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A MICRO BUSINESS DEVELOPMENT MODEL THAT UTILIZES GREEN INNOVATION ANTECEDENT VARIABLES TO ENHANCE SUSTAINABLE PERFORMANCE IN MSMES LOCATED IN BINTAN REGENCY

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ABSTRACT

The aims of this research is to know, understand, and test the influence and interrelationship of the antecedent factors of green innovation on sustainable performance. This type of research is verifiable descriptive research. This research was conducted on 364 marine-based MSMEs in Bintan Regency. Data collection was carried out using a questionnaire with a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The conceptual model is presented in Figure 1 and verified using the PLS (Partial Least Square) method with SmartPLS 3.0 software. The results of the study show that first, there is a positive and significant relationship between technological capabilities and green innovation. Organizations with strong technological capabilities are better able to adopt environmentally friendly practices, which support more efficient product and process development. Second, CSR has a positive influence on green innovation. Companies that are active in CSR practices tend to be more open to innovations that support sustainability. However, not all CSR initiatives contribute significantly, especially if they are not grounded in a sincere commitment to sustainability. Third, green innovations have been proven to have a positive and significant effect on sustainable performance. Organizations that implement green innovation not only meet environmental demands but also improve operational efficiency and reputation. However, the success of green innovation must be integrated with the overall business strategy to achieve maximum impact. Fourth, the effect of moderation of environmental dynamics is not significant on sustainable performance. This indicates that external changes may not be strong enough to affect the relationship between green innovation and sustainable performance, and many organizations have not fully adapted to those dynamics.

Keywords: Technological Capabilities; Corporate Social Responsibility (CSR); Green Innovation; Environmental Dynamics; Continuous Performance

INTRODUCTION

Bintan has the nickname of the Island of Diamonds, because it is famous for its beautiful beaches, rich historical sites, amazing fauna, many Chinese temples, seafood restaurants. Unlike Tanjungpinang City, Bintan Regency has superior commodities in the form of coconut and coffee which are widely found on the coast. Bintan Regency has a variety of processed seafood products such as: fish and cuttlefish brains, gonggong crackers, gonggong meatballs and gonggong nuggets, gonggong sauce, handicrafts from seafood, shredded meat, and others. The number of Maritime MSMEs that have sprung up causes environmental problems, especially because of the production waste produced. Environmental problems in Bintan Regency include low awareness of entrepreneurs in industrial waste management, inadequate human resource competence, and supervision and control of potentially polluting activities/businesses that are not optimal. Due to increasing environmental problems, companies are encouraged to implement an environmentally friendly orientation, one of which is realized through green innovation. The popularity of these innovations soars in tandem with the serious threat of global warming and environmental damage (Baeshen et al., 2021; Li et al., 2023; Yahya et al., 2022).

Green innovation is any form of creativity that produces solutions to reduce adverse environmental impacts or promote a more sustainable use of natural resources and energy. Green innovation plays a crucial role in achieving sustainable development (Yahya et al., 2022; Chen YS., 2008; Ridha et al., 2024; Tseng ML et al., 2013; Rakhmawati et al., 2019; Kunapatarawong R et al., 2016; Wang H et al., 2021; Aguilera-Caracuel et al., 2013; Albort et al., 2016; Budi et al., 2021; Fandy Kusuma A et al., 2024; Mariawati et al., 2024).

Some of the driving factors (antecedents) of green innovation include: market, stakeholder pressure, technology, collaboration and networking, organizational level, social, cultural, and ethical factors. Technology capabilities and CSR/Corporate Social Responsibility are the driving factors that affect green innovation.

Companies need technological capabilities to build their resource competencies for green innovation. High technological capabilities encourage green innovation and allow for the efficiency of the production process so that it ultimately reduces production costs and increases competitiveness (Li et al., 2023; Yahya et al., 2022; Ridha et al., 2024; Tseng ML et al., 2013; Kunapatarawong R et al., 2016; Aguilera-Caracuel et al., 2013; Albort et al., 2016; Budi et al., 2021; Fandy Kusuma A et al., 2024; Mariawati et al., 2024).

