INVERGE JOURNAL OF SOCIAL SCIENCES
https://invergejournals.com/
ISSN (Online): 2959-4359, ISSN (Print): 3007-2018
Volume 5 Issue 2, 2026

GREEN FINANCE AS A CATALYST FOR SUSTAINABLE PERFORMANCE: THE MEDIATING EFFECTS OF GREEN INNOVATION AND GREEN CAPABILITIES AND THE MODERATING ROLE OF STAKEHOLDER PRESSURE

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DOI: https://doi.org/10.63544/ijss.v5i2.278

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Article History:
Received: 14.03.2026
Accepted: 08.04.2026
Published: 21.04.2026

Abstract

This study examined the role of green finance in enhancing sustainable performance, with a focus on the mediating effects of green innovation and green capabilities and the moderating role of stakeholder pressure. The study adopted a quantitative research design and collected data from 320 respondents working in manufacturing and service sector firms in Pakistan. Structural equation modelling (SEM) was applied to test the proposed relationships.

The findings indicated that green finance exerted a significant positive effect on sustainable performance ($\beta = 0.42$, $p < 0.001$). Green innovation ($\beta = 0.31$, $p < 0.001$) and green capabilities ($\beta = 0.36$, $p < 0.001$) also showed significant positive effects on sustainable performance. Mediation analysis revealed that green innovation ($\beta = 0.19$, $p < 0.001$) and green capabilities ($\beta = 0.22$, $p < 0.001$) partially mediated the relationship between green finance and sustainable performance. Stakeholder pressure significantly moderated this relationship ($\beta = 0.27$, $p < 0.01$), strengthening the positive impact of green finance under higher levels of external pressure.

The results emphasized that financial investment in environmental initiatives contributed more effectively to sustainability outcomes when supported by innovation, organizational capabilities, and stakeholder engagement. The study provided theoretical and practical implications for enhancing sustainability strategies in organizations.

Keywords: Green Capabilities, Green Finance, Green Innovation, Stakeholder Pressure, Structural Equation Modelling, Sustainable Performance

1. Introduction

The increasing need to degrade the environment, change of climate, and depletion of resources compelled organizations to re-evaluate the conventional business models and embrace sustainable business practices. Green finance became another significant tool that enabled responsible investments that were environmentally friendly and helped to shift to low-carbon economies. Previous research suggested that green finance facilitated companies to invest in renewable energy, environmental pollution, and environmentally friendly technologies, thus leading to sustainable performance results (Darsono et al., 2026; Masood et al., 2025). The emergence of sustainability as a strategic focus, financial instruments like green bonds, sustainable loans and climate financing were more and more used by organizations in order to match economic goals with environmental goals.

Sustainable performance was not just limited on financial benefits but encompassed the environmental and social aspects which are the triple bottom line view. Researchers noted that sustainable performance should be achieved not just with the help of financial resources but also with the help of innovation and

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https://invergejournals.com/
ISSN (Online): 2959-4359, ISSN (Print): 3007-2018
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organizational capacities (Islam et al., 2025; Anwar et al., 2024). Green innovation was central in helping firms to come up with environmentally friendly products and processes whereas green capabilities enhanced the capacity of firms to incorporate sustainability in operations. These in-house processes played a crucial role in converting monetary investments into the actual sustainability results.

One of the external drivers that played an important role in the corporate environmental strategies was stakeholder pressure. Increasing demands among the stakeholders, including regulators, customers, investors, and communities on environmentally responsible actions compelled companies to go green and be more transparent (Gurler et al., 2025; Jillani et al., 2024). The combination of internal strengths and external forces produced a dynamic environment within which companies were going through sustainability challenges. As a result, it has become necessary to comprehend the compounding effects of green finance, innovation, capabilities, and stakeholder pressure to further sustainability research.

The amassing literature, dearth of empirical researches, exhaustively explored the combined model of connection between green finance and sustainable performance based on mediating and moderating processes. Research studies on the topic tended to be interested in direct connections or single variables without considering the multifaceted interrelations between financial resources, organizational capabilities, and stakeholder factors (Bal & Karibek, 2026; Liu and Xie, 2025). This research paper sought to address this gap by exploring the role of green finance in relation to sustainable performance by means of green innovation and green capabilities and also the moderating effect of the stakeholder pressure.

