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Research Article

Integrated Sustainability Practices and International Green Business Readiness among Green-Oriented Small and Medium Enterprises in the Philippines

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Abstract
This study examined the relationships among circular economy practices, green innovation, sustainable entrepreneurship values, sustainability performance, and international sustainability readiness among green-oriented small and medium enterprises (SMEs) in the Philippines. It also aimed to develop an integrated entrepreneurship framework to support sustainable business development and international green business preparation. A mixed-methods research design was employed, involving 11 purposively selected green-oriented SMEs in the National Capital Region. Survey data were analyzed using descriptive statistics and multiple linear regression. The findings indicated that sustainable entrepreneurship values received the highest assessment, followed by green innovation and circular economy practices, whereas international sustainability readiness obtained the lowest assessment. The reported regression results showed positive and statistically significant relationships between the three sustainability dimensions and sustainability performance, with green innovation demonstrating the strongest standardized coefficient. However, the predictors did not demonstrate statistically significant relationships with international sustainability readiness. These findings suggested that implementing sustainability practices did not necessarily ensure preparedness for international green business activities. Financial capacity, market access, international networks, certifications, and institutional support remained important considerations. Based on the findings, the study proposed the G.R.E.E.N. Entrepreneurship Framework, comprising five dimensions: Green Value Creation, Responsible Innovation and Technology, Ecosystem Engagement and Empowerment, Economic Resilience and Market Expansion, and Navigational Governance and Policy Integration. The framework provides a conceptual basis for strengthening SME sustainability practices and supporting international business preparation.

Keywords
circular economy practices; green innovation; sustainable entrepreneurship; sustainability performance; sustainability readiness

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Ethics Statement
This study was conducted in accordance with ethical standards.

INTRODUCTION

Sustainability has become an increasingly important dimension of contemporary business development as enterprises face growing expectations to address environmental degradation, resource efficiency, climate-related challenges, and responsible economic growth. This shift requires businesses to move beyond conventional profit-oriented strategies and incorporate environmental and social considerations into their organizational decisions. Circular economy practices provide an approach to reducing waste, improving material utilization, and promoting resource efficiency, while green innovation supports the development of environmentally responsible products, services, and processes (Murtagh & Badi, 2020; Siddiqi et al., 2026). The increasing emphasis on environmental sustainability is also reflected in research examining green energy penetration and the transition toward cleaner energy systems (Ali & Sultanuzzaman, 2026), as well as climate adaptability and energy performance in green building practices (Feng et al., 2025). Organizational capabilities further influence

sustainability implementation, as green intellectual capital contributes to green innovation and environmental performance (Firmansyah, 2026), while green human resource management and organizational commitment have been associated with employee innovation and environmentally responsible behavior (Khan et al., 2026; Pontillo et al., 2025). Corporate social responsibility also provides a strategic mechanism for organizational differentiation in emerging economies (Bui & Tran, 2026). At the institutional level, governance conditions, green financing, and public support influence sustainable economic development (Abdul Manaf et al., 2026; Kong et al., 2026; Wacławik et al., 2025). Financing remains particularly important because sustainability-oriented infrastructure and business initiatives require adequate investment and appropriate financial arrangements (Merk et al., 2012). These developments demonstrate that sustainable entrepreneurship involves the integration of environmental practices, technological innovation, organizational commitment, financial capacity, and enabling institutional conditions.

In the Philippine context, the transition toward sustainable business practices presents both opportunities and challenges for small and medium enterprises (SMEs). Green innovation and environmentally responsible supply chain management have been examined in relation to sustainable competitive advantage among Philippine firms, highlighting the importance of innovation and organizational support in strengthening business sustainability (Gloria, 2025). However, the capacity of SMEs to implement comprehensive sustainability strategies may be constrained by limited financial resources, technical capabilities, and access to appropriate support mechanisms. Somova (2024) specifically examined whether business success barriers impede the readiness of Philippine SMEs to adopt greener business practices, providing relevant contextual evidence for understanding the challenges associated with sustainability adoption. These concerns are consistent with broader research identifying external financing constraints as significant challenges for enterprises pursuing social and environmental objectives (Schätzlein et al., 2023). Moreover, green leadership has been examined in relation to sustainable business performance among Southeast Asian SMEs, emphasizing the importance of organizational direction in promoting sustainability-oriented practices (Siri, 2025). The development of green employment and sustainability-related skills also highlights the importance of workforce capabilities and supportive policy environments in the transition toward greener economic activities (Ristanović et al., 2026). Consequently, sustainability adoption among Philippine SMEs must be considered alongside organizational resources, human capabilities, institutional support, and the requirements of increasingly competitive markets.

