

Extending Legitimacy Theory for Sustainable Business Performance through the Lens of Green Innovation and Financial Synergy

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Abstract: This study examined the influence of innovative capacity on sustainable company performance, enhancing legitimacy theory by including green money as both a mediator and moderator. A quantitative research methodology was utilized, gathering data from 142 seafood export enterprises in Vietnam. Partial Least Squares Structural Equation Modeling was employed to examine the hypotheses. The results indicated that innovative capacity improved sustainable performance. Moreover, the result determined that green finance, a vital mediator and moderator, is crucial for enhancing the influence of innovative capability on sustainability results. This work conceptually advanced legitimacy theory and provided practical insights for governments and corporations.

Keywords: business performance; green finance; innovative capacity; legitimacy theory; structural equation modeling; sustainable

1. Introduction

The international corporate environment has increasingly prioritized sustainability in response to escalating environmental issues, including climate change, biodiversity decline, and resource exhaustion. Sustainability has become a critical dimension of business performance as firms align their operations with societal and environmental needs to ensure long-term growth¹. Sustainable business performance (SBP) is finally a complete system for long-term success that combines creative ability with green funding. It means moving from one concentration on profit maximization to embracing a triple-bottom-line approach that takes into account social and environmental consequences together with economic outcomes². Companies that give sustainable business performance top priority first aggressively control their environmental impact interact with stakeholders in a meaningful way, and use their creative ideas to create solutions addressing social and environmental issues³. This all-encompassing strategy not only improves their reputation and resilience but also allows businesses to lead in building a more fair and sustainable future⁴. Within this transformation, innovative capacity has

emerged as a pivotal driver for businesses to achieve sustainability⁵. The innovative capability is not only about generating a few bright ideas; it is also about developing a systematic capacity for ongoing improvement and the generation of new ideas⁶. This asks for fostering a culture in which curiosity is welcomed, experimentation is respected, and the knowledge gained from both successes and failures is integrated into future projects⁷. Creative businesses can find expanding prospects, change with changing consumer needs, and finally provide additional value to their stakeholders by means of revolutionary products, streamlined processes, or whole novel approaches to running businesses⁸.

The European Union's Green Deal and the Corporate Sustainability Reporting Directive (CSRD) have emphasized the significance of sustainability-focused innovation, especially in attaining climate neutrality by 2050⁴. These legislative initiatives highlight the critical need for firms to develop innovative capacities that align with green finance mechanisms to meet sustainability goals. Green finance (GF), which is absolutely leading the required money toward a more sustainable future. It actively considers the environmental consequences of loans and investments, hence reflecting a fundamental

change in how financial choices are made performance⁹⁾. GF aims to hasten the change to a low-carbon economy by promoting the development of green financial instruments and guiding capital toward ecologically beneficial initiatives such as renewable energy infrastructure and sustainable agriculture. This not only saves the environment but also motivates the invention of clean technology and fresh commercial prospects¹⁰⁾.

The legitimacy theory provides a theoretical lens to understand how firms navigate societal expectations for sustainability. It posits that businesses must align their activities with the values and norms of their surrounding communities to maintain legitimacy and access critical resources⁴⁾. Businesses can leverage innovative capacity and green finance to enhance their legitimacy by demonstrating commitments to sustainability, thereby gaining stakeholder trust and regulatory support¹¹⁾. However, while legitimacy theory captures the social contract between businesses and society, its traditional frameworks often fail to address the dynamic interplay between innovative capacity, green finance, and SBP. This gap necessitates extending legitimacy theory to incorporate these modern challenges and mechanisms, particularly the mediating role of green finance and its moderating effects on innovative capacity's contribution to SBP.

Despite the growing recognition of the role of innovative capacity in sustainability, research exploring its direct and mediated impact on SBP remains limited⁸⁾. Existing studies have often examined innovative capacity and green finance in isolation, without fully addressing the interplay between these factors and the broader sustainability outcomes^{12, 13)}. Furthermore, the mediating and moderating roles of green finance are underexplored despite its evident potential to strengthen the relationship between innovative capacity and SBP. This research seeks to address significant gaps in the literature by analyzing these connections and providing policymakers, corporations, and stakeholders with viable sustainability strategies.