Companies that implement CSR can also encourage the implementation of green innovation because it can build cooperative relationships with stakeholders, which in turn leads to the exchange of information and competitive knowledge (Li et al., 2023 ; Baeshen Y et al., 2021 ; Yahya et al., 2022; Chen YS., 2008; Ridha et al., 2024; Tseng ML et al., 2013; Rakhmawati et al., 2019; Kunapatarawong R et al., 2016; Wang H et al., 2021; Aguilera-Caracuel et al., 2013; Albort et al., 2016; Budi et al., 2021; Fandy Kusuma A et al., 2024; Mariawati et al., 2024).

Current research highlights more green innovations in large companies than MSMEs, so analysis related to green innovation in MSMEs is still limited. For example, research by Baeshen et al., Budi et al., Mariawati et al., Firdausyi et al., and Ridha et al. which examined the drivers of green innovation in SMEs. This is due to various obstacles faced by MSMEs in implementing green innovation, such as lack of awareness and understanding, the assumption that implementation costs are a burden rather than an investment, limited capital and experts, and a low understanding of the benefits (Yahya et al., 2022 ; Budi et al., 2021 ; Fandy Kusuma A et al., 2024 ; Mariawati et al., 2024).

Although studies on green innovation and its impact on sustainable performance in MSMEs have grown, there are still a number of research gaps that have not been widely explored, especially in the local context in Indonesia. Most previous studies have focused on urban areas or developed areas such as Java and Bali, while areas such as Bintan Regency in the Riau Islands are still relatively rarely touched by similar studies.

In addition, the approach used in various studies tends to be partial, only testing the relationships between variables without developing an integrated micro business development model based on the antecedent of green innovation. Contextual aspects such as the influence of local culture, regional policies, and characteristics of coastal communities have also not been widely studied as mediation or moderation variables that can strengthen the relationship between green innovation and sustainable performance. Not only that, most of the previous studies were cross-sectional, so they were less able to capture the long-term dynamics of the implementation of green innovations.

Another important gap is the lack of systematic mapping of the level of readiness or green readiness of MSMEs in adopting environment-based innovations, even though this is very important to ensure the effectiveness of the proposed policies and strategies.

Therefore, this research is here to fill this gap by building a micro business development model based on the antecedents of green innovation that is contextual and applicable to MSMEs in Bintan Regency.

LITERATURE REVIEW

Technology Capabilities

Technological capability is understood as the ability of an organization to master, utilize, adapt, develop, and transform technology so as to produce added value and competitive advantage (AbdManap et al., 2023). This concept includes aspects of tangible assets (machinery, equipment, infrastructure) and intangible assets (knowledge, HR skills, culture of innovation, and management systems). This statement is in line with classical and contemporary literature that emphasizes the cumulative and multi-dimensional nature of technological capabilities.

Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) is a concept in modern management that emphasizes that the company is not only responsible to its shareholders to make profits, but also has broader responsibilities to *stakeholders* such as employees, consumers, local communities, government, and the environment. Thus, CSR is a form of the company's commitment to operate ethically, transparently, and sustainably by paying attention to the balance between economic, social, and environmental aspects. Basically, CSR arises from the awareness that business activities always have an impact, both positive and negative, on society and the environment. If the negative impact is not managed properly, it can damage the company's reputation, cause social resistance, and even hinder business sustainability. Therefore, CSR is a strategic mechanism for companies to reduce risks, build a positive image, increase public trust, and make a real contribution to sustainable development (*sustainable development*) (Potter & Kramer 2006).

Green Innovation

Green innovation or often called green innovation / eco-innovation is a form of innovation that focuses on the creation, development, and application of new products, processes, services, or management methods that not only aim to improve the company's economic performance, but also pay attention to sustainability aspects by minimizing negative impacts on the environment. In other words, green innovation is a systematic effort to integrate environmentally friendly principles into the innovation process so that it can produce more efficient, sustainable solutions, and provide added value for both companies and the wider community.

In the context of modern management, green innovation is part of a business strategy oriented to the triple bottom line: profit, people, and planet. Through this approach, the company not only strives to create products that are competitive and financially profitable, but also ensures that its production process is energy-efficient, reduces waste, utilizes environmentally friendly raw materials, and supports the creation of a better quality of life for the community (Zhang et al., 2020).