Background of the Study

Green finance was a developing idea aimed at addressing the global environmental issues and the necessity to have sustainable economic growth. It included finance policies and tools and investments that favoured ecologically friendly projects and minimized ecological hazards. Past research have indicated that green finance played a major role in ensuring sustainable development through the allocation of money to renewable energy sources, waste management, and emission control projects (Darsono et al., 2026). This revolution was a change of the traditional financial systems to financial systems that were geared towards sustainability.

Green innovation became a prominent strategy to be used in meeting sustainability goals. It was about creating products, processes and technologies that would have the least impact on the environment but retain the economic efficiency. The empirical evidence implied that green finance increased the innovation capacity of firms through the financial assistance in terms of research and development (Chen et al., 2026; Li et al., 2025). Organizations which invested in green innovation were in a better position to enhance their environmental and financial performance both at the same time.

The emergence of green capabilities proved to be a key organizational asset that helped firms to properly use green finance and innovation. These competencies encompassed the capability to incorporate environmental knowledge, change in line with regulations and adopt sustainable strategies. The dynamic capability theory stated that more resources became competitive advantages and long-lasting results in firms with robust green capabilities (Frontiers, 2025; Anwar et al., 2024). This underscored the value of internal competencies towards long-term sustainability.

Efforts by stakeholders were a critical factor in determining the practice of corporate sustainability. With more stakeholders becoming environmentally conscious, corporate activities and practices were questioned more, and sustainability reporting and accountability became more required. Studies have shown that pressure of stakeholders had a tremendous impact on the implementation of green innovation and sustainable strategies by firms, which increased overall performance (Gurler et al., 2025; Bal and Karibek, 2026). These results implied that external pressures supported internal activities, which formed a comprehensive approach to sustainability.

Research Problem

The literature recognized the significance of green finance in ensuring sustainability, discrepancies still existed on how financial investment could be converted into an overall better sustainable performance. Due to the benefits that green finance was directly affecting, much of the research was done on the actual effects of green finance, but not the mechanisms that were behind the explanation of this correlation. This left

a gap in knowledge about the functions of green innovation and green capabilities as mediating variables that may fill the gap between financial investments and sustainability results. The role of the stakeholder pressure as a contextual factor was underestimated. Although the previous literature has acknowledged the role of stakeholder pressure in influencing environmental practices, there is a paucity of research on the moderating effects of stakeholder pressure in enhancing or diluting relationship between green finance and sustainable performance. This confined analysis meant that there were few developed sustained theoretical and empirical models especially in developing economies where sustainability issues were even stronger.

Objectives of the Study

1. To examine the impact of green finance on sustainable performance.
2. To analyse the mediating role of green innovation between green finance and sustainable performance.
3. To investigate the mediating role of green capabilities in the relationship between green finance and sustainable performance.
4. To evaluate the moderating effect of stakeholder pressure on the relationship between green finance and sustainable performance.

Research Questions

Q1. How did green finance influence sustainable performance?

Q2. How did green innovation mediate the relationship between green finance and sustainable performance?

Q3. How did green capabilities mediate the relationship between green finance and sustainable performance?

Q4. How did stakeholder pressure moderate the relationship between green finance and sustainable performance?

Significance of the Study

The given research left a strong theoretical and practical impact on the field of sustainable finance and management since it expanded the current literature by incorporating the resource-based perspective, dynamic capability theory, and the stakeholder theory into a single theory. It provided a thorough insight into the interaction between financial resources, internal resources and external pressures in order to affect sustainable performance. This helped to overcome the shortcomings of the previous researches that were based on single relationships. The research provided valuable information to policy makers, managers and financial institutions. It highlighted the importance of promoting green finance initiatives to support sustainable development goals and encouraged organizations to invest in green innovation and capability building. It highlighted the importance of stakeholder involvement in improving the sustainability performance, as a guideline to companies that are in a more competitive and environmentally sensitive market.

Research Hypotheses

H1: Green finance exerted a significant positive effect on sustainable performance.

H2: Green innovation and green capabilities exerted a significant positive effect on sustainable performance.