Although existing studies have examined green innovation, circular economy-related practices, environmental performance, organizational commitment, corporate social responsibility, and sustainability-oriented business strategies, these areas are often investigated through distinct analytical perspectives. Previous research has explored the relationship between green intellectual capital and environmental performance (Firmansyah, 2026), the contribution of green innovation to sustainable competitive advantage among Philippine firms (Gloria, 2025), and the influence of green human resource management on employee behavior (Pontillo et al., 2025). Other studies have addressed green leadership and sustainable business performance (Siri, 2025), green orientation and technological dynamism in emerging economies (Siddiqi et al., 2026), corporate social responsibility-based differentiation (Bui & Tran, 2026), and the financing constraints experienced by social enterprises (Schätzlein et al., 2023). Nevertheless, an important contextual and empirical issue remains concerning how circular economy practices, green innovation, and sustainable entrepreneurship values operate together in relation to both sustainability performance and international sustainability readiness among green-oriented Philippine SMEs. These outcomes should not be treated as interchangeable because enterprises may implement environmentally responsible practices within their domestic operations without necessarily possessing the financial capacity, technological resources, certifications, market knowledge, and international business networks needed to participate in global green markets. Although previous literature has examined financing and the institutional conditions supporting sustainable economic activities (Merk et al., 2012; Abdul Manaf et al., 2026), the extent to which internal sustainability practices translate into international business preparedness among Philippine SMEs remains an important area for investigation. This distinction establishes the need for an integrated assessment that considers enterprise-level sustainability performance alongside the broader organizational and institutional conditions associated with international business readiness.

In response to this research gap, the present study examined integrated sustainability practices and international green business readiness among green-oriented SMEs in the National Capital Region (NCR), Philippines. Specifically, it assessed the participating enterprises' circular economy practices, green innovation, and sustainable entrepreneurship values; examined the relationships of these dimensions with sustainability performance; determined their relationships with international sustainability readiness; and developed an integrated entrepreneurship framework based on the findings. The study was conceptually informed by Circular Economy Theory, Green Innovation Theory, and Sustainable Entrepreneurship Theory to examine how resource efficiency, environmentally responsible innovation, and the integration of economic, environmental, and social objectives contribute to sustainability-oriented business development. Its principal conceptual contribution was the proposed G.R.E.E.N. Entrepreneurship Framework, or Global-Responsive Entrepreneurship for Environmental and Economic Nexus, comprising five interconnected dimensions: Green Value Creation, Responsible Innovation and Technology, Ecosystem Engagement and Empowerment, Economic Resilience and Market Expansion, and Navigational Governance and Policy Integration. By examining these dimensions within the context of green-oriented SMEs, the study sought to contribute empirical insights into the relationship between sustainability practices and international business preparedness while providing a conceptual basis for further research and practical support for sustainable SME development. Given the study's limited sample and geographic scope, its findings were interpreted within the participating enterprises and were not intended to represent all Philippine SMEs.

METHODOLOGY

Design

The study employed a mixed-methods research design incorporating quantitative and qualitative approaches to examine integrated sustainability practices and international green business readiness among green-oriented small and medium enterprises (SMEs) in the National Capital Region (NCR), Philippines. This design was intended to provide an assessment of enterprise sustainability practices, examine the relationships among the identified sustainability dimensions, and inform the development of an integrated entrepreneurship framework. The quantitative component focused on descriptive assessment and multiple linear regression, while the qualitative component was intended to contribute contextual understanding of sustainability-oriented business practices. The quantitative analysis examined three explanatory dimensions: circular economy practices, green innovation, and sustainable entrepreneurship values. These dimensions were considered in relation to two outcome variables: sustainability performance and international sustainability readiness. The study was conceptually anchored in Circular Economy Theory, Green Innovation Theory, and Sustainable Entrepreneurship Theory. These perspectives provided the conceptual basis for examining resource efficiency, environmentally responsible innovation, and the integration of environmental, economic, and social objectives in entrepreneurial activities.

