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The Role of Stakeholder Pressure in Enhancing Green Innovation Performance: The Moderating Role of Green Culture

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ABSTRACT

The issue of sustainability has received much attention from scholars, experts, and the community, along with the need for a more environmentally-friendly business practice. The purpose of this study is to analyze how and when stakeholder pressure can lead to green innovation performance in Indonesian MSMEs, mainly in several provinces on Java Island. We consider the mediating role of green HRM to bridge the relationship, as well as the moderating role of green culture. Using quantitative approach, we distributed online questionnaire towards 280 MSMEs actors determined by purposive sampling method. The data obtained is analyzed using Structural Equation Modeling with Partial Least Squares. The findings indicate that stakeholder pressure can influence green environmental performance both directly and indirectly through the mediating role of GHRM. In addition, green culture is also found to moderate the influence of stakeholder pressure on green innovation performance, that the relationship is stronger when green culture in the MSMEs is held high.

1. INTRODUCTION

Today environmental issues such as global warming have become a phenomenon of international concern. Recent studies have mentioned that an increase in global average temperature occurs as a result of human and business activities that produce greenhouse gases, such as carbon dioxide (CO_2) and methane (CH_4) [1]. Climate change from firms' increased activity also leads to potential natural disasters, rising sea levels, and extreme weather patterns. These impacts are not only limited to environmental damage, but also affect various aspects of human life. The disrupted balance of ecosystems directly affects the economic and social resilience of societies [2]. The current environmental crisis is becoming increasingly real, and as a direct contributor, companies are required to build up efforts to face these conditions through sustained innovative measures [3].

The degradation in environmental conditions leads stakeholders to monitor corporate activities that can affect the environment [4]. Stakeholders, which consists of consumers, investors, governments, or other community groups that can influence and influence organizational activities, play a crucial role in driving firms change towards sustainable innovation [5]. This is due to the reason that stakeholders have the power to put pressure on organizations to move towards more sustainable practices [6], including urging firms to implement greener innovation in their business activities. For example, in practice of tourism business, sustainability runs tourism to balance on the environment, social, culture, and economy [7].

One of the stakeholder pressures comes from consumers who are increasingly aware of environmental issues and problems [8]. This pressure is driving firms to reduce their carbon footprint, use more environmentally friendly raw materials, and adopt more sustainable business practices. Investors are also increasingly prioritizing firms that are committed to sustainable innovation, as they are aware that environmental factors can have a direct impact on firms' long-term performance. Stakeholder pressure has an important role in influencing how companies can respond to carbon emission disclosures [9]. Stakeholder engagement can influence a company's decision to invest in green initiatives and implement better governance to reduce carbon emissions, while adopting more sustainable business practices. In this context, the role of stakeholders becomes crucial in forcing firms not only to adapt to environmental challenges, but also to be proactive agents of change in creating sustainable innovation [1]. Therefore, an in-depth understanding of how these pressures from stakeholder can lead to sustainable innovation performance becomes crucial in responding to and addressing global environmental challenges.

To respond to the complexity of increasing environmental challenges, the role of green innovation is becoming highly strategic and crucial [10]. These innovations open the door to solutions that are not only effective to deal with environmental problems, but also have long-term durability. The scope of green innovation is very broad, including the development of environmentally friendly technologies, the application of business practices that support sustainability, and the stimulation of creative thinking to reduce the environmental impact in a comprehensive way [11]. These innovations

involve the creation, improvement, and application of technologies that are not only efficient in the use of resources, but also have minimal impact on the environment [12].

In this regard, environmentally-conscious business practices become an integral part that can lead to green innovation [13]. Firms and organizations in various sectors have begun to transform their operational activities to integrate business practices that support sustainability. This covers resource efficiency, responsible waste management, and the implementation of fair and sustainable practice of GHRM. By adopting sustainable business practices, firms not only have a positive impact on the environment, but also enhance their reputation and market attractiveness. The performance of green innovation relates to the social company and ethical environmental responsibility. In other words, green innovation is not only a business necessity, but also a form of investment for the future of the earth that mankind lives on.

A study highlights the global necessity of continuous business performance, especially in light of recent economic challenges, where environmentally friendly measures have become paramount [14]. Along with researches of Li et al. [15] and Guo and Wang [16], it underscores the importance of promoting green innovation, particularly in energy-intensive companies, as a critical step toward a lower-carbon economy. These studies explore various factors influencing green innovation, such as environmental regulations and the theory of planned behavior, and identify how sustainable HRM practices mediate the impact of sustainable transformational leadership on innovation. However, while these studies recognize the importance of stakeholder pressure, they do not specifically analyze how and when this pressure leads to green innovation. There remains a gap in the literature regarding the mechanisms through which stakeholder pressure drives green innovation, particularly in the context of green culture and GHRM practices.