H3: Green innovation and green capabilities mediated the relationship between green finance and sustainable performance.

H4: Stakeholder pressure moderated the relationship between green finance and sustainable performance, strengthening the relationship under higher pressure levels.

2. Literature Review

Green Finance and Sustainable Performance

Green finance received much academic interest as the mechanism that helped to make investments environmentally responsible and enhance better sustainability results. Empirical analyses proved that green financial products such as green bonds and sustainable lending allowed companies to invest in environmentally-friendly projects and attain a better environmental and economic performance. Researchers discovered that green finance greatly enhanced the sustainable performance of firms through encouraging cleaner production and resource efficiency (Darsono et al., 2026). These results showed that there was a shift

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towards financial systems that were more consistent with the goals of sustainability.

Green finance also enhanced corporate strategies, which enhanced the ability of firms to achieve their long-term sustainability objectives. Research found out that availability of green financing led to better environmental performance of firms and helped them to shift toward low-carbon operations. The experience of the emerging economies indicated that green finance enhanced sustainable development by promoting environmentally responsible investments, and minimizing ecological risks (Mukarram et al., 2025; Tripopsakul, 2025). This underscores the increased role of financial resources in propelling sustainability efforts. Green finance plays a key role in promoting sustainable performance by aligning financial activities with environmental and social objectives. Environmental challenges such as pollution, waste mismanagement, and ecological degradation highlight the need for sustainability-driven financial systems (Rafiq-uz-Zaman et al., 2024a; Khalid et al., 2024). In developing contexts, rising environmental risks further strengthen the importance of integrating sustainability into economic decisions (Bano et al., 2024). Moreover, policy-driven climate resilience initiatives emphasize that financial mechanisms must support sustainability goals to achieve long-term performance (Rafiq-uz-Zaman et al., 2024b). A holistic sustainability framework combining environmental, social, and economic dimensions further supports this relationship (Rafiq-uz-Zaman et al., 2025a).

The complementary organizational and institutional factors tended to play a major role in the relationship between green finance and sustainable performance. The scholars noted that green finance was not a sufficient way to ensure sustainability results without the innovation and governance systems. Empirical studies revealed that the performance of green finance was enhanced with robust environmental policies and organizational strengths (Batool et al., 2025; Liu et al., 2025).

Intermediating Position of Green Innovation and Green Capabilities

Green innovation was a key mediating factor in the transformation of financial investments into the performance outcome of sustainability. It mentioned the creation of eco-friendly products, processes, and technologies minimizing the ecological footprint without compromise to competitiveness. It was empirically shown that companies that invested in green innovation reported a better sustainability performance as they could achieve improved efficiency and lower their environmental footprint (Islam et al., 2025; Liu and Xie, 2025).

Research indicated that green finance was a great way to improve innovation levels of firms since they could receive sufficient funding to conduct research and developmental activities. It was shown that green financial inclusion and innovation strategies had a combined impact on the environmental transformation and performance of firms. The mutual enhancement of green finance and innovation boosted the capacity of firms to attain sustainable development (Liu and Xie, 2025; Mukarram et al., 2025). These results reaffirmed the necessity to combine financial and technological approaches.

Green innovation and capabilities mediate the relationship between green finance and sustainable performance by enabling effective utilization of financial resources. Innovation ecosystems enhance adaptability and support sustainability-oriented transformation (Rafiq-uz-Zaman et al., 2025b). At the same time, environmental awareness and sustainability education contribute to the development of green capabilities, improving the implementation of eco-friendly practices (Bano et al., 2024; Khalid et al., 2024). Thus, innovation and capabilities translate financial investments into sustainable outcomes.

Green capabilities were also found as a very important mediator that could help firms to use financial resources well. Green capabilities encompassed organizational skills, knowledge and processes that facilitated the environmental management and sustainability practices. The researchers believed that those companies that had well-developed dynamic green capabilities were more likely to convert financial investments into competitive advantages and enhanced performance outcomes (Widyantoro et al., 2025; Abbas, 2024).