Locale and Participants

The research was conducted among green-oriented SMEs located in the National Capital Region, Philippines. The study involved 11 enterprises selected purposively on the basis of their engagement in environmentally oriented business activities. These enterprises represented retail, food and beverage, and technology industries. Of the 11 participating enterprises, 10 were classified as micro-enterprises and one as a small enterprise. In terms of market coverage, all participating businesses reported operating primarily in local markets. Their organizational characteristics provided the context for examining the implementation of sustainability practices and the extent of their preparation for international green business activities.

Sampling

Purposive sampling was used to select the participating enterprises. This technique enabled the study to focus on businesses considered relevant to the research objectives because of their engagement in environmentally oriented activities. The final sample consisted of 11 enterprises operating in the NCR.

Instrument

The instrument covered four principal dimensions: (1) Circular Economy Practices, (2) Green Innovation, (3) Sustainable Entrepreneurship Values, and (4) International Sustainability Readiness. These dimensions were used to assess enterprise characteristics and reported sustainability-related activities. The questionnaire examined practices relating to resource utilization, environmentally responsible products and processes, sustainability-oriented management, stakeholder engagement, and preparation for international green business activities. Responses provided the basis for the descriptive assessment of sustainability practices and the subsequent regression analyses involving sustainability performance and international sustainability readiness.

Collection

The study gathered information from the 11 purposively selected green-oriented SMEs through the survey questionnaire. The collected responses were used to describe the participating enterprises and assess their reported implementation of circular economy practices, green innovation, sustainable entrepreneurship values, and international sustainability readiness.

Analysis

Descriptive statistics were used to summarize the organizational characteristics and sustainability assessments of the participating enterprises. Frequency and percentage distributions were applied to describe categorical characteristics, while means and standard deviations were used to summarize the reported assessments across the four principal sustainability dimensions. Multiple linear regression analysis was employed to examine the relationships of circular economy practices, green innovation, and sustainable entrepreneurship values with sustainability performance. A separate multiple regression analysis examined the relationships of the same three explanatory dimensions with international sustainability readiness. These analyses were intended to determine the direction and relative contribution of the sustainability dimensions to the two outcome variables. The regression results were interpreted using unstandardized coefficients, standard errors, standardized beta coefficients where reported, t-statistics, F-statistics, coefficients of determination, and p-values. Statistical significance was evaluated at the .05 level. The coefficient of determination was considered in assessing the proportion of outcome variation explained by the predictors, while the regression coefficients were examined to determine the direction of the reported relationships.

Ethical Considerations

The study involved business representatives and collected information concerning enterprise sustainability practices. Ethical reporting should establish that participation was voluntary, that participants were informed about the purpose of the research, and that appropriate measures were used to protect the confidentiality of participating enterprises and respondents. Data should be handled securely and used only for the purposes communicated to participants.

Limitations and Methodological Rigor

The study was limited by its purposively selected sample of 11 green-oriented SMEs within the NCR. The small and geographically concentrated sample restricts the extent to which the findings can be generalized to other enterprises, regions, industries, or businesses with established international operations. The predominance of micro-enterprises and the local market coverage of all participating businesses should also be considered when interpreting the findings on

international sustainability readiness. The use of enterprise-reported survey responses may introduce response and measurement biases.

RESULTS AND DISCUSSION

The organizational characteristics of participating enterprises provide an important context for interpreting their sustainability practices and international business readiness. The study involved 11 green-oriented small and medium enterprises (SMEs) operating in the National Capital Region (NCR), Philippines. These enterprises represented three industry categories: retail, food and beverages, and technology. Examining this distribution is relevant because the nature of business operations may influence the types of environmental practices that enterprises can implement, particularly in relation to resource consumption, waste management, product development, and service delivery.

