



Linking Organizational Culture and Green Awareness to Financial Performance: The Mediating Role of Green Innovation

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ABSTRACT

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Despite increasing pressure on firms to integrate sustainability into their strategic and operational activities, limited empirical research has examined how organizational environmental capabilities translate into financial performance through innovation mechanisms. This study investigates the effects of organizational culture and green awareness on financial performance, while examining the mediating role of green innovation. Primary data were collected from 278 managers in Vietnam using a structured questionnaire measured on a five-point Likert scale. The hypothesized relationships were tested using Structural Equation Modelling (SEM). The findings reveal that organizational culture significantly and positively affects green innovation ($\beta = 0.151, p < 0.001$) and financial performance ($\beta = 0.226, p < 0.001$). Likewise, green awareness positively influences green innovation ($\beta = 0.460, p < 0.001$) and financial performance ($\beta = 0.347, p < 0.001$). Furthermore, green innovation positively affects financial performance ($\beta = 0.379, p < 0.001$). Mediation analysis indicates that green innovation partially mediates the relationships between organizational culture and financial performance (indirect effect $\beta = 0.057, p = 0.002$), as well as between green awareness and financial performance (indirect effect $\beta = 0.175, p = 0.001$), confirming that green innovation strengthens the impact of organizational environmental capabilities on firm performance. These findings contribute to the sustainability and innovation literature by highlighting the critical role of green innovation as a behavioral and strategic mechanism linking organizational environmental orientation to financial outcomes. The study also provides practical implications for managers seeking to enhance competitive advantage and long-term sustainability through green innovation.

1. INTRODUCTION

Over the past few decades, environmental sustainability has evolved from a marginal consideration into a core strategic priority for firms operating in contexts characterized by volatility and constrained resources. Escalating global challenges, particularly climate change, ecological degradation, and the depletion of natural resources, have intensified institutional pressures on organizations to reconcile their economic goals with broader environmental responsibilities [1, 2]. In response, firms are progressively moving beyond compliance-based environmental management toward proactive, sustainability-oriented strategies that embed environmental considerations within core business models. Within this evolving landscape, firm performance is no longer assessed solely on financial metrics but increasingly on firms' capacity to generate sustainable value for a broad range of stakeholders [3].

Against this backdrop, green innovation has become an increasingly important mechanism through which firms can simultaneously advance environmental and economic performance. Broadly defined, green innovation encompasses

the development or adoption of products, processes, and managerial practices that mitigate environmental harm while enhancing operational efficiency and competitive advantage [4, 5]. Existing empirical evidence indicates that such innovations improve resource efficiency, reduce waste and emissions, and help firms respond to the growing market demand for environmentally responsible products and services [6]. Consequently, green innovation is increasingly regarded as a strategic mechanism that not only mitigates environmental risks but also enhances superior financial performance.

Notwithstanding its potential benefits, the effectiveness of green innovation is contingent upon internal organizational conditions that shape a firm's capacity to develop and implement environmentally oriented innovations. Among these, organizational culture has been widely recognized as a foundational determinant. Conceptualized as a system of shared values, beliefs, and norms that guide employee behavior [7], organizational culture plays a critical role in cultivating an environment conducive to sustainability-oriented innovation. A culture that prioritizes environmental responsibility can foster pro-environmental behaviors, facilitate knowledge exchange, and strengthen organizational

learning, which are key antecedents of innovation capability [8, 9]. Empirical studies consistently demonstrate that firms characterized by strong environmental cultures are more inclined to engage in green innovation and achieve enhanced environmental and financial outcomes.

In parallel, green awareness constitutes another salient internal driver of firms' environmental strategies. Green awareness reflects the extent to which organizational members possess both knowledge of and commitment to environmental sustainability issues [6]. Elevated levels of green awareness among employees and managers can strengthen the alignment between organizational objectives and sustainable practices, thereby promoting environmentally responsible decision-making across functional domains. Prior research suggests that green awareness facilitates the effective implementation of eco-innovation initiatives and enhances organizational responsiveness to stakeholder expectations regarding sustainability [10].

