	Std. Error	Beta				
1	Constant	0.226	0.124		2.201	0.006	
	F_NTTCX	0.132	0.055	0.132	3.951	0.001	1.432
	F_CSTC	0.104	0.049	0.118	2.876	0.005	1.587
	F_NLTC	0.185	0.041	0.243	4.512	0.000	1.744
	F_NLQT	0.462	0.014	0.621	4.714	0.000	1.926
	F_NLMTr	0.273	0.047	0.231	2.253	0.008	1.508
<i>Dependent variable: Access to Green Finance</i>							

Source: Author's calculations

The multicollinearity diagnostic results indicate that all Variance Inflation Factor (VIF) values are below 2 and all Tolerance values exceed 0.5. Therefore, multicollinearity is not considered a serious issue in the regression model.

The regression results indicate that all five independent variables exert positive and statistically significant effects on SMEs' access to green finance, with significance levels (Sig.) below 0.05.

Based on the standardized regression coefficients (Beta), the relative importance of the influencing factors can be ranked as follows:

- Managerial capability (NLQT) has the strongest impact on access to green finance ($\beta = 0.621$; $p < 0.001$);
- This is followed by financial capacity (NLTC) ($\beta = 0.243$; $p < 0.001$) and environmental capability (NLMTr) ($\beta = 0.231$; $p = 0.008$);
- Awareness of green finance (NTTCX) ($\beta = 0.132$; $p = 0.001$) and policy and institutional environment (CSTC) ($\beta = 0.118$; $p = 0.005$) exhibit relatively smaller but still statistically significant effects.

Based on the regression results, the estimated multiple linear regression equation describing the relationship between the influencing factors and access to green finance among logistics SMEs in Dong Nai Province is expressed as follows:

$$TCTX = 0.226 + 0.132NTTCX + 0.104CSTC + 0.185NLTC + 0.462NLQT + 0.273NLMTr + e_i$$

These findings indicate that enhancing managerial capability, financial capacity, and environmental capability plays a critical role in improving enterprises' access to green financial resources. At the same time, the results highlight the supporting roles of green finance awareness and the policy–institutional environment in facilitating green finance accessibility for logistics SMEs.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

This study was conducted to examine the factors influencing access to green finance among small and medium-sized logistics enterprises (SMEs) in Dong Nai Province. By adopting a mixed-methods approach that integrates qualitative research with quantitative analysis based on a survey of 480 enterprises, the results of Cronbach's Alpha reliability testing, exploratory factor analysis (EFA), and multiple regression analysis confirm that the proposed research model is appropriate and statistically significant.

The regression results indicate that all five factors—awareness of green finance, policy and institutional environment, financial capacity, managerial capability, and environmental capability—have positive effects on logistics SMEs' access to green finance in Dong Nai Province. Among these determinants, managerial capability exerts the strongest influence, followed by financial capacity and environmental capability. This finding suggests that financial institutions not only consider firms' compliance with environmental standards but also place particular emphasis on managerial competence, financial transparency, and the strategic vision of leadership teams when evaluating applications for green financing.

Although awareness of green finance and the policy–institutional environment exhibit relatively weaker effects, they continue to play an important role in shaping firms' behavior and in creating favorable conditions for accessing green financial resources. Overall, this study contributes additional empirical evidence to the growing body of literature on green finance in the logistics sector in Vietnam and provides a scientific basis for formulating appropriate policy and managerial implications in the context of promoting green and sustainable logistics development.

The findings of this study are generally consistent with previous empirical studies on green finance accessibility among SMEs in Vietnam. In particular, the positive impact of awareness of green finance and the policy–institutional environment is in line with the findings of Nguyen Thi Thu Hang and Tran Thi Thanh Thuy (2019), who emphasized the importance of enterprises' understanding of green finance mechanisms and the supporting role of government policies in facilitating access to green credit. Similarly, the significant effect of financial capacity confirms the conclusions of Le Thi Kim Oanh and Nguyen Hoang Minh (2021), suggesting that enterprises with stronger financial resources and higher financial transparency are more likely to satisfy the appraisal requirements of financial institutions [9], [11].