The distribution also indicates that the participating enterprises were predominantly micro-enterprises. This characteristic is important because smaller businesses may face operational and resource constraints when adopting sustainability technologies, developing formal environmental management systems, or pursuing international certifications. Previous research has discussed the influence of financial constraints on the capacity of mission-oriented and sustainability-focused enterprises to obtain external financing and support (Schätzlein et al., 2023). Such constraints may be particularly relevant when sustainability initiatives require investments that exceed the immediate financial capacity of smaller organizations.

The enterprises' years of operation provide an additional dimension for understanding their organizational development. Businesses at different stages of operation may differ in their managerial experience, resource availability, operational stability, and capacity to introduce sustainability-oriented innovations. The development of green employment and sustainability-related capabilities also involves skills, organizational structures, and policy conditions that influence the transition toward environmentally responsible economic activities (Ristanović et al., 2026). These considerations suggest that the sustainability practices of the participating enterprises should be interpreted in relation to their organizational circumstances rather than treated as uniform across all SMEs.

The market coverage of the participating enterprises is particularly relevant to the study's examination of international sustainability readiness. All enterprises reported local market coverage, indicating that the sample did not include businesses with reported international market operations. This context helps explain why sustainability practices and international readiness need to be examined as related but distinct organizational dimensions. Research on Philippine SMEs has identified business barriers as relevant considerations in the adoption of environmentally oriented practices (Somova, 2024). Accordingly, the profile of the participating enterprises establishes the organizational context for examining their sustainability assessments and the potential challenges associated with international business development.

Table 1
Demographic Profile of the Participating Enterprises

Characteristics	Frequency	Percentage
Industry		
Retail	5	45.45
Food and beverages	5	45.45
Technology	1	9.09
Years in operation		
0–3 years	5	45.45
4–7 years	2	18.18
8–10 years	4	36.36
Business size		
Micro	10	90.91
Small	1	9.09
Market coverage		
Local	11	100.00
Total	11	100.00

Note. Percentages are based on the total number of participating enterprises.

The distribution shows that retail and food and beverage enterprises each accounted for 45.45% of the sample, while technology enterprises represented 9.09%. In terms of business size, 90.91% were micro-enterprises and 9.09% were small enterprises. Nearly half had operated for three years or less, while all participating enterprises reported local market coverage. These characteristics indicate that the findings primarily reflect the experiences of micro-enterprises operating in domestic markets. Consequently, the results should not be generalized to larger SMEs or enterprises with established international operations without further empirical evidence.

Descriptive Assessment of Sustainability Practices

The descriptive results provide an overview of the extent to which participating enterprises reported implementing circular economy practices, green innovation, sustainable entrepreneurship values, and international sustainability readiness. These dimensions represent complementary aspects of sustainability-oriented business development. Circular economy practices concern the management and efficient use of resources, while green innovation relates to the development and application of environmentally responsible products, services, and processes. Sustainable entrepreneurship values reflect the integration of environmental and social considerations into business decisions. These dimensions collectively provide a basis for examining sustainability-oriented organizational performance.

Among the four dimensions, sustainable entrepreneurship values obtained the highest composite mean. This result suggests that the participating enterprises reported relatively strong sustainability-oriented commitments in their business practices and stakeholder-related activities. The importance of employee participation and organizational commitment is consistent with research examining the relationship between green human resource management, employee behavior, and sustainability outcomes (Pontillo et al., 2025). Similarly, research on green leadership and sustainable business performance emphasizes the relevance of leadership and organizational orientation in supporting sustainability practices among Southeast Asian SMEs (Siri, 2025).

Green innovation obtained the second-highest composite mean, indicating that the participating enterprises reported positive engagement in environmentally responsible service and process development. However, the item-level results show that investment in research and development received a lower mean than sustainable service and process redesign. This difference suggests that the adoption of practical improvements may be more established than sustained investment in formal innovation activities. Research has associated green intellectual capital with green innovation and environmental performance, highlighting the potential importance of organizational knowledge and capabilities in supporting innovation-oriented sustainability initiatives (Firmansyah, 2026). Philippine evidence has also examined green innovation in relation to sustainable competitive advantage and green supply chain management (Gloria, 2025).