Despite the growing body of literature on environmental management and firm performance, several important research gaps remain unresolved. First, prior studies have largely examined organizational culture, green awareness, green innovation, and financial performance as isolated constructs, with limited attention given to the underlying mechanisms linking these variables within an integrated theoretical framework. In particular, empirical evidence explaining how green innovation functions as a mediating capability through which organizational culture and green awareness link to superior financial outcomes remains insufficient. Second, although the natural resource - based view (NRBV) emphasizes the strategic value of environmental capabilities, existing studies have seldom integrated NRBV with innovation theory to explain how internal organizational resources stimulate green innovation and subsequently enhance firm performance. This theoretical fragmentation limits a comprehensive understanding of the pathways through which sustainability-oriented organizational practices generate competitive advantage [11, 12]. Third, most existing evidence has been concentrated in developed economies, while empirical studies in emerging markets remain limited. This issue is particularly important in the Vietnamese context, where firms are increasingly pressured to adopt environmentally sustainable practices amid rapid economic growth and intensifying environmental concerns. The institutional and managerial conditions of emerging economies may produce different organizational dynamics compared to developed countries, thereby necessitating further empirical investigation [13].

To address these gaps, the present study develops an integrated research framework that examines the effects of organizational culture and green awareness on financial performance, while explicitly investigating the mediating role of green innovation. Drawing on the NRBV and innovation theory, this study argues that firms characterized by sustainability-oriented organizational cultures and high levels of green awareness are more likely to engage in green innovation initiatives, which, in turn, enhance financial performance through improved operational efficiency, cost reduction, and competitive differentiation. By empirically testing this mechanism in the Vietnamese context, the study provides a more comprehensive explanation of how internal environmental orientations are translated into tangible economic outcomes.

This study offers several key contributions. First, it enriches

the existing literature by combining organizational culture, green awareness, and green innovation within a single analytical model, thereby providing a more holistic perspective on the internal determinants of financial performance. Second, it empirically validates the mediating role of green innovation, clarifying the processes through which environmental orientation is converted into measurable economic benefits. Third, it adds to the relatively limited research on sustainability in emerging economies by uncovering context-specific factors that influence the effectiveness of green innovation practices. Finally, from a managerial standpoint, the findings highlight the importance of fostering a sustainability-driven organizational culture and strengthening environmental awareness as essential foundations for achieving long-term financial performance.

2. LITERATURE REVIEW

2.1 Natural resource - based view and innovation theory

The NRBV builds upon the traditional resource-based perspective by highlighting that sustained competitive advantage can arise from firm-specific capabilities designed to respond effectively to environmental challenges and resource limitations [9]. From this perspective, organizational resources such as environmental management capabilities, sustainability-oriented culture, and green awareness, enable firms to mitigate ecological impacts while improving efficiency and competitiveness. These capabilities support environmentally responsible practices and facilitate the development of green strategies that align ecological and economic objectives [14, 15]. In this study, the NRBV provides the theoretical foundation for explaining why organizational culture and green awareness constitute valuable internal environmental capabilities that can support firms' long-term competitiveness. However, while the NRBV identifies these internal environmental attributes as strategic resources, it offers a limited explanation of the processes by which these resources are transformed into tangible organizational outcomes. Therefore, additional theoretical perspectives are needed to explain how these internal environmental capabilities are converted into improved financial performance.

Complementing the NRBV, innovation theory [16] emphasizes innovation as a dynamic organizational process through which firms leverage internal knowledge, capabilities, and strategic resources to enhance organizational performance and sustained competitive advantage [17-19]. In the context of environmental management, green innovation encompasses the design and adoption of products, processes, and managerial approaches that mitigate environmental impacts while enhancing organizational efficiency [6]. Prior research suggests that organizational culture and green awareness cultivate an internal environment conducive to experimentation, learning, and the adoption of environmentally friendly technologies [20, 21]. From this perspective, innovation theory offers a strong conceptual foundation for understanding the mediating function of green innovation, whereby internal organizational attributes are translated into improved financial performance.

Integrating the NRBV and innovation theory, this study proposes that internal environmental resources alone are insufficient to generate superior financial outcomes unless

they are effectively translated into innovative organizational practices. Specifically, the NRBV explains why organizational culture and green awareness represent valuable strategic resources, whereas innovation theory clarifies how these resources are converted into competitive advantage through green innovation [22]. By combining these two theoretical perspectives, the study provides a more comprehensive explanation of how firms translate internal environmental orientations into both sustainability and financial performance. Therefore, the integration of the two theories strengthens the understanding of green innovation as a critical link between organizational capabilities and firm performance [23].