Departing from a number of existing literatures, this study attempts to highlight the role of stakeholder pressure in improving green innovation performance by considering the moderation of green culture and the mediation of GHRM practices. It fills the gap which exists in understanding how stakeholder pressure specifically drives green innovation performance in the presence of a green culture and GHRM practices. Furthermore, this study analyzes how and when pressure from various stakeholders drives firms' decisions to improve green innovation performance, which have not yet addressed in the literatures. Focusing on green innovation performance makes an important contribution to understanding the concrete impact of stakeholder pressure in the form of more sustainable innovation practices.

This study aims to address several key issues: (1) the role of stakeholder pressure in improving green innovation performance, both directly and through GHRM's mediating role; (2) how green culture moderates the connection between stakeholder pressure and green innovation performance; and (3) how this moderation influences the sustainability of innovation at the organizational level.

2. LITERATURE REVIEW

2.1 Stakeholder pressure and green innovation performance

In the context of business and management, stakeholders refer to individuals or groups who have interests or can be influenced and influence decisions or activities of an organization. These parties may include employees, customers, shareholders, governments, communities, and other parties [17]. Stakeholder pressure comes when stakeholders express specific wishes or demands against the organization [18]. This pressure can come from various aspects, such as ethical, environmental, social, or economic issues. Interested parties often act as catalysts for change, encouraging organizations to adopt more sustainable or responsible practices.

Pressure from stakeholders, especially those related to environmental issues, can encourage firms to improve their green innovation performance. Green innovation performance includes the ability of a firm to produce and implement environmentally friendly innovations [19]. These aspects may include developing products with a lower carbon footprint, more energy efficient production processes, or implementing sustainable technologies. It is important for firms to respond to these pressures, considering that organizations that can balance stakeholder needs with environmental sustainability will be able to achieve competitive advantage. Additionally, increased awareness of environmental issues among consumers and investors can provide incentives for companies to develop and market products that are considered more environmentally friendly [20].

Achieving green innovation performance is not only a response to stakeholder pressure, but also a long-term investment in sustainability. Firms that integrate green innovation in their business strategy can not only meet stakeholder demands, but also create new opportunities, increase operational efficiency, and reduce environmental risks [21]. Therefore, in facing pressure from various stakeholders, firms can turn challenges into opportunities by combining responsive actions with green innovation performance. In an ever-changing business environment, awareness and response to pressure from stakeholders on environmental issues can be translated into achieving green innovation performance as one of the company's proactive steps to achieve business sustainability.

The relationship between stakeholder pressure and green innovation performance is well-documented. According to Jayaraman [10], stakeholder pressure has been shown to lead to increased green innovation performance in SMEs, particularly in Malaysia. This is consistent with findings from Zhang et al. [22] which indicate that firms that addressing stakeholder pressure are better positioned to develop green innovation performance. The hypothesis proposed is as follows:

H1: Stakeholder pressure positively influences green innovation performance.

2.2 Stakeholder pressure and green human resource management

By definition, green HRM refers to the integration of environmentally friendly practices and principles into various human resource management functions in an organization [23]. Green HRM practices involve aligning HR policies and processes with the organization's broader sustainability goals. Yong et al. [24] stated that there are several components in the practices of GHRM, for example green mobilization and option, green exercise and development, the management of green performance, and green employee engagement.

Basically, green HRM exists to ensure and mobilize individuals in organizations to have values and participate in environmentally friendly activities in every job or task they carry out [25]. Currently, green HRM practices are seen as one answer to the emergence of pressure from stakeholders who demand firms to raise the practice of sustainable and environmentally-friendly business [26]. Existence of pressure from various parties such as consumers, investors, government, and society mean that organizations need to change their business direction, priorities, values, and operational practices to adapt to these pressures, one of which is through implementing green HRM practices [27].

Increasing stakeholder pressure on sustainability and environmental responsibility is positively correlated with the adoption and implementation of environmentally friendly HRM practices within companies [28]. As organizations face increasing pressure from stakeholders, including consumers, investors, regulators, and society, they are likely to integrate environmentally friendly principles into human resource management functions [27]. This integration includes environmentally friendly HRM practices such as environmentally conscious recruitment, employee training on sustainability, and incorporation of sustainability goals in performance management [29]. This study predicts that higher levels of stakeholder pressure may be associated with a greater likelihood for organizations to embrace and embed green HRM practices into their overall business strategy.