The existing body of literature on sustainable business performance highlights two critical research gaps that require immediate attention. First, while innovative capacity is widely recognized as a key enabler of sustainability, its direct impact on SBP lacks empirical exploration. Many studies have focused on the role of innovative capacity in driving economic performance but have overlooked its broader implications for sustainability^{8, 14)}. Moreover, the mechanisms through which innovative capacity fosters SBP remain underexplored. For instance, while innovative capacity enables businesses to adopt green technologies, reduce emissions, and improve resource efficiency, the degree to which these innovations translate into tangible sustainability outcomes is not well-documented¹⁵⁾. This research seeks to address significant gaps in the literature by analyzing these connections and

providing policymakers, corporations, and stakeholders with viable sustainability strategies⁴⁾. The mediating and regulating functions of green financing in the link between innovative capability and sustainable business practices remain inadequately investigated. Green finance is seen as an essential facilitator of sustainability by supplying the financial resources required for sustainable technologies and initiatives^{12, 16)}. However, limited research has investigated how green finance mediates the link between innovative capacity and SBP. For example, while green finance can help firms overcome financial barriers to implementing innovative solutions, the extent to which it amplifies the impact of innovative capacity on SBP is yet to be fully understood¹³⁾.

Furthermore, green finance's moderating role in shaping innovative capacity's contribution to SBP has received scant attention. Existing studies have essentially treated green finance as an independent variable rather than as an intermediary or enhancer of innovative capacity's effects¹⁷⁾. These gaps underscore the need for an extended legitimacy theory framework that incorporates green finance as both a mediator and moderator.

This research aims to offer a comprehensive knowledge of the interplay of innovative capability, green financing, and sustainable business practices by addressing these gaps. It seeks to enhance legitimacy theory by incorporating modern dynamics, providing new perspectives on how organizations might optimize their sustainability results.

This document is organized as follows: Section 2 offers an extensive examination of the literature and establishes the theoretical foundation. Section 3 delineates the study approach, encompassing data collecting and analysis procedures. Section 4 delineates the findings. Section 5 closes the study by examining the findings in relation to the research objectives, emphasizing theoretical contributions, practical consequences, and future research avenues.

2. Literature review

This literature review examines the relationship between green finance and sustainable business practices, focusing on the mediating role of technological innovation. The review is structured into three parts: green finance, theoretical framework, and hypotheses development.

2.1. Green finance

Green financing has become an essential instrument for tackling environmental issues and fostering sustainable economic growth. Characterized as financial instruments, services, and investments that promote environmentally sustainable endeavors, GF aids the transition to a green economy by mobilizing capital for eco-friendly technologies and initiatives¹⁸⁾. It includes various products such as green bonds, green loans, and investments in renewable energy, energy efficiency, and pollution

management, connecting financial resources with sustainability objectives¹³.

GF acts as a catalyst for SBP by supplying the financial resources essential for enterprises to adopt new technology and procedures¹⁴. It reduces capital constraints for businesses, enabling them to adopt renewable energy technologies, improve resource efficiency, and reduce carbon emissions¹⁹. Furthermore, GF enhances the reputational capital of firms as stakeholders increasingly demand transparency and accountability in environmental practices¹⁵. Firms engaging in GF initiatives demonstrate their commitment to sustainability, thereby attracting socially responsible investors, improving stakeholder trust, and gaining competitive advantages¹².

However, the adoption of GF is not without challenges. Elevated transaction costs, absence of legal frameworks, and insufficient knowledge among enterprises frequently obstruct its execution²⁰. Furthermore, the absence of established measuring and reporting standards for GF and SBP hinders the evaluation of its efficacy⁴. Despite these challenges, GF continues to be a critical enabler of sustainability, serving as both a mediator and moderator in the relationship between innovative capacity and SBP.

2.2. Theoretical framework

Legitimacy theory provides a theoretical framework for understanding how businesses navigate societal expectations for sustainability. It posits that organizations must align their activities with the values, norms, and expectations of society to maintain legitimacy and access critical resources²¹. In the context of sustainability, legitimacy theory highlights the importance of demonstrating environmental responsibility to gain stakeholder trust and support¹¹.