Dynamics of the Environment

Environmental dynamics is a term that describes the changes, interactions, and reciprocal relationships that continue to take place between the components of the environment, both biotic (living things) and abiotic (non-living elements), as well as the influence of human activities in them. This dynamic occurs because the environment is not a static system, but a system that is always changing, adapting, and influencing each other over time. In general, environmental dynamics include all forms of change that arise due to natural factors and human activities. Natural factors can be natural disasters, climate change, erosion, or other natural ecological processes. Meanwhile, human factors include industrial activities, urbanization, deforestation, exploitation of natural resources, and environmental pollution. The interaction between the two will create environmental conditions that are always dynamic, sometimes causing positive impacts in the form of creating ecosystem balance, but often also giving rise to negative impacts such as environmental damage, decreased quality of life, and threats to sustainability (Tue, F., Lasulika, C. T., Hasim, H., & Nurfaika, N., 2024).

Kinerja Berkelanjutan

Sustainable performance or in international terms is called *sustainable performance*, is a concept of performance of organizations, companies, and individuals that not only focuses on achieving short-term results (for example, financial gains), but also pays attention to long-term sustainability by integrating economic, social, and environmental aspects in all its activities. Sustainable performance is a form of performance that is able to maintain balance between current needs and the ability to meet the needs of future generations. This is in line with the principle of *sustainable development*, which is development that seeks to meet current needs without sacrificing the ability of future generations to meet their needs (Zhou et al., 2023).

Research Framework

From the formulation of the problem and theoretical basis above, it can be said that there is an influence of independent variables, namely ease of use, perception of benefits and electronic trust, as well as satisfaction of use as dependent variables, which are described as follows:

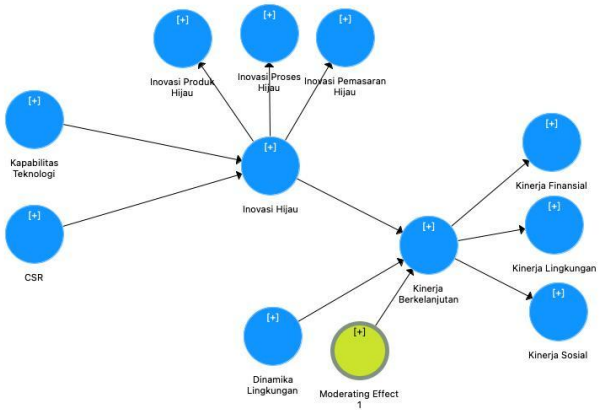


Figure 1 Research Framework

Hypothesis

The hypothesis in this study is:

1. H1: It is suspected that there is a significant positive relationship between technological capabilities and green innovation.
2. H2: It is suspected that there is a significant positive relationship between

Corporate Social Responsibility (CSR) and green innovation.

3. H3: It is suspected that there is a significant positive relationship between green innovation and sustainable performance.
4. H4: It is suspected that the moderation of environmental dynamics has a significant effect on sustainable performance.

RESEARCH METHODOLOGY

This type of research is verifiable descriptive research. This research was conducted on 364 marine-based MSMEs in Bintan Regency. Data collection was carried out using a questionnaire with a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The variables used include: technology capability, CSR / Corporate Social Responsibility, environmental dynamics, green innovation and sustainable performance. The technological capability consists of four indicators, referring to Cuerva et al. (2014). CSR is focused on four indicators, adopted from Abbas (2020). Furthermore, environmental dynamics consisted of five indicators referring to Azadegan et al. (2013), and Chan et al. (2016). Then, the green innovation variable with ten indicators and is classified into green product innovation, green process innovation and green marketing innovation, based on Cheng et al. (2014), Chan et al. (2016), Seman et al. (2019), and El-Kassar et al., (2019). Finally, sustainable performance consists of ten indicators representing financial performance, environmental performance, and social performance, adopted from Dania et al. (2019), Seman et al. (2019), as well as El-Kassar et al., (2019).