The study from Rimbawanto et al. [30] found that stakeholder pressure significantly drives the implementation of green HRM practices in Indonesia. In addition, Shahzad et al. [31] found similar results within the context of SMEs. This pressure often includes demands for more sustainable practices and better environmental performance, and it reflects growing trends among stakeholders who prioritize environmental issues. The hypothesis proposed is as follows:

H2: Stakeholder pressure positively influences green HRM.

2.3 Green HRM and green innovation performance

Green HRM is an approach in HRM that places sustainability and environmental responsibility as key elements in its policies and practices [32]. In the context of green HRM, employee recruitment and selection are directed at individuals who have environmental awareness or experience in sustainable business practices. Training and development programs are also designed to increase environmental awareness and provide skills that support sustainable business practices, such as energy efficiency and waste management. Apart from that, green HRM also encourages work flexibility policies, such as working from home to reduce carbon emissions and create a more environmentally friendly work environment. Evaluation of employee performance in green HRM includes sustainability elements, such as achieving sustainable targets or contributing to sustainability initiatives [25].

Green HRM practices that run optimally in organizations can help manage waste and resources efficiently, as well as create an organizational culture that supports sustainability values [33]. Overall, Hameed et al. [23] revealed that green HRM not only changes technical practices in managing human resources, but also plays a strategic role in directing organizations towards sustainability, creating long-term value for firms, employees, and society as a whole, including through achieving green innovation performance [6]. When employees have values that align with the organization, they are more likely to bring a sustainability and pro-environment mindset to work. Employees who have knowledge and enthusiasm for environmentally friendly activities tend to have the potential to contribute ideas and solutions that are on line with the environmental goals organization [34]. This alignment skills and values can enhance firm capacity for green innovation. Additionally, actively engaged employees are more likely to contribute innovative ideas for sustainable practices and products [35]. Environmentally-friendly HRM practices that foster involvement and collaboration can support environmentally friendly innovation performance in organizations.

In this study, green HRM is predicted to lead to green innovation performance by developing a workforce that has the skills, mindset, and motivation to contribute to environmentally friendly practices. Begum et al. [36] demonstrated how green HRM can affect green innovation performance of SMEs in Pakistan. This is due to the fact that the integration of sustainability into HR practices creates opportunities for innovation and fosters a culture where employees actively contribute to the development of environmentally friendly solutions and products [37]. This will lead the firm as a leader in green innovation in its industry.

H3: Green HRM positively influences green innovation performance.

2.4 The mediating role of green HRM

Green innovation refers to the development and application of innovation in various sectors aimed at reducing negative impacts on the environment and increasing sustainability [13]. This practice essentially seeks to create more environmentally friendly solutions, support ecological sustainability, and promote resource efficiency. Meanwhile, green innovation performance is a measure of the extent to which an organization is successful in adopting and implementing green innovation [38]. Achieving this performance is seen from the effectiveness of implementing sustainable practices, developing environmentally friendly products, and efficiency in resource use [31].

Currently, there are various aspects that can influence green innovation performance, such as pressure from stakeholders. Pressure from stakeholders, including consumers who are increasingly environmentally conscious, investors, competitors, government, and society can encourage organizations to achieve green innovation performance in response to their demands [39]. In this case, green HRM is seen as a practice that can bridge the relationship between stakeholder pressure and green innovation performance. Firms can implement green HRM to translate pressure from external parties into concrete strategies in the domain of sustainable human resources.

Green HRM ensures sustainability is embedded in HR policies, from recruitment processes to performance management. This integration aligns employees with the organization's green values, cultivating a workforce committed to environmental responsibility [25]. In this study, green HRM is predicted to act as a mediator by responding to stakeholder pressures into HR practices that encourage sustainability in organizations. The study by Shahzad et al. [30] highlights that stakeholder pressure significantly drives the adoption of green HRM practices in Indonesia, which, in turn, enhances green innovation performance. This finding is

further corroborated by Shahzad et al. [31], who observed similar effects within SMEs, suggesting that green HRM practices mediate the relationship between stakeholder pressure and green innovation outcomes. Additionally, Zhang et al. [38] found that integrating stakeholders' pressures with environmental awareness and ethics leads to advanced green innovation performance in Chinese manufacturing firms.

Through aligning HR policies, employee involvement, and cultivating an environmentally friendly culture, green HRM becomes the main mechanism that enables stakeholder pressure to positively influence green innovation performance. This mediated relationship highlights the integral role that HR departments play in leveraging external pressures to benefit environmental innovation within the organization.

H4: Green HRM mediates the influence of stakeholder pressure on green innovation performance.

2.5 The moderating role of green culture

In organizations, green culture which includes sustainable norms, values and practices is an important foundation for organizations committed to environmental responsibility [40]. At this level, green culture is one of the factors that can lead to the achievement of organizational results or employee behavior [41]. One important aspect of this green culture is the role of leaders and the climate in the organization in shaping and directing individual values and behavior. Leadership that supports sustainability can be a key driver of positive moderation, strengthening the influence of green culture and ensuring the adoption of sustainable practices.