Green finance plays a pivotal role in enhancing corporate legitimacy. By financing environmentally sustainable projects, firms demonstrate their commitment to environmental and environmental well-being, aligning their activities with societal norms and expectations¹³. This alignment is particularly critical in environmentally sensitive industries, where stakeholder scrutiny is higher²². Green finance acts as a communication channel, enabling firms to signal their environmental commitments to stakeholders and regulatory bodies²³. Furthermore, the integration of green finance into corporate strategies can reduce the legitimacy gap, as firms align their financial practices with global sustainability goals such as the Paris Climate Agreement²⁴.

The correlation between legitimacy and company performance is well demonstrated in the literature. Companies that synchronize their operations with society's expectations frequently achieve superior financial outcomes owing to increased stakeholder trust and reputational equity²⁵. Superior environmental reporting and performance correlate with favorable financial results,

especially in accounting-based performance metrics like return on assets and return on equity⁴. However, market-based performance measures, such as Tobin's Q, often yield inconclusive results, highlighting the complexity of this relationship²⁶.

Innovative capacity, characterized as the capability of organizations to create and execute innovative technologies, processes, and products, is an essential facilitator of corporate sustainability⁸. Legitimacy theory asserts that organizations with robust inventive capabilities are more adept at aligning their operations with society's expectations, therefore augmenting their legitimacy²¹. Innovative capacity enables firms to adopt green technologies, reduce emissions, and improve resource efficiency, thereby addressing environmental challenges and meeting stakeholder demands²³. Furthermore, firms with high innovative capacity are more likely to attract green finance as they demonstrate the potential for impactful sustainability outcomes.

By integrating green finance into their innovative strategies, firms can maximize their sustainability outcomes while enhancing their legitimacy. This interplay between innovative capacity, green finance, and legitimacy forms the theoretical foundation for this study, which extends legitimacy theory to incorporate the mediating and moderating roles of green finance in the relationship between innovative capacity and SBP. Hence, this study proposed the research model as Figure 1.

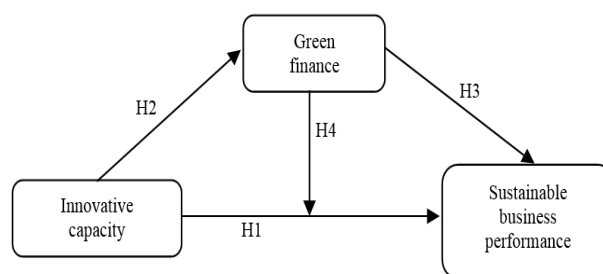


Fig. 1: Research model

2.3. Hypotheses development

Innovative capacity is widely regarded as a critical driver of sustainable business performance²⁷. Firms with robust, innovative capabilities can develop and implement green technologies, optimize resource use, and reduce environmental impacts, thereby achieving sustainability goals⁸. For instance, green process innovations, such as low-carbon manufacturing, and green product innovations, such as renewable energy solutions, enable firms to align their operations with societal and environmental expectations¹⁷. Empirical studies support the positive relationship between innovative capacity and SBP. Firms with high innovative capacity experience improved environmental performance, which translates into better financial outcomes. Innovative capacity enables firms to

address stakeholder demands for sustainability, thereby enhancing their reputational capital and financial performance¹⁴). Based on these findings, the first hypothesis is proposed:

H1: Innovative capacity has a positive impact on sustainable business performance.

Innovative capacity increases a firm's ability to attract green finance by demonstrating its commitment to sustainability and its potential for impactful environmental outcomes. Firms with strong innovative capabilities are more likely to develop projects that align with the criteria for green finance, such as renewable energy initiatives and pollution control measures²⁸). By doing so, they signal their environmental commitment to investors, thereby increasing their access to green finance^{12, 29}). Empirical research substantiates the correlation between innovative capability and green financing. Companies exhibiting elevated innovation levels are more inclined to obtain financing for environmentally sustainable initiatives^{5, 17}). Green finance is often directed toward firms with demonstrated innovative capabilities, as these firms are perceived to be better equipped to achieve sustainability goals³⁰). Therefore, the second hypothesis is formulated as follows:

H2: Innovative capacity has a positive impact on green finance.