2.2 Organizational culture, green innovation and financial performance

Organizational culture is generally understood as a pattern of shared values, beliefs, and norms that guide employees' behaviors and influence organizational practices [24]. In the context of environmental sustainability, a culture that embeds ecological responsibility within its core values serves as a powerful internal driver of pro-environmental behavior. Such a culture not only heightens employees' awareness of environmental issues but also fosters intrinsic motivation to engage in sustainability-oriented initiatives. Consequently, employees are more likely to support and actively participate in environmentally responsible practices, facilitating the integration of sustainability into organizational routines and decision-making processes [25].

From an innovation perspective, organizational culture plays an important role in shaping a firm's capacity to generate and implement green innovation. A sustainability-oriented culture promotes experimentation, knowledge sharing, and cross-functional collaboration, conditions essential for the development of environmentally friendly products and processes [6]. Empirical studies suggest that firms with well-developed environmental cultures are more inclined to pursue green innovation, as such contexts encourage employees to generate and implement initiatives that minimize environmental impacts while enhancing the efficient use of resources [8]. Moreover, such cultures mitigate resistance to change and facilitate the adoption of innovative environmental practices, thereby strengthening long-term competitive advantage.

Beyond its influence on innovation, organizational culture is widely recognized as a strategic asset that contributes to superior firm performance. Within the resource-based view, culture can constitute a valuable, rare, and inimitable resource that enhances organizational effectiveness [26, 27]. A strong and adaptive culture improves internal coordination, reinforces employee commitment, and aligns individual behaviors with organizational objectives, thereby increasing operational efficiency and strategic coherence [28]. Firms that embed sustainability within their cultural fabric are particularly well positioned to enhance corporate reputation, build stakeholder trust, and respond proactively to evolving environmental and social expectations. Longitudinal evidence further suggests that such firms tend to outperform their peers financially over time [28]. Accordingly, the following hypotheses are proposed:

H1: Organizational culture positively influences green innovation.

H2: Organizational culture positively influences financial

performance.

2.3 Green Awareness, green innovation and financial performance

Green awareness refers to the extent to which individuals perceive, comprehend, and show concern for environmental issues and their consequences for organizational activities [29]. At the managerial level, it reflects the degree of environmental knowledge, values, and cognitive attention that decision-makers devote to sustainability-related challenges and opportunities [6]. Drawing on Upper Echelons Theory, organizational outcomes are influenced by the cognitive orientations and value systems of top executives. Managers with a high degree of environmental awareness are thus more inclined to frame ecological challenges not merely as regulatory pressures or cost obligations, but as strategic opportunities for innovation and value creation [30]. This cognitive framing fosters proactive environmental strategies, strengthens managerial commitment to sustainability, and encourages the allocation of organizational resources toward environmentally oriented initiatives [10, 29]. Consequently, green awareness plays a critical role in shaping firms' willingness to engage in green innovation.

A growing body of empirical research lends support to this view. Firms exhibiting higher levels of environmental awareness and more effective knowledge-sharing practices are better able to develop and implement green innovation strategies, as such awareness improves their capacity to recognize opportunities for eco-efficient processes and the development of sustainable products [11, 29]. In this sense, green awareness not only stimulates the generation of environmentally friendly ideas but also facilitates their diffusion and implementation across the organization. Moreover, firms that demonstrate a high level of environmental awareness are more likely to implement sustainable practices that enhance resource efficiency, minimize waste, and reduce energy consumption, thereby lowering operational costs and improving overall profitability [1]. Furthermore, environmentally conscious firms are more likely to strengthen their corporate reputation, build legitimacy with stakeholders, and attract environmentally responsible customers and investors, which in turn enhances market performance and access to capital [31]. These considerations suggest that green awareness functions both as a cognitive driver of innovation and as a strategic resource that enhances financial performance. Accordingly, the following hypotheses are proposed:

H3: Green awareness positively influences green innovation.

H4: Green awareness positively influences financial performance.