The research hypothesis testing was conducted using the Structural Equation Model (SEM) approach based on Partial Least Square (PLS). PLS is a structural equation model (SEM) based on components or variants. Structural Equation Model (SEM) is one of the fields of statistical study that can test a series of relationships that are relatively difficult to measure simultaneously(Hair et al., 2019). According to(Ghozali, 2020)*Structural Equation Model*(SEM) based on Partial Least Square (PLS) is an alternative approach that shifts from the covariance-based SEM approach to the variance-based one. Covariance-based SEM generally tests causality or theory while PLS is more of a predictive model. However, there is a difference between covariance-based SEM and component-based PLS in the use of structural equation models to test theories or develop theories for prediction purposes. The path analysis that will be used in this study is the Structural Equation Model (SEM) partial least squares (PLS) using Smart PLS 3.3 software.

RESULTS AND DISCUSSION

The research was conducted using an online survey that was distributed to the target respondents. Data screening is carried out to detect problematic respondents, according to Hair (2019) the detection of respondent data needs to be done to avoid response bias, for example respondents who fill in the origin or respondents who fill in with certain patterns. From the distribution of questionnaires carried out, there were 364 respondents who filled out the questionnaire completely and met the criteria. Respondent profile data can be seen in the following table:

Table 1.Respondent Profile

Description	Information	Sum	Percentage
Gender	Pria	112	30.8%
	Wanita	252	69.2%
Age	<25 Tahun	49	13.5%
	25-35 Tahun	96	26.4%
	36-45 Tahun	100	27.6%
	> 45 Tahun	119	32.7%
Education	SD	9	2.5%
	SMP	52	14.3%
	SMA	128	35.2%
	D3	102	28%
	S1	73	20.1%
Length of Business Operation	<1 Year	52	14.3%
	1-3 Year	137	37.6%
	>4 Year	175	48.1%
Scale of Efforts	<300 Juta/ Year	304	83.5%
	300-2,5 billion/Year	60	16.5%

Source: Processed Primary Data, 2025

This table provides a clear picture of respondent demographics, length of business, and business scale. It can be seen that the majority of respondents are women, over 45 years old, and have education at the high school level or higher. Most businesses are small-scale and have been operating for more than 4 years, indicating stability in the business sector studied.

Jenis kelamin Pria (30.8%): Dari total responden, 112 orang adalah pria. Angka ini menunjukkan bahwa pria merupakan kelompok yang lebih kecil dibandingkan wanita dalam survei ini. Jenis kelamin Wanita (69.2%): Sebagian besar responden, yaitu 252 orang, adalah wanita. Ini menunjukkan dominasi wanita dalam populasi yang diteliti.

Age <25 (13.5%): Only 49 respondents were under the age of 25, indicating that the younger age group is underrepresented. Age 25-35 (26.4%): This age group consists of 96 people, indicating that young adults are quite significant in this survey. Age 36-45 (27.6%): With 100 respondents, this group is also quite large, indicating that middle age participates well. Age >45 Years (32.7%): This group was the largest with 119 respondents, suggesting that older people had strong representation in the businesses studied.

Pendidikan SD (2.5%): Hanya 9 responden yang have an elementary education equivalent, indicating that there is very little primary education among respondents. Junior high school education (14.3%): With 52 respondents, this indicates there is a small proportion who have a lower secondary education. High school education (35.2%): Senior secondary education was the most with 128 respondents, indicating that many people have a higher education than junior high school. D3 Education (28%): A total of 102 respondents had a diploma education, indicating a significant proportion. S1 Education (20.1%): With 73 respondents, undergraduate education is also quite represented, although not as much as high school or D3.

Length of Operation <1 Year (14.3%): Only 52 respondents were just starting their business, indicating that there were few new ventures. 1-3 Years (37.6%): This group, with 137 respondents, shows a lot of businesses that have been running for several years. Above >4 Years (48.1%): Most of the respondents, 175 people, owned a business that had been in operation for more than 4 years, showing stability in their business.

Business scale <300 Million/Year (83.5%): This is the majority category with 304 respondents, indicating that most businesses operate on a small scale. Business Scale 300-2.5 Billion/Year (16.5%): Only 60 respondents were in the medium business category, indicating that larger business scales are very smallvalid for use in research and can be... used for further analysis.