Green finance functions as a vital facilitator of sustainable company performance by supplying the financial resources essential for the adoption of green technology and practices. It promotes investments in renewable energy, energy efficiency, and pollution mitigation, allowing companies to attain sustainability objectives³¹). Furthermore, green finance enhances the reputational capital of firms, as stakeholders increasingly value transparency and accountability in environmental practices³²). Empirical studies validate the positive relationship between green finance and SBP. Firms engaging in green finance initiatives experience improved environmental performance, which translates into better financial outcomes²³). Green finance reduces financial barriers for firms, enabling them to adopt sustainable practices and improve stakeholder trust. Based on this evidence, the third hypothesis is proposed:

H3: Green finance has a positive impact on sustainable business performance.

Green finance serves as both a mediator and a moderator in the link between innovative capability and sustainable business practices. By providing financial resources, green finance amplifies the impact of innovative capacity on sustainability outcomes¹⁷). For instance, firms with access to green finance can scale their innovations, adopt cutting-edge technologies, and implement comprehensive sustainability strategies, thereby enhancing their SBP¹³). Empirical studies substantiate the moderating influence of green financing. Green financing enhances the connection

between innovation and sustainability by alleviating financial limitations and mitigating risks associated with green ventures^{12, 33}). Green finance acts as a lever for innovative capacity, enabling firms to achieve superior sustainability outcomes³⁴). Thus, the fourth hypothesis is formulated as follows:

H4: Green finance positively mediates and moderates the relationship between innovative capacity and sustainable business performance

3. Research method

This study measures the constructs of innovative capability (IC), sustainable business performance (SBP), and green financing (GF) using multi-item scales derived from validated instruments in previous research. Each concept is evaluated using four items on a five-point Likert scale, with 1 representing severe disagreement and 5 representing strong agreement. This method guarantees consistency, dependability, and validity in accurately capturing the theoretical aspects of the constructs.

Innovative capability denotes a firm's proficiency in creating and executing novel technologies, products, and processes that tackle environmental and social issues while enhancing competitive advantage. The assessment of IC (4 items) is grounded in the conceptualization of innovative capability from prior studies^{8, 17}). Sustainable business performance refers to a company's capacity to attain enduring economic, social, and environmental objectives. The SBP scale, consisting of four components, is derived from previous research on business sustainability performance^{4, 14}). Green finance pertains to financial instruments, services, and investments that facilitate ecologically friendly endeavors. The GF scale (4 items) is based on constructs validated in prior studies on green finance and its role in fostering sustainability¹³).

This research focuses on 142 seafood export enterprises in Vietnam. These companies function within an ecologically sensitive sector, rendering them suitable for analyzing the relationship between inventive ability, green funding, and sustainable business performance. The seafood export business in Vietnam is under heightened worldwide scrutiny regarding environmental sustainability and is compelled to use new and sustainable methods to improve competitiveness.

A purposive sampling method was utilized to guarantee that the chosen organizations were pertinent to the study's aims. Specifically, firms were included based on the following criteria: (1) Active engagement in seafood exports, (2) Experience of more than three years in adopting sustainability practices, (3) Willingness to provide data on their innovative activities, green finance, and sustainability performance. This targeted approach enhances the reliability and relevance of the findings by focusing on firms that have meaningful insights into the

constructs under investigation.

The researchers partnered with local industry groups and chambers of business to disseminate the survey. Two hundred questionnaires were sent, resulting in 142 valid replies (response rate: 71%), deemed adequate for structural equation modeling³⁵⁾.

Table 1 summarizes the demographic features of the respondents. These attributes offer insights into the sample's representativeness and the contextual significance of the findings.

Table 1: Demographic Statistics of Respondents

Variable	Category	n	%
Firm Size	Small	48	33.8
	Medium	64	45.1
	Large	30	21.1
Years of Operation	3–5 years	39	27.5
	6–10 years	56	39.4
	>10 years	47	33.1
Export Market	Asia	58	40.8
	Europe	45	31.7
	North America	39	27.5
Sustainability Initiatives	Renewable energy adoption	73	51.4
	Resource efficiency	42	29.6
	CSR programs	27	19

4. Research result

This study initially gave the findings of the measurement model evaluation, subsequently followed by the results of the structural model.