2.4 Green innovation and financial performance

Green innovation is increasingly acknowledged as a key driver of firm performance, especially amid intensifying environmental challenges and shifting stakeholder expectations [32]. By investing in environmentally friendly technologies, processes, and managerial practices, firms can simultaneously generate ecological and economic benefits. From an efficiency perspective, green innovation enables firms to reduce material and energy consumption, minimize waste, and optimize resource utilization, thereby lowering

operational costs and enhancing productivity [5]. These efficiency gains are especially important in resource-constrained environments, where cost control and operational excellence are essential for financial performance.

Beyond efficiency improvements, green innovation also contributes to revenue growth and market expansion. Firms that develop environmentally friendly products and services are better positioned to meet increasing demand for sustainable solutions, enhance customer satisfaction, and differentiate themselves from competitors [33]. Additionally, green innovation strengthens reputational capital and organizational legitimacy, thereby facilitating access to new markets and attracting environmentally conscious investors and stakeholders [8, 30, 34]. As such, green innovation generates both operational and market-related benefits that enhance both operational efficiency and market-based performance [35].

A growing body of empirical studies offers strong evidence of a positive association between green innovation and financial performance. Prior research indicates that green innovation strengthens firm competitiveness and supports superior financial outcomes by promoting sustainable development and long-term value creation [36]. Similarly, Hart and Dowell [14] demonstrate that the adoption of environmentally oriented technologies and managerial practices leads to notable improvements in both environmental and corporate performance. More recent contributions further suggest that green innovation enhances firm performance through multiple pathways, including the development of green intellectual property, gains in operational efficiency, and improved market positioning [30]. Collectively, these findings highlight the central role of green innovation in driving sustainable financial success. From the perspective of the NRBV, green innovation allows firms to convert environmental capabilities into strategic resources that are valuable, rare, and difficult to imitate, thereby supporting sustained competitive advantage [9]. Accordingly, the following hypothesis is proposed:

H5: Green innovation positively influences financial performance.

The Mediating Role of Green Innovation

The NRBV posits that firm-specific environmental capabilities generate sustained competitive advantage only when they are effectively deployed through value-generating activities such as innovation [9]. The mere presence of internal environmental orientations such as sustainability-oriented organizational culture or high levels of green awareness does not automatically yield superior financial performance. Rather these intangible capabilities must be operationalized through concrete organizational actions that generate measurable economic value.

In this context, green innovation serves as a critical transformation mechanism that converts internal environmental drivers into performance outcomes. Organizational culture and green awareness establish the cognitive and behavioral foundations that encourage environmentally responsible practices; however, it is through green innovation that these orientations are translated into tangible improvements in products, processes, and managerial systems. Such innovations enhance resource efficiency, reduce environmental and operational costs, and enable firms to develop differentiated offerings. As a result, firms can strengthen both cost-based and market-based competitive advantages [37]. Empirical evidence increasingly supports the mediating role of green innovation. For instance, Xie et al. [37] demonstrate that green innovation functions as a mediating mechanism between environmental strategies and firm performance by facilitating efficiency gains and enhancing competitive positioning. Similarly, Wang [8] found that sustainability-oriented organizational culture improves firm performance indirectly through its positive effect on green innovation. These findings suggest that green innovation functions as a conduit through which internal organizational factors are transformed into economic value, rather than merely acting as an independent driver of performance. Accordingly, the following hypotheses are proposed:

H6a: Green innovation mediates the relationship between organizational culture and financial performance.

H6b: Green innovation mediates the relationship between green awareness and financial performance.

The proposed research model (Figure 1) is as follows:

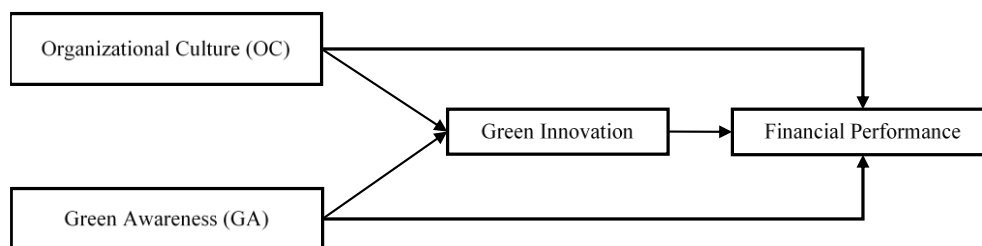


Figure 1. Research model

3. METHODOLOGY

3.1 Research design and data collection

This study employed a quantitative research approach to examine the relationships among organizational culture, green awareness, green innovation, and financial performance. The target population comprised senior managers working in manufacturing and service firms in Vietnam. These respondents were selected because of their comprehensive

understanding of organizational strategies, innovation activities, and environmental practices within their firms. Their managerial positions enabled them to provide informed and reliable assessments of the research constructs.