Testing Measurement Model

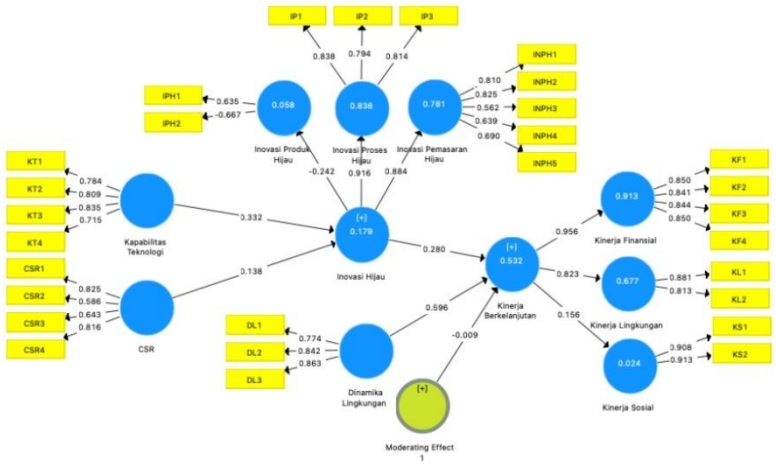
Data analysis was carried out using PLS SEM through the SMART PLS Version 3.0 software. The testing process is carried out in stages including internal consistency reliability, discriminant validity and convergent validity. The results of the internal consistency reliability test were carried out using Cronbach Alpha. From the data analysis carried out, the results were obtained as in the following table:

Table 2. Reliable Construct Testing and Validity

Variabel	Cronbach's Alpha	Composite Reliability	(AVE)
CSR	0.740	0.813	0.526
Environmental Dynamics	0.768	0.866	0.684
Green Innovation	0.825	0.876	0.548
Technology Capabilities	0.794	0.866	0.619
Continuous Performance	0.863	0.898	0.597
Moderating Effect 1	1.000	1.000	1.000

Source: Processed Primary Data, 2025

The test results in the table above show a reliability value above 0.70. Hair (2017) stated that a cronbach alpha score above 0.70 is in the very good category. Thus, as a whole, it can be concluded that all variables pass the internal consistency reliability test. The results of the convergent validity test in the table above show an outer loading value above 0.70 and an AVE value above 0.50. So that it can be concluded that each variable and its indicators have very good convergent validity. The convergent validity test was carried out by looking at the indicator value (outer loading) and the AVE (average variance extracted) value. Hair (2017) stated that the standard of an excellent outer loading value if it has a score above 0.70 and the standard AVE value above 0.50 has very good criteria. The results of the convergent validity test can be seen in the following image:



Source: Processed Primary Data, 2025

Discriminant validity testing using the Fornell-Larcker criteria (Hair 2017) showed the highest cross loading correlation value. The test results can be seen in the following table.

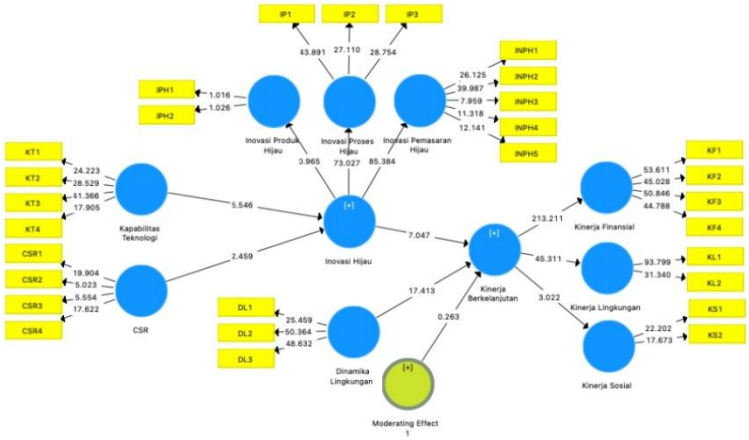
Table 3. Discriminatory Validity Testing

	CSR	Dinamika Lingkungan	Inovasi Hijau	Kinerja Berkelanjutan	Moderating Effect 1
CSR	0.725				
Environmental Dynamics	0.447	0.827			
Green Innovation	0.319	0.290	0.740		
Technology Capabilities	0.721	0.678	0.452	0.773	
Moderating Effect 1	-0.046	-0.118	0.057	-0.064	1.000

Source: Processed Primary Data, 2025

Structural Model Evaluation

The next step after the evaluation of the measurement model is the evaluation of the structural model to test the hypothesis proposed earlier. This analysis was carried out by examining the direct and indirect influence between the hypothesized variables. The following are the results of the PLS-SEM analysis.