4.1. Measurement model

An evaluation of the measurement model was performed to ascertain the reliability and validity of the constructs utilized in this study. The assessment employed SmartPLS software to examine convergent validity, discriminant validity, and the outer loadings of the constructs. Establishing a strong measurement model is essential prior to analyzing structural connections since it verifies that the measured variables adequately reflect the underlying latent components.

Convergent validity evaluates the extent to which indicators of a concept converge or exhibit a significant degree of shared variation. To verify convergent validity, three principal criteria were evaluated: outer loadings, Composite Reliability (CR), and Average Variance Extracted (AVE). Outer loadings indicate the correlation between each indicator and its respective construct. Loadings should ideally exceed 0.7 to confirm that indicators are good representatives of their constructs. In this study, all indicators surpassed this threshold, indicating strong convergent validity. As illustrated in Table 2, the outer loadings for all items ranged between 0.712 and 0.923, demonstrating that each item has a

substantial loading on its intended construct. Composite Dependability evaluates the internal consistency of the indicators, with values over 0.7 signifying sufficient dependability³⁶⁾. In this study, the CR values ranged from 0.884 to 0.927, surpassing the recommended threshold.

AVE quantifies the extent of variance accounted for by the construct in comparison to the variance attributed to measurement error. An AVE over 0.5 indicates that the concept accounts for over half of the variation of its indicators. The AVE values for the constructs in this study varied from 0.654 to 0.759, so affirming robust convergent validity.

Table 2: Convergent validity assessment

Construct	Outer Loadings	CR	AVE
IC	0.712–0.902	0.915	0.73
SBP	0.731–0.923	0.927	0.759
GF	0.712–0.891	0.884	0.654

Discriminant validity guarantees that constructs are unique and do not have significant overlap. The Fornell-Larcker Criterion was employed for this assessment. The Fornell-Larcker Criterion stipulates that the square root of the Average Variance Extracted (AVE) for each construct must exceed its inter-construct correlations.

Table 3: Fornell-Larcker Criterion

Construct	IC	SBP	GF
IC	0.854		
SBP	0.621	0.871	
GF	0.537	0.623	0.809

This guarantees that a construct exhibits greater variation with its indicators than with alternative constructs. Table 3 demonstrates that the diagonal elements (square roots of AVE) exceed the off-diagonal correlations across constructs, thereby fulfilling the Fornell-Larcker Criterion.

4.2. Structural model

The structural model evaluation examines the proposed links between constructs, ascertaining the degree to which independent variables forecast dependent variables. This section details the analysis of R^2 , f^2 , Q^2 , Variance Inflation Factor (VIF), and the overall PLS-SEM model. Additionally, the mediating and moderating roles of Green Finance (GF) are examined.

R^2 denotes the fraction of variation in the dependent variable elucidated by the independent variables. In this study, R^2 values were computed for both Sustainable Business Performance (SBP) and Green Finance (GF). $R^2_{SBP} = 0.635$ indicates that IC and GF explain 63.5% of the variance in SBP. $R^2_{GF} = 0.503$ signifies that IC accounts for 50.3% of the variance in GF. Q^2 assesses the predictive relevance of the model through blindfolding procedures. Positive Q^2 values indicate that the model has predictive relevance for the endogenous constructs. All Q^2 is larger than 0, confirming that the model possesses significant

predictive capabilities for both SBP and GF ($Q^2_{SBP} = 0.472$, $Q^2_{GF} = 0.322$).

Multicollinearity occurs when independent variables are highly correlated, potentially distorting the estimation of pathway coefficients. VIF values assess multicollinearity, with values below 5 indicating no significant multicollinearity issues. In this study, all VIF values were below the threshold of 3. These results confirm the absence of multicollinearity concerns, ensuring the stability and reliability of the path coefficients.

Effect sizes (f^2) reflect the impact of each predictor on the dependent variable. In Table 4, $f^2_{GF \rightarrow SBP} = 0.276$; hence, GF has a medium effect size on SBP. IC has a large effect size on GF ($f^2 = 0.507$) and SBP ($f^2 = 0.382$).