Organizational support can also have a significant moderating factor. The level of commitment and allocation of organizational resources to sustainability initiatives can modify the influence of green culture. Organizations that actively provide support for sustainable practices may experience more positive moderation, creating an environment in which a green culture can optimally thrive [42]. Furthermore, employee awareness of environmental and sustainability issues has the potential to be a moderating factor that influences connection either green culture or organizational behavior. A high level of awareness can increase the effectiveness of green culture in motivating and guiding employees' positive actions towards sustainability [42].

H5: Green culture moderates the impact of stakeholder emphsis on performance of green innovation.

Figure 1 presents the conceptual framework of the study.

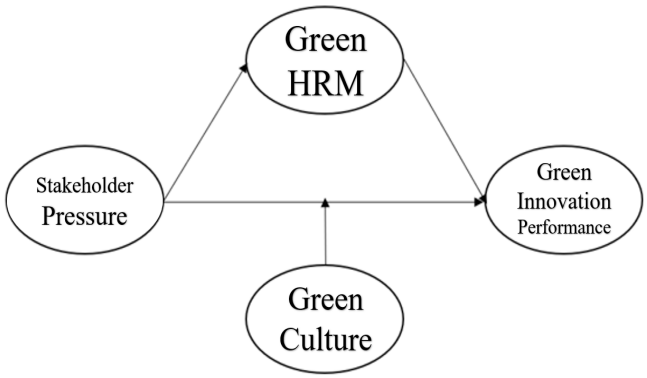

Figure 1. Conceptual framework

3. RESEARCH METHODOLOGY

3.1 Research design

This study employs a quantitative approach to assess the magnitude of the influence of various variables. The research focuses on MSMEs operating in several provinces on the island of Java, Indonesia. A purposive sampling method was utilized to select MSMEs based on the following criteria: (1) MSMEs that have been operating for more than 3 years and (2) MSMEs that engage in green-based business practices.

The sample size was determined using recommendations from Hair Jr et al. [43] for Structural Equation Modeling with Partial Least Squares (SEM-PLS), which suggests a minimum of 100 samples for adequate statistical power. In this study, a total of 280 respondents were surveyed, exceeding the minimum requirement to ensure robustness and reliability of the results. The larger sample size helps in achieving more generalizable results and compensates for potential non-responses or incomplete data.

3.2 Sampling procedures

The sampling process involved identifying MSMEs that fit the specified criteria through business directories, industry associations, and online searches. Invitations to participate were sent via email and social media platforms. To ensure a representative sample, we targeted a diverse range of industries and business sizes within the green-based sector. The purposive sampling approach allowed for a focused examination of MSMEs that are actively engaged in sustainable practices, thus aligning with the study's objectives.

3.3 Data collection methods

Data were collected over one month using an online questionnaire distributed via Google Forms. The questionnaire included sections on demographic information and specific variables related to stakeholder pressure, green HRM practices, green innovation performance, and green culture. Respondents were asked to rate their agreement with various statements on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

While the online survey method facilitated wide reach and convenience, it also had limitations, such as potential biases from self-reporting and limited access for respondents without reliable internet. To mitigate these issues, reminders were sent to encourage participation and ensure the questionnaire was accessible on multiple devices.

3.4 Scales and instruments

The questionnaire comprised the following measures:

1. Stakeholder pressure is measured using the scales developed by Henriques and Sadorsky [44] with 11 items.
2. Green innovation performance is measured using the scales developed by Chen et al. [11] with 8 items.
3. Green HRM is measured using the scales developed by Roscoe et al. [45] which consists of 15 items.
4. Green culture is measured using the scales developed by Fraj et al. [46] and Cui et al. [42] which consists of 6 items.

3.5 Statistical analysis techniques

Data analysis was conducted using Structural Equation Modeling with Partial Least Squares (SEM-PLS). SEM-PLS was chosen for its suitability in analyzing complex relationships between variables and handling small to medium sample sizes. The analysis involved evaluating the measurement model for reliability and validity, and the structural model for hypothesized relationships.

3.6 Ethical considerations

Ethical considerations were integral to the study design. Participants were informed about the study's purpose, and consent was obtained before data collection. Anonymity and confidentiality were assured by not collecting personally identifiable information and securely storing data. Participants had the option to withdraw from the study at any time without consequence. The study adhered to ethical guidelines to ensure the integrity and respect for participants' rights.