Before the primary data collection, a pilot study was carried out with five experts from universities and research institutions to assess the clarity, relevance, and contextual suitability of the measurement items. Feedback from these experts resulted in minor revisions to improve wording precision and content validity. Following this refinement

process, the final questionnaire was distributed to managers across various firms via email and Zalo. After three follow-up reminders, a total of 278 valid responses were obtained and deemed suitable for subsequent data analysis.

This study employed convenience sampling combined with snowball sampling to collect data from managers and employees working in Vietnamese enterprises. These sampling techniques were considered appropriate due to the practical difficulty of obtaining access to organizational respondents involved in sustainability related activities and decision making processes. Similar approaches have been widely adopted in organizational and sustainability research where access to specialized respondents is limited [38, 39]. To minimize the possible sampling bias, several procedural measures were implemented. First, data were collected from respondents across different industries and organizational positions to enhance sample diversity. Second, anonymity and confidentiality were emphasized to reduce social desirability bias and encourage honest responses. Third, respondents were encouraged to distribute the survey to qualified participants with relevant professional experience rather than personal acquaintances only, thereby reducing network homogeneity bias.

3.2 Measurement

All measurement items were adapted from established scales used in previous studies and adjusted to fit the research context. All constructs were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly

agree). Organizational culture was measured using 7 observed variables adapted from previous studies [8, 27]. Green awareness was measured using 5 observed variables reflecting employees' environmental knowledge and concern [6]. Green innovation was measured using 7 observed variables related to environmentally friendly products and processes [5, 10]. Financial performance was measured using 7 observed variables reflecting profitability, sales growth, and overall financial performance compared with competitors [36].

3.3 Data analysis

The data analysis followed several steps. First, Cronbach's Alpha was used to assess scale reliability. Next, exploratory factor analysis (EFA) was conducted using SPSS to explore the underlying factor structure and evaluate the suitability of the measurement items in the Vietnamese research context. Subsequently, confirmatory factor analysis (CFA) was performed using AMOS to confirm the measurement model by assessing model fit, convergent validity, and discriminant validity.

4. RESULTS

4.1 Participants demographic

The profiles of the respondents and their firms are presented in Table 1.

Table 1. Demographics table

Factors	Component	Frequency	Percentage (%)
Position	General Director	65	23.4
	CEO/CFO	86	30.9
	Head of Department/Division	127	45.7
Firm size (employees)	< 50 employees	64	23
	50–200 employees	102	36.7
	200–500 employees	68	24.5
	> 500 employees	44	15.8
Firm age	< 5 years	58	20.9
	5–10 years	96	34.5
	> 10 years	124	44.6
Industry sector	Manufacturing	112	40.3
	Services	98	35.2
	Trade/Other	68	24.5

4.2 Common method bias

To assess the potential presence of common method variance, Harman's single-factor test was employed. All measurement items were entered into an EFA using an unrotated principal component extraction. The results yielded eight factors with eigenvalues exceeding 1.0, with the first factor accounting for 29.112% of the total variance. As no single factor accounted for the majority of the variance, common method bias is unlikely to represent a significant threat to the validity of the findings.

4.3 Analysis of research results

4.3.1 Cronbach's alpha

The reliability of the measurement scales was evaluated using Cronbach's Alpha, with acceptable thresholds of $\alpha > 0.6$ and item-total correlation > 0.3 [40, 41]. The results (Table 2)

show that all constructs have Cronbach's Alpha values ranging from 0.875 to 0.941, indicating high internal consistency and suitability for further analysis.

Table 2. Cronbach's alpha results

Factors	Cronbach's Alpha
Organizational Culture	0.875
Green Awareness	0.889
Green Innovation	0.941
Financial Performance	0.934

Source: Extracted from SPSS Algorithm results (SPSS 26)

4.3.2 Exploratory factor analysis

EFA was conducted to examine the factor structure of the variables. The results show that the data satisfy the required conditions for factor analysis, with KMO = 0.918, Bartlett's test significance = 0.000, total variance explained = 63.255%,

and eigenvalue = 2.163 confirming the appropriateness of the factor model. The detailed results of the pattern matrix are presented in Table 3.