Table 4: R^2 and Q^2 Values

Construct	R^2	Q^2	VIF		f^2	
			GF	SBP	GF	SBP
GF	0.5	0.32		1.732		0.276
SBP	0.64	0.47				
IC			1.732		0.507	0.382

Path coefficients denote the magnitude and orientation of interactions among constructs. All hypotheses in this investigation were validated, demonstrating strong positive correlations. Table 5 indicates that the route coefficients for all hypotheses were statistically significant ($p < 0.001$).

Table 5: Path Coefficients

Hypothesis	β	t-Value	Result
H1: IC \rightarrow SBP	0.51	9.284	Supported
H2: IC \rightarrow GF	0.71	13.671	Supported
H3: GF \rightarrow SBP	0.42	7.562	Supported
H4: IC \times GF \rightarrow SBP	0.18	3.712	Supported

Our analysis revealed compelling evidence for the mediating role of green finance in the relationship between innovative capacity and sustainable business performance. The mediation analysis examined the indirect pathway where innovative capacity influences green finance, which in turn affects sustainable business performance (IC \rightarrow GF \rightarrow SBP). The results demonstrated a substantial indirect effect ($\beta = 0.298$, $t = 6.723$, $p < 0.001$), confirming that green finance serves as a significant mediating mechanism. Importantly, the direct effect of innovative capacity on sustainable business performance remained significant ($\beta = 0.51$, $t = 9.284$, $p < 0.001$) after accounting for the mediating pathway, indicating partial rather than full mediation. This partial mediation reveals that while green finance is a crucial conduit through which innovative capacity enhances sustainability outcomes, innovative capacity also maintains a considerable direct

impact independent of green financing mechanisms. The mediation suggests that companies with more inventive potential are more proficient at obtaining green money, which enables the adoption of sustainable practices, thereby improving company success. The moderating influence of GF was evaluated using the interaction term (IC \times GF). The substantial positive path coefficient ($\beta = 0.183$, $t = 3.712$, $p < 0.001$) corroborates the idea that GF enhances the direct link between IC and SBP. This moderation indicates that the influence of IC on SBP is more significant when GF levels are elevated.

5. Discussion and Contributions

5.1. Discussion

The findings revealed a substantial positive correlation between IC and SBP (H1 supported), underscoring the significance of IC in cultivating competitive advantage and tackling environmental concerns⁸). This study confirmed that IC enables firms to adopt green technologies, optimize resource use, and align with societal and environmental expectations¹⁷). However, unlike prior research that primarily focused on developed economies^{4, 23}), this study extends the discussion to the seafood export sector in Vietnam, a developing economy. The findings highlight the context-specific nature of IC's impact, as firms in environmentally sensitive industries face unique challenges and pressures to innovate sustainably³⁷). This result aligns with the previous study; this research result emphasized the role of IC in addressing stakeholder demands for sustainability in resource-intensive industries¹⁴).

The study established a substantial positive correlation between intellectual capital (IC) and green finance (GF) (H2 supported); creative enterprises are more likely to secure green funding owing to their proven capacity to attain sustainability objectives. Likewise, IC augments a company's ability to get financing for renewable energy projects and pollution mitigation strategies³⁸). In the Vietnamese context, the findings suggest that firms with strong IC are better positioned to align their projects with the criteria for GF. This is particularly relevant in the seafood export sector, where global scrutiny over environmental practices necessitates innovative solutions to meet international sustainability standards³⁹). In the Vietnamese context, seafood exporters face stringent international sustainability standards including the Marine Stewardship Council (MSC) certification, Aquaculture Stewardship Council (ASC) standards, and Global G.A.P. Aquaculture Standard⁴⁰). Additionally, EU regulations on seafood imports, particularly those addressing Illegal, Unreported and Unregulated (IUU) fishing, alongside the EU's Farm to Fork Strategy, impose rigorous traceability and sustainability requirements⁴¹). The US market presents its own challenges through FDA seafood HACCP

regulations and USDA import requirements. Meeting these standards necessitates substantial innovations in traceability systems, sustainable farming practices, resource-efficient processing, and waste management – all requiring significant capital investment. This reality highlights why firms with strong innovative capacity are better positioned to secure green finance and align their operations with international sustainability benchmarks. For instance, several leading Vietnamese seafood exporters have implemented blockchain-based traceability systems and water recirculation technologies, funded through green bonds and sustainability-linked loans. The study's results resonate with Chueca Vergara and Ferruz Agudo³⁰⁾, who emphasized the role of GF in fostering eco-innovation in industries under pressure to meet stringent environmental benchmarks.