4. RESULTS AND DISCUSSION

4.1 Respondents' profile

Respondents in this study are MSMEs which were dominated by small-scale MSMEs with a total of 140 businesses (50%), in the food and beverage industry with 95 businesses (34%) and the fashion industry with 83 businesses (30%). The majority of MSMEs have 1-5 employees, namely 116 businesses (41%), and have been established for 3-5 years (36%) (Table 1).

Table 1. Respondents' profile

Respondents	Amount	Percentage
Size		
Micro	106	38%
Small	140	50%
Medium	34	12%
Industry Type		
Fashion	83	30%
Food and Beverage	95	34%
Handicraft	72	26%
Agribusiness	30	10%
Number of Employees		
1-5 employees	116	41%
5-10 employees	109	39%
>10 employees	55	20%
Duration of Business Operation		
3-5 years	101	36%
5-7 years	71	25%
7-9 years	73	26%
> 9 years	35	13%

4.2 Common method bias

The common method bias test can be carried out using the collinearity test (Inner VIF) as a comprehensive method for assessing vertical and lateral collinearity simultaneously [40]. If the resulting VIF value is greater than 3.3, it can be an indication that a model is contaminated by common method bias. Therefore, if the resulting VIF value is less than or equal to 3.3, then the model can be considered free from common method bias. The common method is usually tested with the VIF value in the inner model. In this study (see Table 2), the overall VIF value produced is smaller than 3.3, so it can be concluded that the structural model used is free from common method bias [47].

Table 2. Results of validity and reliability test

Latent Construct	Items	Loading Factor	CA	CR	AVE
Stakeholder Pressure	SP1	0.794	0.931	0.941	0.594
	SP2	0.727			
	SP3	0.706			
	SP4	0.791			
	SP5	0.801			
	SP6	0.793			
	SP7	0.829			
	SP8	0.801			
	SP9	0.785			
	SP10	0.814			
	SP11	0.723			
Green Innovation Performance	GIP1	0.781	0.878	0.903	0.540
	GIP2	0.714			
	GIP3	0.739			
	GIP4	0.737			
	GIP5	0.805			
	GIP6	0.722			
	GIP7	0.790			
	GIP8	0.779			
Green HRM	GH1	0.701	0.936	0.944	0.529
	GH2	0.792			
	GH3	0.731			
	GH4	0.753			
	GH5	0.761			
	GH6	0.741			
	GH7	0.796			
	GH8	0.747			
	GH9	0.750			
	GH10	0.760			
	GH11	0.705			
	GH12	0.729			
	GH13	0.708			
	GH14	0.789			
	GH15	0.740			
Green Culture	GC1	0.759	0.886	0.914	0.639
	GC2	0.709			
	GC3	0.856			
	GC4	0.837			
	GC5	0.827			
	GC6	0.800			

Table 3. Common method bias (VIF)

	GHRM	GIP
GC		1.188
GHRM		1.134
GIP		
SP	1.000	1.203

GC: Green Culture, GHRM: Green Human Resource Management, GIP: Green Innovation Performance, SP: Stakeholder Pressure
Source: Processed Data (2023)

The measurement model is evaluated with convergent validity and discriminant validity. Convergent validity shows that an indicator can relate to other indicators on the similar variable [43]. Convergent legality is tested by evaluating loading factor, *Cronbach's Alpha*, composite reliability, and average variance extracted (AVE). As shown in Table 3, the factor loading value surpasses the minimum threshold of 0.7,

the AVE value exceeds the minimum threshold of 0.5, and *Cronbach's Alpha* and composite reliability indicators each exceed the minimum threshold of 0.7 [43].

4.3 Measurement model evaluation

After convergent validity is confirmed, the next step is checking discriminant validity based on the criteria suggested namely the square root value of AVE must be bigger than the correlation value among variables. As shown in Table 4, all AVE square roots are greater than the correlation value between variables.

Table 4. Discriminant validity

	GC	GHRM	GIP	SP
GC	0.800			
GHRM	0.273	0.727		
GIP	0.488	0.355	0.735	
SP	0.352	0.283	0.719	0.771

GC: Green Culture, GHRM: Green Human Resource Management, GIP: Green Innovation Performance, SP: Stakeholder Pressure
Source: Processed Data (2023)

The measurement model is also evaluated by looking at the R^2 value and evaluating the amount of variance interpreted by the exogenous variables. The R^2 value shows the variance value in the endogenous variable which is interpreted by one or more exogenous variables [43]. The two endogenous variables, namely green HRM and green innovation performance, show R2 values of 0.680 and 0.595 respectively. This value means that the green HRM variable can be explained by stakeholder pressure of 68.0%, while the green innovation performance variable can be explained by green HRM and stakeholder pressure of 59.5%.