Moderating Role of Stakeholder Pressure

The presence of a stakeholder pressure was a major external pressure on the implementation of sustainable practices and environmental strategies by firms. There were stakeholders who put pressure on companies to be environmentally responsible and enhance transparency such as regulators, customers, investors, and communities. It was found that the pressure of the stakeholders had a positive effect on the

green innovation and sustainability performance, as it motivated firms to address the environmental expectations (Gurler et al., 2025; Sikandar et al., 2026). This proved the increased significance of external factors in determining corporate sustainability.

The connection between green capabilities and innovation was reinforced by the stakeholder pressure, which prompted firms to improve their environmental capabilities. Empirical analysis revealed that companies with an increased level of stakeholder pressure were more inclined to invest in green technologies and to work out sustainable practices. This pressure served as an accelerator and enhanced the strength of internal resources and capabilities (Widyantoro et al., 2025; Gurler et al., 2025).

Stakeholder pressure significantly influences the effectiveness of green finance in achieving sustainable performance. Environmental degradation and climate challenges increase expectations for sustainable practices (Rafiq-uz-Zaman et al., 2024a). Policy and regulatory pressures further drive organizations toward sustainability (Rafiq-uz-Zaman et al., 2024b), while rising public awareness strengthens stakeholder demands (Bano et al., 2024). Therefore, stakeholder pressure moderates how effectively green finance contributes to sustainable performance.

The relationship between green finance and sustainable performance was moderated by the stakeholder pressure that affected the use of financial resources by firms. The research found that companies that had to operate in highly regulated and competitive settings had higher positive impacts of green finance on the sustainability results. This meant that stakeholder pressure improved the effectiveness of financial investments by aligning the organizational strategies with the environmental needs (Darsono et al., 2026; Sikandar et al., 2026). One of the contextual factors affecting sustainability performance was the stakeholder pressure.

3. Research Methodology

Research Design

In this study, the research design used was a quantitative research design in order to understand the relationships between green finance, sustainable performance, green innovation, green capabilities, and stakeholder pressure. The design was aimed at testing the hypothesis with structured data and statistical methods. A cross-sectional design was used, where data were gathered at one point in time on respondents in pertinent organizational environments. This design offered an effective means to elicit perceptions and behaviours of firms concerning sustainability practices and financial approaches.

Population and Sample

The study population comprised of employees and managerial staff of firms that operate in the manufacturing and service sectors in Pakistan, more specifically in the finance, sustainability and operations departments. The respondents were sampled using purposive sampling approach to identify those who have relevant knowledge on green practices and financial decision-making. Two hundred and forty questionnaires were sent and 342 responses were received. Data were screened and incomplete entries were eliminated and a final analysis was done on 320 valid responses. This was deemed as sufficient to undertake structural equation modelling and provide adequate statistical power to test hypotheses.

Data Collection Method

A structured questionnaire was used in the collection of primary data; the scales were developed out of literature-validated scales. The questionnaire was shared online (e.g., using Google Forms and email) and in a physical form to reach a broader audience and involve them. The purpose of the study and confidentiality regarding the respondent were explained to the respondents. Participants had the freedom of choice, and ethical considerations were upheld during the data collection process. The collection of data was done in a way that there was diversity in responses in various industries and levels within an organization.

Measurement of Variables

Multi-item scales, which were based on the previous empirical studies, were used to measure all constructs in the study and guarantee validity and reliability. Green finance was gauged when based on availability and utilization of environmentally oriented financial resources. Environmental, economic and social performance indicators were used to determine sustainable performance. Green innovation encompassed eco-friendly product and process development items whereas green capabilities encompassed organizational capabilities in environmental management. The stakeholder pressure was determined based on

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https://invergejournals.com/
ISSN (Online): 2959-4359, ISSN (Print): 3007-2018
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items that indicate the external demands of regulators, customers and investors. Responses were recorded on a five-point Likert scale of 1 (strongly disagree) to 5 (strongly agree).

Data Analysis Techniques

The statistical package, Statistical Package of Social Sciences (SPSS), and Structural Equation Modelling (SEM) were employed in SmartPLS to analyse the collected data. Demographic characteristics and distributions of the variables were summarized using descriptive statistics. Cronbach alpha, composite reliability, and average variance extracted (AVE) were used to measure reliability and validity of the measurement model. Path coefficients (8) and t-values and p-values were used to test the hypothesized relationships by assessing the structural model. The mediating effects of green innovation and green capabilities were checked through bootstrapping procedures, and the moderating effect of stakeholder pressure was checked using terms of interaction within the framework of SEM.