The positive relationship between GF and SBP (H3 supported) aligns with prior studies that underscored GF as a critical enabler of sustainability¹⁴⁾. GF facilitates investments in green technologies, energy efficiency, and pollution control, enabling firms to achieve both environmental and financial objectives. The findings also echo Haque and Ntim²³⁾, who demonstrated that GF enhances reputational capital and stakeholder trust, contributing to better financial outcomes. In Vietnam, the role of GF is particularly pronounced due to the limited availability of traditional funding sources for sustainability projects. The findings suggest that GF not only reduces financial barriers but also signals a firm's commitment to sustainability, thereby enhancing its competitive position in global markets. This aligns with the observations of Chen and Zhao¹³⁾, who highlighted the importance of GF in emerging economies where firms face unique financial and regulatory challenges.

The study provided robust evidence for the mediating and moderating roles of GF in the relationship between IC and SBP (H4 supported). The mediating effect of GF underscores its role as a critical mechanism through which IC translates into improved SBP. This finding argued that GF amplifies the impact of IC by providing the financial resources necessary for scaling innovations¹⁷⁾. This suggests that IC enhances GF, which in turn improves SBP, corroborating the findings of Chen and Zhao¹³⁾. The theoretical significance of this partial mediation extends legitimacy theory by demonstrating how financial instruments function as tangible enablers of legitimacy acquisition⁴⁾. Firms with strong innovative capacity are better positioned to secure green finance due to their demonstrated potential for impactful environmental solutions, which aligns with the expectations of sustainability-focused investors and financial institutions⁴²⁾. This access to specialized financing subsequently allows these companies to implement larger-scale sustainable innovations, creating a reinforcing cycle of legitimacy enhancement.

The moderating effect of GF further highlights its ability to strengthen the IC-SBP relationship, particularly in contexts with varying regulatory and financial conditions. GF reduces financial constraints and de-risks green projects, enabling firms to maximize the impact of their innovative efforts¹²⁾. The results also resonate with Velte⁴⁾, who emphasized the role of GF as a lever for IC, facilitating superior sustainability outcomes. Essentially, GF amplifies the effectiveness of IC in driving sustainability performance, aligning with Velte⁴⁾, Zhao, et al.¹²⁾, who emphasized the role of financial resources in enhancing innovative and sustainable initiatives.

5.2. Theoretical contributions

By integrating GF as both a mediator and moderator, this study extends the legitimacy theory framework, offering a more comprehensive understanding of how firms navigate societal and environmental expectations. The findings highlight the dynamic interplay between IC, GF, and SBP, providing new insights into how firms can align their activities with societal norms to enhance legitimacy^{11, 21)}. Our findings reveal a reinforcing cycle of legitimacy enhancement through the interplay of IC and GF. Innovative firms gain initial legitimacy through demonstrating environmental commitments, which facilitates access to green finance, which in turn strengthens their capacity to implement larger-scale sustainable innovations, further enhancing legitimacy. This cyclical process extends legitimacy theory beyond static conceptions of social approval to a dynamic resource-based perspective.

The study contributes to the limited body of research on IC and GF in developing economies, particularly in Vietnam's seafood export sector. Unlike prior studies that primarily focused on developed markets^{4, 23)}, this research highlights the unique challenges and opportunities faced by firms in emerging markets. Our study provides novel insights into the contextual dimensions of legitimacy in environmentally sensitive industries within developing economies. In contrast to developed markets where institutional pressures primarily drive legitimacy concerns, our findings from Vietnam's seafood sector highlight how resource constraints and international market access considerations create unique legitimization pathways that necessitate both innovation and specialized financing. This context-specific understanding enriches legitimacy theory by demonstrating how sector-specific financial mechanisms and innovation pathways shape legitimacy acquisition strategies in emerging markets.