Source: Processed Primary Data, 2025

The results of the complete hypothesis testing can be seen in the following table.

Table 4. Hypothesis Testing Results

Hipotesis	Original Sample	Standard Deviation	T Statistics	P Values
Technology Capabilities -> Green Innovation	0.332	0.060	5.546	**0.000**
CSR -> Green Innovation	0.138	0.056	2.459	**0.014**
Green Innovation -> Sustainable Performance	0.280	0.040	7.047	**0.000**
Moderating Effect 1 -> Continuous Performance	-0.009	0.034	0.263	**0.792**

Source: Processed Primary Data, 2025

Hypothesis 1 Technology Capability -> Green Innovation. These results show that there is a significant positive relationship between technological capabilities and green innovation. A high Statistical T Value (5.546) and a very low P Value (0.000) indicate that this hypothesis is accepted. This means that the increase in technological capabilities has a great effect on increasing green innovation.

Hypothesis 2 CSR -> Green Innovation. These results show that Corporate Social Responsibility (CSR) and green innovation are also significant, although weaker than the previous hypothesis. The T Value of Statistics 2.459 and the P Value of 0.014 indicate that this hypothesis is accepted. This means that CSR can contribute to the increase in green innovation, although the effect is not as great as the capabilities of the technology.

Hypothesis 3 Green Innovation -> Sustainable Performance. These results show that green innovation has a positive and significant effect on sustainable performance. A very high T Statistic (7.047) and a very low P Value (0.000) indicate that this hypothesis is accepted. This shows that green innovation is an important factor in improving sustainable performance.

Hypothesis 4 Moderating Effect 1 -> Sustainable Performance. These results suggest that the effect of moderation is not significant. A low T Value (0.263) and a high P Value (0.792) indicate that this hypothesis is not accepted. This means that the moderating effect 1 does not have a significant impact on sustainable performance.

DISCUSSION

The results of the study found that there is a significant positive relationship between technological capabilities and green innovation. Technology capabilities include the resources, skills, and infrastructure that an organization has to

develop and implement new technologies. In this context, organizations with strong technological capabilities are better able to adopt innovative practices that are environmentally friendly, such as more efficient product development and low-waste production processes. Previous studies have also shown similar results. For example, research by (Zhang et al., 2020) found that organizations with high technological capabilities tend to be more innovative in creating eco-friendly solutions.

They emphasized the importance of investing in research and development (R&D) to encourage green innovation. On the other hand, research by Smith and Jones (2021) shows that not all technological capabilities contribute to green innovation. The study found that excessive focus on advanced technology without considering sustainability aspects can result in negative impacts. They suggest that organizations need to strike a balance between technology development and sustainability goals.

The results of this study show that there is a positive and significant relationship between Corporate Social Responsibility (CSR) and green innovation. CSR encompasses various initiatives taken by companies to contribute to the well-being of society and the environment. In the context of green innovation, CSR can encourage companies to adopt more sustainable practices, such as the use of environmentally friendly materials and emission reduction. This shows that companies that are active in social responsibility tend to be more open to innovations that support sustainability.

Research by Lee and Shin (2019) also found that CSR has a positive relationship with green innovation. They emphasize that companies that are proactive in CSR tend to gain the trust of consumers, which in turn encourages innovation to meet environmental expectations. In contrast, a study by Brown and Dacin (2020) shows that the effects of CSR on green innovation are not always positive. They found that some companies that adopt CSR solely for the sake of image without a real commitment to sustainability often do not result in substantial innovation.