4. Results and Analysis

Demographic Profile of Respondents

The analysis included gender, age, education level, and work experience. Understanding these characteristics supported the interpretation of the study results and ensured that the sample reflected diverse organizational perspectives.

Table 1

Demographic Characteristics of Respondents (n = 320)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	198	61.9%
	Female	122	38.1%
Age	20–30 years	102	31.9%
	31–40 years	138	43.1%
	41–50 years	60	18.8%
	Above 50 years	20	6.2%
Education	Bachelor's	120	37.5%
	Master's	156	48.8%
	PhD	44	13.7%
Experience	1–5 years	110	34.4%
	6–10 years	132	41.3%
	Above 10 years	78	24.3%

The demographic analysis revealed that most of the respondents were male (61.9%), and female respondents made 38.1% of the number of respondents. This was an expression of the gender ratio that existed in the managerial and operational positions in the manufacturing and service industries. The data also indicated a decent amount of gender diversity, which facilitated the equal views in the responses. In terms of age distribution, majority of the respondents were aged between 31-40 years old (43.1%), then 20-30 years (31.9%). This meant that a high percentage of respondents were at their early-mid career phase where there still was relevance regarding sustainability practices and financial planning. Having older respondents over the age of 40 years also enhanced the data since they offered a real-life experience. Regarding education and experience, many of the respondents (48.8%), had a master's degree which means a well-educated sample that could comprehend the complex sustainability and financial concepts. Also, the majority of respondents had a working experience of 6-10 years (41.3%), indicating that the respondents had enough work experience to give informed responses on the issue of organizational practices and strategies.

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ISSN (Online): 2959-4359, ISSN (Print): 3007-2018
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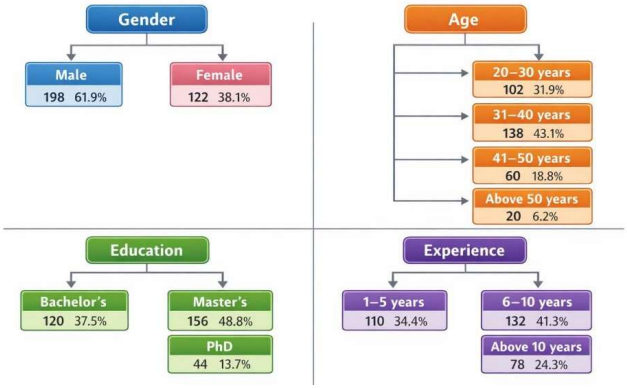
Figure 1

Demographic Characteristics of Respondents (n = 320)



Descriptive Statistics and Reliability Analysis

Mean values indicated the general agreement level of respondents, while standard deviation reflected the variability in responses. Reliability analysis ensured that the measurement scales produced consistent results.

Table 2

Descriptive Statistics and Reliability Results

Variable	Mean	Standard Deviation	Cronbach's Alpha
Green Finance	4.12	0.61	0.88
Green Innovation	4.05	0.64	0.86
Green Capabilities	4.09	0.59	0.87
Stakeholder Pressure	4.18	0.57	0.85
Sustainable Performance	4.21	0.60	0.89

The descriptive statistics showed that the mean values of all variables were greater than 4.00, meaning that there were high levels of agreement between the respondents with the existence and significance of the green finance, innovation, capabilities, stakeholder pressure, and sustainable performance. The mean value of sustainable performance was the largest (4.21), indicating that organizations were acting to ensure attainment of sustainability results. The values of the standard deviation were between 0.57 and 0.64 which means that there was moderate variation in the responses. This implied that the respondents were fairly consistent in their opinions on varied constructs, and this strengthened the accuracy of the information. The consistency also indicated a common ground of the practices related to sustainability in organizations. The reliability analysis indicated that all the constructs were above the suggested Cronbachs alpha of 0.70. The alpha value of green finance was 0.88, and the most reliable one was sustainable performance, which was 0.89. These findings validated that the measurement scales were valid and that they could be analysed statistically.