International sustainability readiness obtained the lowest composite mean among the four dimensions. Although its overall interpretation remained positive, its relative position suggests that the participating enterprises reported comparatively less developed readiness for international green business activities. International readiness may involve requirements that extend beyond internal environmental practices, including financial capacity, technological resources, market information, institutional support, and access to relevant networks. Studies addressing financing constraints and the conditions supporting green business development indicate that access to resources and institutional arrangements can influence the capacity of enterprises to pursue sustainability-related objectives (Schätzlein et al., 2023; Somova, 2024). The difference between sustainability commitment and international readiness therefore warrants separate consideration.

Table 2
Descriptive Assessment of Sustainability Practices among Green-Oriented SMEs

Sustainability dimension	Mean	SD	Interpretation
Circular Economy Practices	2.98	0.17	Agree
Green Innovation	3.16	0.23	Agree
Sustainable Entrepreneurship Values	3.36	0.23	Strongly Agree
International Sustainability Readiness	2.73	0.174	Agree
Overall	3.06	0.034	Agree

The results indicate that sustainable entrepreneurship values received the highest mean (M = 3.36, SD = 0.23), followed by green innovation (M = 3.16, SD = 0.23) and circular economy practices (M = 2.98, SD = 0.17). International sustainability readiness received the lowest mean (M = 2.73, SD = 0.174). The overall mean of 3.06 (SD = 0.034) was interpreted as Agree. At the item level, promoting sustainability among employees and customers received a mean of 3.64, while sustainable service and process redesign received 3.45. Sustainable logistics and waste minimization obtained 3.27. In contrast, reuse, recycling, and material reduction received 2.73, while investment in research and development received 2.82. These item-level differences indicate areas where implementation appears relatively established and areas where further development may be warranted. The findings should nevertheless be interpreted as reported assessments rather than independent measurements of environmental impact.

Circular economy practices demonstrated a positive regression coefficient in the reported model. This direction suggests that higher reported engagement in resource efficiency, waste reduction, and material management was associated with higher sustainability performance, holding the other predictors constant. The result is conceptually consistent with research examining green supply chain management and environmentally responsible operational practices (Murtagh & Badi, 2020). However, the coefficient should be interpreted as a statistical association within the participating sample and should not be taken as evidence that circular economy practices independently cause improvements in sustainability performance.

Green innovation recorded the largest standardized beta coefficient among the three predictors. This result suggests that green innovation had the strongest relative association with sustainability performance in the reported regression model. The finding is consistent with research linking green innovation to environmental performance and sustainable competitive advantage (Firmansyah, 2026; Gloria, 2025). Innovation may support sustainability through the redesign of products and services, improvements in production or service processes, and the adoption of environmentally responsible technologies.

Sustainable entrepreneurship values also demonstrated a positive reported coefficient. This result suggests that enterprises reporting stronger environmental responsibility and sustainability-oriented decision-making also tended to report stronger sustainability performance. The relationship is relevant to research on green leadership, employee commitment, and sustainability-oriented organizational behavior (Khan et al., 2026; Pontillo et al., 2025; Siri, 2025). These studies provide a basis for understanding how organizational values and employee-related practices may support sustainability implementation. Taken together, the three predictors represent complementary organizational dimensions, although their individual contributions should be interpreted cautiously given the small number of participating enterprises.

Table 3
Multiple Regression Results for Sustainability Performance

Predictor	B	SE	β	t	p
Circular Economy Practices	0.30	0.10	0.35	3.00	.005

Green Innovation	0.40	0.12	0.45	3.33	.002
Sustainable Entrepreneurship Values	0.35	0.11	0.40	3.18	.003

Green innovation recorded the highest standardized beta (β = 0.45), followed by sustainable entrepreneurship values (β = 0.40) and circular economy practices (β = 0.35). These reported results suggest that green innovation had the strongest relative association with sustainability performance among the predictors included in the model. However, the reported t-statistics and p-values require verification against the original statistical output, including the residual degrees of freedom and the precise model specification. The original values have been retained rather than recalculated or silently replaced. Given the sample of 11 enterprises and three predictors, the regression results should be treated as preliminary and interpreted with appropriate statistical caution.