Notably, the present study identifies managerial capability as the most influential determinant affecting logistics SMEs' access to green finance. This result is consistent with Nguyen Van Phuc and Tran Quoc Khanh (2022), who argued that managerial awareness and strategic commitment to sustainable development are critical factors in obtaining green credit in the logistics sector [12]. From the perspective of the Resource-Based View (RBV), managerial capability can be considered a strategic organizational resource that enables enterprises to improve financial transparency, enhance environmental compliance, and effectively prepare green investment projects that meet financial institutions' evaluation criteria [2].

The dominant effect of managerial capability can also be explained through the Resource-Based View (RBV) and agency theory perspectives. According to RBV, managerial capability represents a valuable intangible organizational resource that enhances firms' competitiveness and ability to mobilize strategic resources, including green finance. Logistics SMEs with capable management teams are more likely to formulate sustainable business strategies, improve environmental compliance, and effectively communicate green investment objectives to financial institutions.

From the perspective of agency theory, managerial capability contributes to reducing information asymmetry between enterprises and financial institutions. Enterprises with stronger managerial competence and transparent governance systems are generally perceived as less risky by lenders, thereby improving their credibility and increasing the likelihood of obtaining green financing. This finding highlights the critical role of managerial quality in the context of sustainable logistics development and green transition in emerging economies such as Vietnam.

Despite its contributions, this study still has several limitations. First, the study employs cross-sectional data collected at a single point in time; therefore, the results may not fully capture changes in enterprises' access to green finance over time. Second, the use of OLS multiple regression may not adequately address potential endogeneity issues or complex interrelationships among latent constructs. In addition, the study only applies exploratory factor analysis (EFA) without confirmatory factor analysis (CFA) or structural equation modeling (SEM), which may limit the assessment of construct validity and causal relationships.

Future studies are therefore encouraged to employ CFA and SEM approaches to provide more robust validation of the measurement model and to examine the structural relationships among factors influencing green finance accessibility in the logistics sector.

In addition, this study only employs exploratory factor analysis (EFA) to assess the measurement structure of the constructs. Although EFA is appropriate for exploratory research and scale purification, it may not provide sufficient evidence for confirming construct validity and the overall goodness-of-fit of the measurement model. The absence of confirmatory factor analysis (CFA) and structural equation modeling (SEM) limits the ability to simultaneously examine measurement relationships and structural causal relationships among latent variables.

Therefore, future studies are encouraged to apply CFA and SEM techniques to provide stronger validation of the research model and more robust examination of the relationships between determinants of green finance accessibility among logistics SMEs.

6.2. Recommendations

6.2.1. Recommendations for Logistics SMEs

Based on the research findings, logistics SMEs should prioritize enhancing their managerial capability by investing in leadership training and development, improving corporate governance systems, strengthening financial transparency, and formulating long-term sustainable development strategies. These measures are critical for improving firms' credibility and trustworthiness in the eyes of financial institutions when seeking access to green finance.

In addition, enterprises should strengthen their financial capacity by improving cash flow management, enhancing capital efficiency, and complying with accounting and financial standards to better meet the appraisal requirements of green credit programs.

At the same time, logistics SMEs need to proactively enhance their environmental capability through investments in green technologies, environmentally friendly transport vehicles, energy-efficient solutions, and compliance with environmental regulations. Furthermore, increasing awareness of green finance and actively exploring green credit products, green bonds, and financial support programs related to sustainable development will enable enterprises to better capitalize on available green financing opportunities.

6.2.2. Recommendations for Government Authorities

Government authorities should continue to improve the policy and institutional framework for green finance by establishing a clear, coherent, and stable legal environment that encourages logistics SMEs to engage in green investment activities. In parallel, preferential policies related to taxation, interest rates, and credit guarantee mechanisms should be strengthened to support enterprises implementing environmentally friendly logistics projects.

Moreover, greater emphasis should be placed on communication, training, and technical assistance in the area of green finance to help enterprises better understand the criteria, conditions, and benefits associated with accessing green financial resources, thereby enhancing the effectiveness of policy implementation in practice.

6.2.3. Recommendations for Financial Institutions and Banks

Financial institutions and banks should diversify green financial products that are tailored to the specific characteristics and needs of logistics SMEs, while simultaneously simplifying appraisal and disbursement procedures to facilitate easier access to green capital.

In addition, financial institutions should develop flexible and transparent evaluation criteria that extend beyond traditional financial indicators to include managerial capability, environmental performance, and firms' long-term sustainability potential. Strengthening advisory services and technical support for enterprises during the preparation of green financing applications is also a crucial measure for promoting the development of green finance in the logistics sector.

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