Figure 2

Descriptive Statistics and Reliability Results

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ISSN (Online): 2959-4359, ISSN (Print): 3007-2018
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Measurement Model Assessment

Table 3

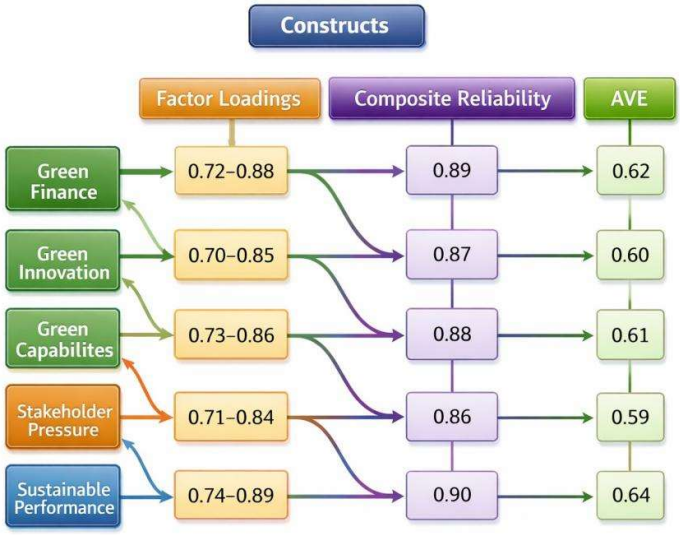
Measurement Model Results

Construct	Factor Loadings	Composite Reliability (CR)	AVE
Green Finance	0.72–0.88	0.89	0.62
Green Innovation	0.70–0.85	0.87	0.60
Green Capabilities	0.73–0.86	0.88	0.61
Stakeholder Pressure	0.71–0.84	0.86	0.59
Sustainable Performance	0.74–0.89	0.90	0.64

The measurement model evaluation revealed that the factor loadings of all items were greater than the recommended 0.70, which implies good item reliability. All constructs had good internal consistency levels with composite reliability values of between 0.86 and 0.90 which is above the minimum of 0.70. These findings indicated that the measurement items were always reflective of their constructs. The average variance extracted (AVE) value of all the constructs was greater than 0.50 that showed sufficient convergent validity. This implied that the constructs accounted a significant part of the variance in their indicators. The maximum AVE value (0.64) was observed in sustainable performance, and this was strong explanatory power. The measurement model was found to meet the standards of reliability and validity, which means that the constructs were appropriate to be further analysed in the context of the structural model. The findings were reassuring of the strength of the measurement framework employed in the study.

Figure 3

Measurement Model Results



Structural Model and Hypothesis Testing

The analysis examined the direct, mediating, and moderating relationships among variables.

Table 4

Hypothesis Testing Results

Hypothesis	Relationship	Beta (β)	t-value	p-value	Result
H1	Green Finance → Sustainable Performance	0.42	6.78	0.000	Supported
H2	Green Innovation & Green Capabilities → Sustainable Performance	0.34	6.02	0.000	Supported
H3	Green Finance → (Green Innovation & Green Capabilities) → Sustainable Performance (Mediation)	0.21	5.33	0.000	Supported
H4	Stakeholder Pressure moderates Green Finance → Sustainable Performance	0.27	4.36	0.000	Supported