4.4 Structural model evaluation

Structural model evaluation is carried out to determine the influence of exogenous variables and moderating variables on endogenous variables. The significance of the path coefficients is examined using the bootstrapping function with 500 subsamples. Table 5 and Figure 2 display the path coefficients, t values, and p values for all hypotheses. Overall, based on the results shown in Table 5, stakeholder pressure is found to positively influence performance of green innovation (b = 0.595, t = 12.990 p-value < 0.05) and green HRM (b = 0.283, t = 4.691 and p-value < 0.05). In addition, green HRM is also found to positively and importantly influence performance green innovation p (b = 0.122, t = 2.750 and p-value < 0.05). From all the results shown, H1, H2, and H3 can be accepted.

Table 5. Results of structural model evaluation

Hypothesis	Causal Relationship	Path Coefficient	T-Value	P-Value	Findings
H1	SP → GIP	0.595	12.990	0.000	Accepted
H2	SP → GH	0.283	4.691	0.000	Accepted
H3	GH → GIP	0.122	2.750	0.006	Accepted
H4	SP → GH → GIP	0.034	2.309	0.021	Accepted
H5	GCxSP → GIP	0.250	5.120	0.000	Accepted

GC: Green Culture, GHRM: Green Human Resource Management, GIP: Green Innovation Performance, SP: Stakeholder Pressure
Source: Processed Data (2023)

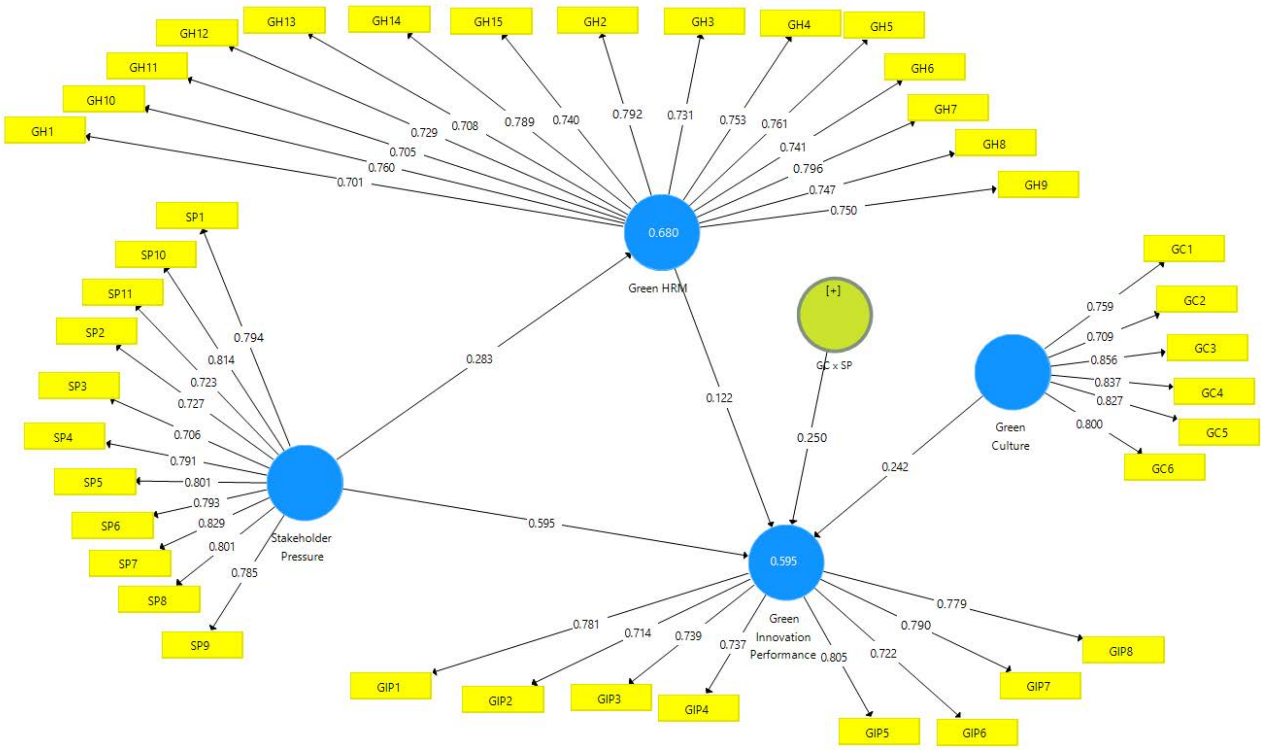

Figure 2. Structural model

Regarding the mediating effect, the results of bootstrapping analysis present the mediation effect carried out by green HRM on the relationship between stakeholder pressure and green innovation performance. Hypothesis 4 predicts that green HRM can mediate the relationship between stakeholder pressure and green innovation performance. Based on Table 5, it is known that H4 (b = 0.034, t = 2.309, p-values < 0.05). These results imply that green HRM has a mediating effect that can improve the relationship between stakeholder pressure and green innovation performance.