Table 3. The pattern matrix table

	Factor			
	1	2	3	4
GI5	.898			
GI4	.894			
GI7	.882			
GI2	.880			
GI6	.834			
GI3	.759			
GI1	.711			
FP6		.924		
FP7		.924		
FP2		.871		
FP4		.804		
FP3		.732		
FP5		.723		
FP1		.695		
OC6			.762	
OC3			.732	
OC7			.730	
OC1			.711	
OC4			.687	
OC5			.681	
OC2			.656	
GA5				.865
GA2				.849
GA1				.783
GA4				.779
GA3				.631

Source: Extracted from SPSS Algorithm results (SPSS 26)

Note: OC = Organizational Culture, GA = Green Awareness, GI = Green Innovation, FP = Financial Performance

4.3.3 Confirmatory factor analysis

It is important to check if the research model fits the data well to ensure the consistency of the observed variable [40,

41]. In this study, several fit indices were used to test the model. The results (Figure 2) show acceptable values: Chi-square/df = 2.105 (≤ 3), Root Mean Square Error of Approximation (RMSEA) = 0.063 (≤ 0.08), Tucker-Lewis Index (TLI) = 0.928 (≥ 0.9), Comparative Fit Index (CFI) = 0.935 (≥ 0.9), Goodness-of-Fit Index (GFI) = 0.853 (0.8–0.9). Because the sample size is not large, reaching a GFI of 0.9 is difficult, so a value above 0.8 is still acceptable [40, 42].

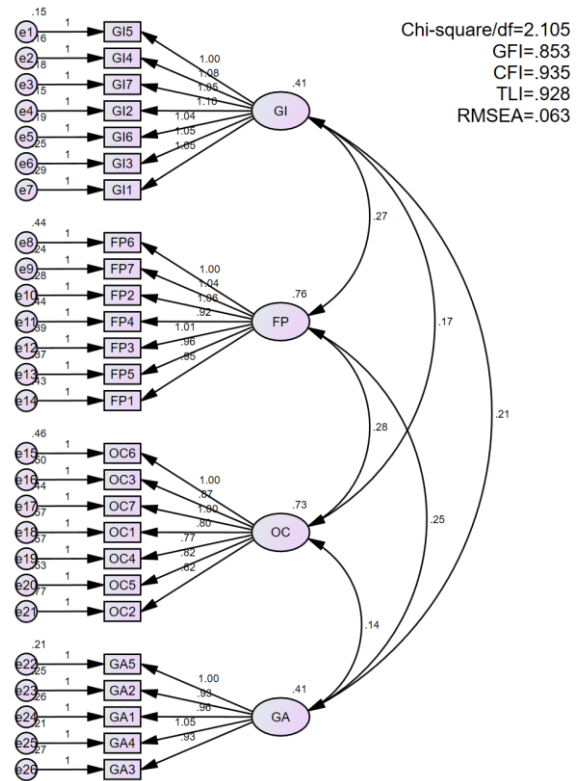


Figure 2. CFA analysis

Source: Extracted from AMOS Algorithm results (AMOS 24)

Table 4. The CR, AVE, MSV and SQRTAVE results

	CR	AVE	MSV	MaxR(H)	GI	FP	OC	GA
GI	0.942	0.701	0.263	0.944	0.837			
FP	0.934	0.671	0.229	0.938	0.479***	0.819		
OC	0.875	0.502	0.140	0.882	0.318***	0.374***	0.709	
GA	0.890	0.617	0.263	0.892	0.512***	0.453***	0.252***	0.786

Source: Extracted from AMOS

Note: CR = Composite Reliability, AVE = Average Variance Extracted, MSV = Maximum Shared Variance, SQRTAVE = Square Root of Average Variance Extracted, MaxR(H) = Maximum Reliability (H)

Table 5. Model fit indices

Fit Index	CMIN/df	GFI	CFI	TLI	RMSEA
Observed Value	2.105	0.853	0.935	0.928	0.063
Acceptable Threshold	≤ 3.0	$0.8 \leq \text{GFI} \leq 0.9$	≥ 0.9	≥ 0.9	≤ 0.08

Source: Extracted from AMOS Algorithm results (AMOS 24)

Note: CMIN/df = Chi-Square/Degrees of Freedom

The CFA results show that the measurement model fits the data well. Next, the study tests the reliability, convergent validity, and discriminant validity of the constructs (Table 4). Reliability is checked by factor loadings (≥ 0.5) and composite reliability ($CR \geq 0.7$). Convergent validity is confirmed when $AVE \geq 0.5$. Discriminant validity is accepted when MSV is lower than AVE and SQRTAVE is higher than the correlations between constructs.