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ISSN (Online): 2959-4359, ISSN (Print): 3007-2018
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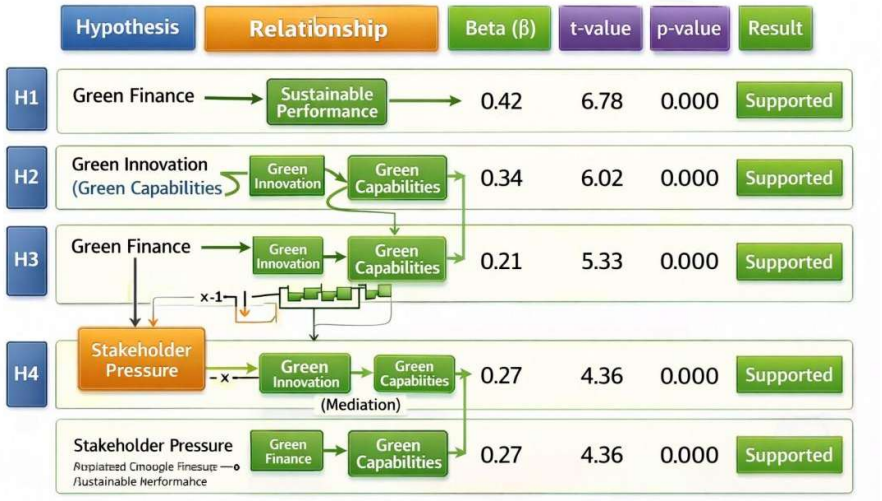
The results of hypothesis testing revealed that green finance had a strong positive impact on sustainable performance (0.42 6.78 0.000), which proved its strong position as a key factor influencing the sustainability outcomes. This conclusion showed that those organizations that invested financial funds in environmentally responsible activities performed better in terms of environmental, social, and economic performance. The conjoined impact of green innovation and green capabilities on sustainable performance was also important (= 0.34, t = 6.02, p = 0.000), which implied that the internal organization processes were critical to the improvement of sustainability performance.

The mediation findings also revealed that green innovation and green capabilities greatly mediated the impact of green finance to sustainable performance (= 0.21, t = 5.33, p = 0.000), which implied that financial resources were more effective when converted through innovation and capability building. These findings also confirmed that the effect of the stakeholder pressure on the relationship between green finance and sustainable performance was a significant modulating factor (= 0.27, t = 4.36, p = 0.000), which enhances the effect of green finance when subjected to greater external pressure. This observation implied that organizations with a higher regulatory, customer and investor pressure were more prone to using green finance well to enhance sustainability performance.

Figure 4

Hypothesis Testing Results



5. Discussion

The results of this research offered great empirical evidence to the significance of green finance as an important factor of sustainable performance. The high positive correlation between green finance and sustainable performance revealed that organizations which invested in environmental friendly financial systems had better environmental, social and economic performance. This finding was consistent with the recent empirical data indicating that green financial systems facilitated more efficient use of resources and cleaner production, as well as value creation in the long term (Bashir et al., 2024; Taghizadeh-Hesary and Yoshino, 2023). The research supported the thesis that financial capital channelled into sustainability projects played a enabling role towards the organizational attainment of sustainability goals in the competitive and environmentally conscious markets.

The green innovation as a mediating variable offered a more profound understanding of the role of financial investments on the enhanced sustainability results. The findings showed that green finance enabled innovation activities which consequently promoted sustainable performance. This result corroborated the innovation-oriented approach to sustainability in which companies used financial resources to produce environmentally-friendly products, procedures, and technologies (Zhou, 2024; Huang et al., 2023). It implied that financial investments may not yield significant environmental changes without innovation. Hence, green innovation acted as a vital change agent that turned financial investments into actual sustainability gains.

In a similar manner, the mediating role of green capabilities demonstrated the significance of internal

organizational competencies towards the realization of the sustainability objectives. The findings showed that companies that had high green competencies were able to use financial resources efficiently to enact environmental policies and enhance the performance outcomes. This observation was in line with the resource-based perspective, which pointed out that organizational capabilities defined how much resources would lead to competitive advantage (Chen and Chang, 2023; Singh et al., 2024). This paper has shown that the green capabilities of environmental management skills, knowledge integration, and adaptive processes were crucial in the maximization of the effects of green finance on sustainability performance.

The stakeholder pressure moderating effect also contributed to the green finance-performance relationship, as it added an external contextual element. The findings showed that the positive correlation between green finance and sustainable performance was enhanced by stakeholder pressure, which means that the better the external scrutiny of a company, the higher the sustainability performance. This observation was consistent with the stakeholder theory, which proposed that organizations acted in response to external needs by aligning their strategies with those of stakeholders (Ullah et al., 2023). It meant that regulatory provisions, awareness among customers and the expectation of investors pushed the firms to use green finance in a better manner.