By empirically testing the mediating and moderating roles of GF, the study provides robust evidence for its critical role in translating IC into improved SBP. This advances the understanding of GF as both a mechanism and an enhancer of sustainability outcomes, as suggested by Zhao, et al.¹²⁾, Chen and Zhao¹³⁾. By integrating GF as both a

mediator and moderator, this study extends the legitimacy theory framework in several significant ways. First, while traditional legitimacy theory focuses primarily on stakeholder perceptions and social contracts, our findings demonstrate how financial mechanisms serve as concrete enablers of legitimacy acquisition and maintenance. The dual role of GF creates a more dynamic understanding of legitimacy – not merely as conformance to social expectations but as an actively financed and operationalized organizational strategy.

The study bridges the gap between innovation and finance literature by demonstrating how IC and GF interact to drive SBP. This research result aligns with the calls for more integrated research on sustainability^{14, 43)}

5.3. Managerial implications

Firms can leverage their IC to attract GF and achieve sustainability goals. By investing in green technologies and aligning their projects with GF criteria, firms can enhance their competitive position while addressing environmental challenges.

Policymakers can promote the adoption of GF by creating supportive regulatory frameworks and incentives. This includes tax benefits, subsidies, and simplified access to GF for small and medium-sized enterprises in resource-intensive industries.

Firms should actively engage stakeholders, including investors, customers, and regulators, to demonstrate their commitment to sustainability. Transparent reporting on IC and GF initiatives can enhance stakeholder trust and attract socially responsible investments.

For the seafood export sector, the findings suggest that adopting IC and leveraging GF are critical for meeting international sustainability standards. Firms in this sector should focus on eco-innovation and green collaborations to enhance their global competitiveness.

6. Conclusion

This research investigates the relationship between intellectual capital (IC) and sustainability business performance (SBP), with green finance (GF) acting as both a mediator and a moderator, specifically within Vietnam's seafood export sector. The findings reveal a significant positive correlation between IC and SBP, highlighting IC's role in fostering competitive advantage and addressing environmental concerns through green technology adoption and resource optimization. The study also establishes a positive link between IC and GF, indicating that innovative firms are more likely to secure green funding to achieve sustainability objectives, particularly crucial for Vietnamese seafood exporters facing stringent international environmental standards. Furthermore, GF positively influences SBP by facilitating investments in green initiatives. Importantly, the research demonstrates that GF mediates the impact of IC on SBP by providing the

necessary financial resources for scaling innovations, and it moderates this relationship by strengthening the link between IC and SBP, especially in contexts with financial and regulatory variations. Theoretically, this study extends legitimacy theory by demonstrating how financial instruments actively enable legitimacy acquisition, particularly in developing economies and environmentally sensitive industries like Vietnam's seafood export sector, where innovation and specialized financing are key to meeting international standards and gaining market access. Managerially, firms are advised to leverage IC to attract GF, policymakers should promote GF adoption, and firms should engage stakeholders transparently on their sustainability initiatives. For the seafood export sector, eco-innovation and green collaborations are critical for global competitiveness.

Despite the valuable insights provided, this study has several methodological limitations that warrant acknowledgment. The cross-sectional research design represents a significant constraint, as data collection at a single point in time prevents us from capturing the dynamic evolution of relationships between innovative capacity, green finance, and sustainable business performance. This limitation is particularly relevant in the rapidly evolving sustainability landscape where policies and practices are continuously developing. Additionally, our reliance on self-reported data may introduce social desirability bias, potentially leading respondents to overstate their sustainability performance given the intense international scrutiny facing Vietnamese seafood exporters regarding environmental practices. To mitigate these limitations, further studies need to implement several methodological safeguards, including guaranteeing complete anonymity to encourage honest responses, employing validated measurement scales with strong psychometric properties, and where possible, triangulating self-reported data with objective industry benchmarks from the Vietnam Association of Seafood Exporters and Producers (VASEP). Future research would benefit from longitudinal designs and mixed-methods approaches that incorporate objective performance metrics alongside perceptual measures.

Nomenclature

AVE	Average Variance Extracted
CSRD	Corporate Sustainability Reporting Directive
CR	Composite Reliability
GF	Green Finance
IC	Innovative Capacity
SBP	Sustainable business performance
VIF	Variance Inflation Factor

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