4.3.4 Model fit

The results (Table 5) show that all indices meet the required thresholds, indicating that the research model fits the observed data well.

4.3.5 Hypotheses testing

Based on the statistical results, the proposed hypotheses were tested using Structural Equation Modelling (SEM)

analysis. The results show that all relationships are significant at the 95% confidence level ($p < 0.05$), and the positive coefficients indicate positive relationships among the variables.

Table 6. Table regression weight

Hypothesis	Relationship	Estimate	SE	CR	P
H1	GI <--- OC	.151	.045	3.341	***
H3	GI <--- GA	.460	.064	7.199	***
H2	FP <--- OC	.226	.063	3.607	***
H4	FP <--- GA	.347	.093	3.724	***
H5	FP <--- GI	.379	.093	4.080	***

Source: Extracted from AMOS Algorithm results (AMOS 24)

Table 7. Intermediate relationships

Hypothesis	Relationship	Unnormalized Estimate	LLCI	ULCI	p-value (Sig)
H6a	OC --> GI --> FP	0.057	0.025	0.110	0.002
H6b	GA --> GI --> FP	0.175	0.095	0.273	0.001

Source: Extracted from AMOS Algorithm results (AMOS 24)

The results of the indirect effects (Table 7) show that GI mediates the relationships between OC and FP, and between GA and FP ($p < 0.05$). Therefore, hypotheses H6a and H6b are supported.

Furthermore, the results indicate that green innovation serves as a partial rather than a full mediator between organizational culture, green awareness, and financial performance. This conclusion is supported by the finding that the direct effects of organizational culture on financial performance ($\beta = 0.226$, $p < 0.001$) and green awareness on financial performance ($\beta = 0.347$, $p < 0.001$) remain statistically significant even after green innovation is incorporated into the structural model. At the same time, the indirect effects through green innovation are also significant, as the bootstrap confidence intervals exclude zero. These findings imply that organizational culture and green awareness enhance financial performance not only through stimulating green innovation but also through other organizational mechanisms, such as improved managerial practices, operational efficiency, employee commitment, and strategic sustainability orientation. Therefore, the study highlights green innovation as a key mechanism linking internal environmental capabilities to financial value, while also suggesting that firms may achieve superior performance through multiple complementary pathways beyond green innovation.

The R^2 results indicate that the proposed model explains 30.1% of the variance in green innovation and 33.1% of the variance in financial performance, indicating moderate explanatory power. While moderate, these R^2 values are acceptable for complex organizational phenomena that are influenced by multiple internal and external factors. Similar levels of explained variance have been reported in sustainability research [44]. Furthermore, Hair and Alamer [45] suggested that R^2 values around 0.25 are meaningful in social science research, while Kline [46] emphasized that the primary objective of covariance-based structural equation modelling (CB-SEM) is theory testing and explanation rather than maximizing predictive accuracy. The remaining unexplained variance is expected, as green innovation and financial performance are also affected by numerous factors not included in the present model, such as firm size, technological capability, resource availability, competitive

The results of the SEM analysis for direct effects are presented in Table 6. Hypotheses H1, H2, H3, H4, H5, proposing positive influences of OC, GA on GI, FI and GI on FP. Based on the results, hypotheses H1, H2, H3, H4, H5 are accepted, as all P-values are below 0.05.

To examine the mediating effect of GI (Hypotheses H6a, H6b), the bootstrapping approach proposed by Preacher and Hayes [43] was employed. A total of 5,000 bootstrap resamples were generated to obtain reliable estimates of the indirect effects. Mediation is established by demonstrating significant relationships from the independent variables (OC, GA) to the mediator (GI), as well as from the mediator (GI) to the dependent variable (FP).

intensity, market conditions, regulatory pressures, and managerial characteristics. Therefore, the reported R^2 values, together with the satisfactory model fit and significant path coefficients, provide adequate support for the explanatory relevance and theoretical validity of the proposed model.