The moderating and mediating effects were combined to emphasize the interactive and complex nature of sustainability drivers. The results implied that sustainable performance was not necessarily based on financial investment but involved the combination of innovation, capabilities, and stakeholder engagement. This holistic approach was consistent with the recent literature which focused on multi-dimensional views of sustainability, in which internal and external factors had a mutual impact on the outcomes of organizations (Zhao et al., 2024; Li et al., 2023). The research contributed to the existing literature on the topic by showing that the success of green finance was enhanced by good internal mechanisms and external compulsions.

The findings had significant implications to companies in emerging economies, where environmental issues and resource limitations were still crucial. The research revealed that in such situations organizations would be able to improve their sustainability performance through a strategic investment in green finance and at the same time create innovation and capabilities. This observation echoed the latest study indicating the relevance of financial inclusion and technological progress to create sustainable development in the emerging markets (Khan et al., 2024; Ahmed et al., 2023). It also indicated that the policymakers ought to develop conducive financial and regulatory conditions to promote green investments.

The research showed that stakeholder pressure was not only a limitation, but it also provided firms with an opportunity to enhance their sustainability practices. The companies that reacted positively to the demands of the stakeholders had a higher chance of attaining competitive advantage and improving their image. This result was consistent with the recent literature that highlights the strategic importance of stakeholder involvement in sustainability efforts (Rehman et al., 2024; Zhou et al., 2023). It shows that stakeholder pressure should be considered a stimulus of innovation and performance enhancement as opposed to a regulation cost on the organizations.

6. Conclusion

This paper has investigated how green finance can improve sustainable performance by considering the moderate impact of green innovation and green capabilities and the moderating impact of stakeholder pressure. The results revealed that green finance was a major contributor to sustainability performances, which means that those organizations that invested in financially oriented practices on the environment performed better in terms of environmental, social, and economic performance. The analysis also found that the green innovation and green capabilities were critical mediating factors, since they converted the financial resources into viable sustainability projects. These findings underscored the fact that financial investment was not a sure-footed success in sustainability unless accompanied with innovation and internal competencies. The relationship between green finance and sustainable performance was reinforced by stakeholder pressure, which implied that external pressure on organizations via regulators, customers, and investors improved the organizational commitment to sustainability. In general, the analysis has presented an all-inclusive framework, which encompassed financial, organizational, and environmental views to describe sustainable performance in modern business settings.

7. Recommendations

Some policy suggestions were made to policymakers, managers, and organizations, based on the findings. To promote long-term sustainable objectives, first, the companies are encouraged to adopt a greater number of green financial instruments like green bonds, sustainable loans, and environmental-oriented investment strategies. Second, organizations must give more emphasis on green innovation development through research and development which targets environmentally friendly products and processes. Third, to improve the financial resources utilization, it was necessary to improve green capabilities with the help of training, integration of knowledge, and environmental management systems. In addition, organizations need to be more proactive in their interactions with stakeholders and address their environmental expectations because stakeholder pressure had a positive effect on the sustainability results. The policymakers must also put in place friendly regulatory systems and incentives to promote green financing and innovation practices within industries. These strategic interventions can greatly enhance the performance of the organizations and can also lead to larger-scale environmental sustainability goals.

8. Future Directions

The study can be further developed in the future by considering other mediating and moderating factors that mediate the relationship between green finance and sustainable performance, including digital transformation, corporate governance, and environmental culture. A longitudinal study would help in understanding the long-term implications of green finance on the sustainability outcomes because this study used cross-sectional data. Industry-specific differences could also be analysed to determine how green finance affects sustainability in the manufacturing sector, banking industry, and energy, among other industries. The generalizability of the findings could be improved by expanding the geographical area to cover comparative studies between developed and developing countries. Moreover, further research might use mixed-method designs to be able to get both quantitative and qualitative viewpoints on sustainability practices. These guidelines would add to a more holistic idea of how green finance is changing in the realization of sustainable development objectives.

Acknowledgments

The authors would like to thank the participants and the respective universities for their support and cooperation in conducting this study.

Contribution of Authors

All the authors participated in the ideation, development, and final approval of the manuscript, making significant contributions to the work reported.

Conflict of Interest Statement

The authors declare no conflicts of interest.

Funding Statement

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Data Availability

The datasets generated during and analysed during the current study are available from the corresponding author on reasonable request.

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