The second regression analysis examined whether circular economy practices, green innovation, and sustainable entrepreneurship values predicted international sustainability readiness. This analysis is important because sustainability performance and international business readiness represent related but distinct organizational capabilities. An enterprise may demonstrate environmentally responsible practices within its existing operations while still lacking the resources, market knowledge, certification, or institutional connections required to participate in international green business activities. The distinction is particularly relevant to the present sample because all participating enterprises reported local market coverage.

The reported regression coefficients for the three predictors were positive. Sustainable entrepreneurship values recorded the largest unstandardized coefficient, followed by circular economy practices and green innovation. These positive directions indicate that higher predictor scores were associated with higher estimated international sustainability readiness in the fitted model. However, the reported individual p-values exceeded the .05 significance threshold. Therefore, the coefficient directions alone do not provide sufficient evidence of statistically significant individual predictive relationships within the participating sample.

The absence of statistically significant individual relationships should not be interpreted as proof that sustainability practices are irrelevant to international readiness. Rather, the results indicate that the present analysis did not establish statistically significant predictive relationships at the specified significance level. International business development may involve additional organizational and external conditions, including financial resources, access to technology, market information, institutional support, and financing arrangements. Research on external financing constraints identifies resource access as an important consideration for enterprises pursuing social and sustainability-oriented objectives (Schätzlein et al., 2023). Research on Philippine SMEs also identifies business barriers as relevant to the adoption of greener business practices (Somova, 2024).

The reported overall model statistics further indicate that the international sustainability readiness regression did not reach statistical significance. The study reports an R^2 of .500 and an F-statistic of 2.336 with p = .160. Although the reported R^2 indicates that the model accounted for a proportion of the observed variation in the outcome within the sample, the nonsignificant F-test means that the analysis did not provide sufficient evidence that the predictors jointly explained international sustainability readiness at the .05 level. The small sample size also limits the precision and generalizability of the estimates. These findings support the need to examine international readiness through a broader set of organizational and institutional factors.

Table 4
Regression Coefficients for International Sustainability Readiness

Predictor	B	SE	t	p
Intercept	0.620	1.072	0.578	.580
Circular Economy Practices	0.236	0.368	0.641	.542
Green Innovation	0.226	0.467	0.484	.643
Sustainable Entrepreneurship Values	0.452	0.408	1.108	.300

The G.R.E.E.N. Entrepreneurship Framework

Based on the findings, the study proposes the G.R.E.E.N. Entrepreneurship Framework, which stands for Global-Responsive Entrepreneurship for Environmental and Economic Nexus. The framework provides an integrated conceptual structure for strengthening sustainability-oriented entrepreneurship and supporting the preparation of green-oriented small and medium enterprises for international business development. It brings together the operational, technological, social, economic, and governance dimensions that influence the capacity of enterprises to translate sustainability commitments into organizational practices and broader market opportunities.

The proposed framework responds to the observed difference between the participating enterprises' sustainability assessments and their comparatively lower international sustainability readiness. Although sustainable entrepreneurship values and green innovation received relatively favorable assessments, the regression analysis did not establish statistically significant relationships between the three sustainability dimensions and international sustainability readiness. This distinction suggests that the development of international green business capabilities requires consideration of factors beyond internal environmental practices, including financial resilience, technological capacity, stakeholder networks, market access, and institutional alignment.

The first two pillars, Green Value Creation and Responsible Innovation and Technology, address the operational and technological foundations of sustainable entrepreneurship. Green Value Creation emphasizes environmentally responsible products and services, waste reduction, resource conservation, and the use of sustainable materials. Responsible Innovation

and Technology focuses on cleaner production, energy efficiency, environmentally responsible innovation, and appropriate technological development. Together, these pillars encourage enterprises to integrate environmental considerations into their products, services, and operational processes.

The remaining pillars extend the framework to organizational collaboration, economic development, and institutional preparedness. Ecosystem Engagement and Empowerment emphasizes employee awareness, stakeholder participation, community involvement, and collaboration with external partners. Economic Resilience and Market Expansion addresses financial sustainability, business competitiveness, market development, and preparation for international opportunities. Navigational Governance and Policy Integration focuses on aligning business operations with sustainability standards, institutional policies, environmental regulations, and governance practices. These dimensions recognize that sustainable business development requires coordinated organizational and external support.