In the moderating role of green culture, H5 predicts that green culture can moderate the relationship between stakeholder pressure and green innovation performance. The findings indicate that H5 can be accepted (b = 0.250, t = 5.120 dan p-value < 0.05), thus green culture can act as a moderator in the relationship between stakeholder pressure and green innovation performance (see Figure 3).

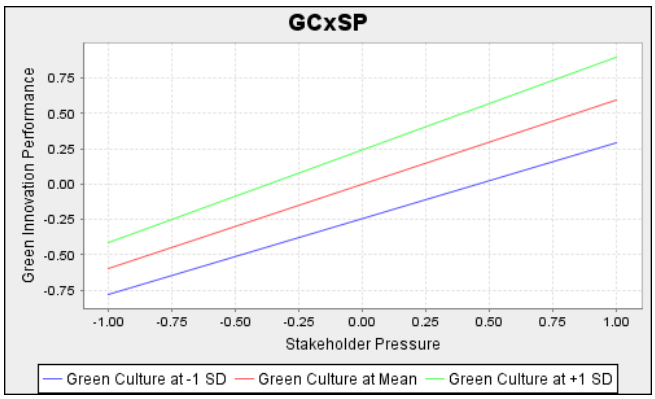

Figure 3. Interaction between stakeholder pressure and green culture

4.5 Predictive relevance (Q^2)

In assessing model quality, Hair Jr et al. [43] recommended utilizing PLS-SEM using a measure of the relevance of model predictions. A process for testing the predictive relevance (Q^2) can be done for a structural model. Based on tests conducted by Hair Jr et al. [43] when the cross-validated Q^2 (redundancy measure) value is greater than 0 (zero), then the predictive relevance of the model has been confirmed. Following this standard, the cross-validation redundancy measure (Q^2) for the green HRM variable is 0.039 and green innovation performance is 0.306, which shows that the model has predictive relevance (Table 6).

Table 6. Cross construct validation redundance

Variables of Endogenous Latent	SSO	SSE	1-SSE/ SSO
GHRM	4200.000	4035.086	0.039
GIP	2240.000	1555.167	0.306

Source: Processed Data (2023)

4.6 Discussion

From the data analysis that has been carried out, it is found that all hypotheses proposed in this study are accepted. The present study offers significant insights into the relationship between stakeholder pressure, green HRM, and green innovation performance in MSMEs in Indonesia. First, our findings demonstrate a significant and positive influence of stakeholder pressure on green innovation performance in MSMEs. This finding aligns with the growing emphasis on corporate social responsibility and the role of stakeholders in shaping business practices. The substantial path coefficient suggests that as MSMEs face increasing pressure from stakeholders, they are more likely to adopt and enhance green innovation practices. This supports the findings of Yang and Zhu [12], who highlighted the impact of stakeholder pressure on green innovation. Our results further substantiate the notion that MSMEs are becoming more attuned to external pressures, including evolving consumer expectations, stringent regulatory frameworks, and a broader societal push towards sustainability. This responsiveness reflects a shift in business models where environmental sustainability is increasingly recognized as integral to competitive advantage.

Furthermore, also finds a significant relationship between stakeholder pressure and the adoption of green HRM practices in MSMEs. This underscores the critical role of external pressures in shaping internal HRM policies, as supported by Guerci et al. [26]. The findings reveal that stakeholder expectations drive MSMEs to integrate green HRM strategies, including environmentally conscious recruitment, training, and performance management. This suggests a broader trend where environmental initiatives are not only focused on product and process innovation but also on internal organizational practices. The alignment of HRM practices with sustainability goals indicates a comprehensive approach to integrating environmental concerns across all facets of an organization.

The results of the third hypothesis test regarding the positive influence of green HRM on green innovation performance observed in our study highlight the critical role of HRM in fostering a culture of environmental responsibility within MSMEs. The integration of environmentally friendly HRM practices, such as training programs on sustainable practices and employee engagement in green initiatives, contributes to the overall improvement in green innovation performance. This is in line with the findings from previous studies [15]. This finding suggests that investments in green HRM can lead to a more environmentally conscious and innovative organizational culture, resulting in the development and implementation of eco-friendly products, services, or processes.