The results of this study show that green innovation has a positive and significant influence on sustainable performance. Green innovation includes the development of products, services, and processes that reduce environmental impact and promote sustainability. The results of this study show that organizations that implement green innovations can not only meet environmental demands, but can also improve their operational efficiency and reputation in the market. Thus, green innovation not only contributes to environmental sustainability, but also provides competitive advantages. Research by (Liu et al., 2024) supports these findings, showing that green innovation contributes significantly to sustainable performance. They emphasize that companies focused on green innovation tend to have lower operating costs and are better able to attract environmentally conscious customers. On the other hand, research by Garcia and Mendez (2020) shows that not all types of green innovations directly improve sustainable performance. They found that if green innovation is not integrated with the overall business strategy, the impact can be minimal or even negative on long-term performance.

The results show that the effect of moderation of environmental dynamics is not significant on sustainable performance. Environmental dynamics include changes in external conditions, such as government policies, market conditions, and public perceptions of environmental issues. The insignificance of these moderation effects can be interpreted that while environmental conditions may affect the way organizations operate, they are not strong enough to affect the relationship between green innovation and sustainable performance. This may be due to other factors that are more dominant in the context of the research or that the organization has not fully adapted to those dynamics. Research by Johnson and Smith (2022) also found that the moderation effects of external factors, such as environmental policies, are not always significant. They point out that many organizations may not have responded effectively to external changes, so there is no visible influence on ongoing performance. In contrast, studies by Lee and Chen (2021) show that environmental dynamics can have a significant impact in certain situations, especially in industries that are heavily affected by environmental regulations. They found that organizations that are proactive to environmental change tend to benefit more in sustainable performance.

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CONCLUSION

The results of this study show that :

1. Green Technology and Innovation Capabilities: There is a positive and significant relationship between technological capabilities and green innovation. Organizations with strong technological capabilities are better able to adopt environmentally friendly practices, which support more efficient product and process development. Previous research has also supported these findings, although there have been warnings that overfocusing on advanced

technologies without considering sustainability can be potentially detrimental.

2. Corporate Social Responsibility (CSR) and Green Innovation: This study found that CSR has a positive influence on green innovation. Companies that are active in CSR practices tend to be more open to innovations that support sustainability. However, not all CSR initiatives contribute significantly, especially if they are not grounded in a genuine commitment to sustainability.
3. Green Innovation and Sustainable Performance: Green innovation has been proven to have a positive and significant effect on sustainable performance. Organizations that implement green innovation not only meet environmental demands, but also improve operational efficiency and reputation. However, the success of green innovation must be integrated with the overall business strategy to achieve maximum impact.
4. Effects of Moderation of Environmental Dynamics: Research shows that the moderation effect of environmental dynamics is not significant on sustainable performance. This indicates that external changes may not be strong enough to affect the relationship between green innovation and sustainable performance, and many organizations have not fully adapted to those dynamics. Organizations need to increase investment in research and development (R&D) to strengthen technological capabilities. This can help in creating and adopting innovative solutions that are more environmentally friendly. Furthermore, the implementation of Sustainable CSR must ensure that CSR initiatives are not only symbolic but also have a tangible impact on sustainability. Active engagement in practices that support sustainability can increase consumer confidence and encourage green innovation. Organizations must integrate green innovation into their overall business strategy. This approach will ensure that green innovation not only serves as a response to environmental demands, but also as a key driver in achieving sustainable performance. Business actors need to be more proactive in understanding and adapting to environmental dynamics. Building an effective monitoring system to identify external changes can help them adjust strategies and improve sustainable performance.

The results of this study provide important implications for business actors and policymakers. Organizations must strengthen their technological capabilities as a strategic step to increase green innovation. This could be through increased investment in R&D, employee training, and collaboration with research institutions. The results of this research provide insight for companies to be more serious in implementing CSR programs that not only aim to improve the image of business actors, but also to produce sustainable innovations. Management needs to ensure that CSR initiatives are integrated with innovation strategies to achieve more effective results. The results of the study also emphasized the importance for business actors to adopt green innovations as part of their strategy. Business actors must ensure that environmental innovation is not only seen as a social obligation, but as an opportunity to improve performance and competitiveness. Investing in green technology and employee training to support these innovations is key to success. The results of further research imply that not all moderation factors will give the expected results. Therefore, it is important for researchers and practitioners to delve deeper into variables that can serve as moderation in certain contexts. Organizations need to consider other factors that may be more relevant and influential in improving sustainable performance.

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