Figure 1
The G.R.E.E.N. Entrepreneurship Framework

Pillar	Strategic orientation
G – Green Value Creation	Develop environmentally responsible products and services, reduce waste, conserve resources, and incorporate sustainable materials.
R – Responsible Innovation and Technology	Promote environmentally responsible innovation, cleaner production, energy efficiency, and appropriate technological development.
E – Ecosystem Engagement and Empowerment	Strengthen stakeholder participation, employee awareness, community involvement, and collaboration with external partners.
E – Economic Resilience and Market Expansion	Improve financial sustainability, business competitiveness, market development, and preparation for international opportunities.
N – Navigational Governance and Policy Integration	Align business operations with sustainability standards, institutional policies, environmental regulations, and governance practices.

Note. The framework was developed from the study's findings and is proposed as a conceptual model for integrated sustainability-oriented entrepreneurship.

The five pillars collectively provide a structure for examining how green-oriented enterprises can strengthen internal sustainability practices while addressing the broader requirements of business development. Green Value Creation and Responsible Innovation and Technology focus on environmental and operational improvements, while Ecosystem Engagement and Empowerment emphasizes the contribution of stakeholders and collaborative relationships. Economic Resilience and Market Expansion and Navigational Governance and Policy Integration address the financial, market, and institutional conditions that may influence international business preparation. The framework is therefore intended to connect enterprise-level sustainability initiatives with the organizational and external capabilities required for broader market participation. The G.R.E.E.N. Entrepreneurship Framework should be understood as a proposed conceptual contribution derived from the findings rather than an independently validated model or measurement instrument. Its applicability, reliability, and predictive validity have not yet been established. Further empirical research involving larger and more geographically diverse SME populations is necessary to evaluate the relationships among its five pillars and determine its usefulness across different industries and business contexts.

Conclusion and Recommendations

The study examined circular economy practices, green innovation, and sustainable entrepreneurship values in relation to sustainability performance and international sustainability readiness among 11 green-oriented SMEs in the National Capital Region, Philippines. The descriptive findings showed that sustainable entrepreneurship values received the highest assessment, followed by green innovation and circular economy practices, while international sustainability readiness received the lowest assessment. The reported regression results indicated positive relationships between the three sustainability dimensions and sustainability performance, with green innovation demonstrating the highest standardized coefficient. However, the analysis did not establish statistically significant relationships between these dimensions and international sustainability readiness. These findings highlight the distinction between implementing sustainability practices and developing the broader organizational capabilities required for international green business participation. The study contributes the proposed G.R.E.E.N. Entrepreneurship Framework, which integrates Green Value Creation, Responsible Innovation and Technology, Ecosystem Engagement and Empowerment, Economic Resilience and Market Expansion, and Navigational Governance and Policy Integration into a unified conceptual structure for sustainability-oriented enterprise development.

Based on these findings, green-oriented SMEs should strengthen their implementation of circular resource management, environmentally responsible products and services, and process innovation while improving the integration of sustainability principles into organizational decision-making. Government agencies, research institutions, and industry organizations should provide targeted sustainability training, technical assistance, and appropriate financial support to address the operational constraints experienced by micro and small enterprises. Support initiatives should also facilitate access to environmental certifications, international sustainability networks, export development services, and reliable foreign market information. Future research should examine the proposed G.R.E.E.N. Entrepreneurship Framework using larger and more geographically diverse samples, validated measurement instruments, and longitudinal or comparative research designs. Researchers should also investigate the financial, institutional, technological, and market-related factors that may influence international sustainability readiness. These efforts would help establish the framework's empirical applicability and provide a stronger basis for supporting the international development of green-oriented SMEs.