5. DISCUSSION

The findings of this study are consistent with NRBV and innovation theory. Specifically, organizational culture and green awareness positively influence green innovation, which, in turn, improved financial performance, consistent with prior studies on green innovation and firm competitiveness [8, 30, 37]. From the NRBV perspective, sustainability-oriented organizational culture and green awareness represent valuable internal environmental capabilities that enable firms to develop environmentally responsible strategies and support competitive advantage [15]. Innovation theory further clarifies this relationship by suggesting that firms transform these internal capabilities into superior performance through innovation activities [37]. The significant mediating effect of green innovation indicates that innovation functions as a critical pathway through which environmental orientations are translated into financial outcomes [22, 23]. These findings emphasize the importance of integrating sustainability values and environmental awareness into organizational practices to strengthen firms' innovation capabilities and financial performance.

The empirical findings support the proposed theoretical framework and contribute to both theory and practice. Organizational culture and green awareness exerted significant direct and indirect effects on green innovation and financial performance, demonstrating the important role of internal environmental capabilities in promoting sustainable business outcomes [8, 22]. In particular, green awareness exhibited the strongest influence on green innovation, indicating that firms with higher levels of environmental knowledge and concern are more likely to engage in environmentally sustainable products, processes, and managerial practices [20, 29]. Moreover, the significant effect of green innovation on financial performance suggests that environmentally oriented innovation not only contributes to

sustainability objectives but also improves operational efficiency, cost reduction, and competitive differentiation [1, 33, 37]. These findings are consistent with prior studies emphasizing the strategic importance of organizational environmental capabilities and green innovation in achieving superior firm performance [28, 44].

The results also extend existing literature by confirming the mediating role of green innovation in the relationship between internal environmental capabilities and financial performance, particularly within the context of an emerging economy [23, 44]. This finding reinforces the argument that organizational resources alone may not automatically generate financial benefits unless they are effectively translated into innovative practices. From a managerial perspective, the findings suggest that managers should foster sustainability-oriented organizational cultures and strengthen green awareness among employees to encourage green innovation initiatives [8, 22]. Such efforts can help firms improve both environmental sustainability and long-term financial competitiveness in increasingly dynamic and environmentally conscious markets [28, 36].

6. CONCLUSION

This study investigates the relationships among organizational culture, green awareness, green innovation, and financial performance. The findings reveal that both organizational culture and green awareness positively influence green innovation and financial performance. These results highlight the importance of internal environmental capabilities in supporting firms' sustainability initiatives and overall business success.

The study further demonstrates that green awareness is a key driver of green innovation. Firms with stronger environmental knowledge and concern are more likely to adopt environmentally friendly products, processes, and managerial practices. In addition, green innovation significantly enhances financial performance, indicating that investments in environmentally oriented innovation can generate both sustainability and economic benefits.

Another important finding is the mediating role of green innovation in the relationships between organizational culture, green awareness, and financial performance. This result suggests that internal environmental capabilities create greater value when they are effectively translated into innovation activities. Therefore, green innovation serves as a critical mechanism linking environmental orientation to improved business outcomes.

Overall, the findings underscore the strategic importance of fostering a sustainability-oriented organizational culture, strengthening green awareness, and promoting green innovation. By developing these capabilities, firms can improve their long-term competitiveness while simultaneously achieving environmental and financial objectives. However, several limitations should be acknowledged. First, this study employed convenience sampling combined with snowball sampling to collect data from managers and employees working in Vietnamese enterprises. Although several procedural remedies were applied, these sampling approaches may introduce potential sampling bias. Future studies are encouraged to employ probability sampling techniques or longitudinal designs to enhance external validity. Second, the use of cross-sectional

data limits the ability to establish causal relationships, while the focus on firms in Vietnam may restrict the generalizability of the findings to other institutional settings. Finally, although the model explains a meaningful proportion of variance in green innovation and financial performance, additional organizational and environmental factors may further enhance explanatory power. Future research is therefore encouraged to employ longitudinal designs, conduct cross-country or cross-industry comparisons, and incorporate variables such as environmental leadership, green supply chain practices, firm size, industry characteristics, technological capability, and regulatory pressures to provide a more comprehensive understanding of the drivers of sustainable business performance.

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