References

Abdul Manaf, H., Fridayani, H. D., Isnadi, Y., & Younus, M. (2026). Toward green digital transformation through governance conditions and environmental sustainability in Surakarta City. *Discover Environment*, *4*(1), 441. https://doi.org/10.1007/s44274-026-00976-x

Ali, N., & Sultanuzzaman, M. R. (2026). Determinants of Green Energy Penetration in N-11 Countries: A Machine Learning Analysis. *Energies*, *19*(2), 541. https://doi.org/10.3390/en19020541
Bui, M. T., & Tran, T. T. H. (2026). Factors driving corporate social responsibility-based differentiation strategy in an emerging country. *Sage Open*, *16*(3), 21582440261431630. https://doi.org/10.1177/21582440261431630
Feng, X., Xiang, F., & Liao, C. (2025). Climate Adaptability and Energy Performance in the Greater Bay Area of China: Analysis of Carbon Neutrality Through Green Building Practices. *Buildings*, *15*(17), 3066. https://doi.org/10.3390/buildings15173066
Firmansyah, A. (2026). Harnessing Green Intellectual Capital to Drive Green Innovation and Environmental Performance. *International Journal of Entrepreneurship and Sustainability Studies*, *6*(1), 76-93. https://doi.org/10.29313/ijeass.v6i1.2731
Gloria, J. V. (2025). Green innovation as a mediator of green transformational Leadership, green supply chain management on green perceived organizational support toward sustainable competitive advantage in sustainable firms in the Philippines. *Discover Sustainability*, *6*(1), 1180. https://doi.org/10.1007/s43621-025-02063-2
Khan, M. A., Latif, W. B., Khattak, S. A., Marwat, A., Imran, A., & Jan, M. F. (2026). The green spark: how green HRM ignites employee innovation through organisational commitment. *Future Business Journal*, *12*(1), 306. https://doi.org/10.1186/s43093-026-01006-1
Kong, P. S. E., Husaini, D. H., Lee, W. H., & Lean, H. H. (2026). Do green bonds foster economic growth conditional on financial development?. *Discover Environment*, *4*(1), 258. https://doi.org/10.1007/s44274-026-00785-2
Merk, O., Saussier, S., Staropoli, C., Slack, E., & Kim, J. H. (2012). Financing green urban infrastructure. *OECD Regional Development Working Papers*, *2012*(10).
Murtagh, N., & Badi, S. (2020). Green supply chain management in construction: A systematic review. *Successful construction supply chain management: Concepts and case studies*, 63-85. https://doi.org/10.1002/9781119450535.ch4
Pontillo, H. R., Dominguez, S. M., Bustamante, A. R., Genodiala, A., Gahum, S., Pontillo, V. A. R., ... & Villaluz, F. (2025). The mediating role of green human capital in the relationship between green human resource management practices and green employee behavior for a sustainable future. *Sustainability*, *17*(23), 10767. https://doi.org/10.3390/su172310767
Ristanović, V., Primorac, D., & Stevandić, N. (2026). Pathways to Green Employment: Skills, Structure, and Policy in EU Transition Economies. *Journal of risk and financial management*, *19*(6), 395. https://doi.org/10.3390/jrfm19060395
Schätzlein, L., Schlütter, D., & Hahn, R. (2023). Managing the external financing constraints of social enterprises: A systematic review of a diversified research landscape. *International Journal of Management Reviews*, *25*(1), 176-199. https://doi.org/10.1111/ijmr.12310
Siddiqi, K. O., Tanchangya, T., Islam, N., Islam, F., & Islam, M. S. (2026). Unpacking Green Orientation, Green Technology Dynamism and Perceived Environmental Performance in an Emerging Economy: Insights From SEM and NCA Approaches. *Business Strategy and the Environment*. https://doi.org/10.1002/bse.71100
Siri, A. (2025). Green leadership and sustainable business performance: evidence from southeast asian SMES. *International Journal of Economic Literature*, *2*(10), 1061-1077.
Somova, H. (2024). Do business success barriers impede the readiness of Philippine Small and Medium Enterprises in'greening'their business?. *Available at SSRN 4831705*. https://doi.org/10.2139/ssrn.4831705
Wacławik, Ł., Tora, J., Roszko-Wójtowicz, E., Koszewska, M., & Okręglicka, M. (2025). Public Attitudes Towards State Support for Renewable Energy Business: Demographic and Socioeconomic Differences in the Perception of Sustainable Energy Policies. *Sustainability*, *17*(24), 10978. https://doi.org/10.3390/su172410978