Our study confirms that green HRM acts as a significant mediator in the relationship between stakeholder pressure and green innovation performance. This finding indicates that stakeholder pressure does not directly impact green innovation performance but is channeled through green HRM practices. This reinforces the importance of aligning HRM practices with environmental sustainability goals. By understanding the mediating role of green HRM, we gain insights into how stakeholder pressures translate into tangible green outcomes. It underscores the need for a holistic sustainability approach that integrates both organizational strategies and human resource policies.

Finally, the moderating effect of green culture on the relationship between stakeholder pressure and green innovation performance highlights the importance of organizational culture in leveraging external pressures. MSMEs with a strong green culture are better equipped to capitalize on stakeholder pressure to drive green innovation. This finding emphasizes the need to align internal values and practices with external sustainability demands, creating a synergistic relationship that fosters environmentally friendly

innovation. It supports the view that a robust green culture amplifies the positive effects of stakeholder pressure, facilitating a more effective response to sustainability challenges.

Overall, this study contributes to the broader literature by demonstrating the interconnected roles of stakeholder pressure, green HRM, and organizational culture in shaping green innovation performance. The findings underscore the importance of integrating external pressures with internal practices to drive sustainable business practices. They also highlight the need for MSMEs to cultivate an organizational culture that supports environmental sustainability, which can enhance their ability to respond to stakeholder demands and improve innovation outcomes.

These results provide valuable insights for both researchers and practitioners, suggesting that a comprehensive approach to sustainability—encompassing stakeholder engagement, green HRM, and organizational culture—is essential for achieving effective green innovation performance.

5. CONCLUSIONS

In conclusion, this study provides a comprehensive analysis of the dynamics between stakeholder pressure, green human resource management (GHRM), green culture, and green innovation performance within MSMEs in Java, Indonesia. By investigating these relationships, the study offers valuable insights into sustainable business practices and underscores the significance of integrating external pressures, human resource practices, and organizational culture in achieving effective green innovation.

The findings highlight that stakeholder pressure significantly influences green innovation performance, both directly and indirectly through the mediation of green HRM. This underscores the importance of aligning internal processes and values with external sustainability demands. The study's results contribute to the broader understanding of how organizations can leverage stakeholder pressure to enhance their green innovation efforts.

For practitioners, the study suggests that proactively addressing stakeholder pressures and investing in green HRM practices can substantially improve green innovation performance. Furthermore, fostering a strong green organizational culture should be a strategic priority for businesses aiming to optimize the benefits of external pressures on their sustainability initiatives. Companies that effectively integrate these elements are better positioned to lead in sustainable innovation.

From a policy perspective, the findings advocate for the development of supportive frameworks that encourage MSMEs to adopt green practices. Policymakers should focus on raising awareness and providing resources to facilitate the implementation of green HRM practices as part of broader sustainability strategies. Such initiatives can help create an enabling environment for MSMEs to thrive in their sustainability efforts.

While this study makes significant contributions, it is not without limitations. Future research should explore these relationships across different cultural and industry contexts to gain a more nuanced understanding. Longitudinal studies could also offer deeper insights into the evolution of MSMEs' sustainability practices over time.

In summary, this study enhances our understanding of the complex interplay between stakeholder pressure, green HRM, green culture, and green innovation performance. By adopting a holistic approach to sustainability, businesses and policymakers can collaborate to foster innovation that not only meets market demands but also aligns with global environmental goals. As sustainable business practices continue to evolve, this study contributes to the ongoing dialogue on integrating social and environmental responsibility into organizational strategies.

REFERENCES

[1] Wang, S., Abbas, J., Sial, M.S., Álvarez-Otero, S., Cioca, L.I. (2022). Achieving green innovation and sustainable development goals through green knowledge management: Moderating role of organizational green culture. Journal of Innovation & Knowledge, 7(4): 100272. https://doi.org/10.1016/j.jik.2022.100272

[2] Susilawati, S. (2021). Dampak perubahan iklim terhadap kesehatan. Electronic Journal Scientific of Environmental Health and Disease, 2(1): 25-31. https://doi.org/10.22437/esehad.v2i1.13749

[3] Ch'ng, P.C., Cheah, J., Amran, A. (2021). Eco-innovation practices and sustainable business performance: The moderating effect of market turbulence in the Malaysian technology industry. Journal of Cleaner Production, 283: 124556. https://doi.org/10.1016/j.jclepro.2020.124556

[4] Berrone, P., Fosfuri, A., Gelabert, L., Gomez-Mejia, L.R. (2013). Necessity as the mother of 'green' inventions: Institutional pressures and environmental innovations. Strategic Management Journal, 34(8): 891-909. https://doi.org/10.1002/smj.2041

[5] Sustrastanti, E., Rachmawati, S. (2023). Pengaruh budaya organisasi hijau, modal intelektual hijau terhadap kinerja perusahaan dengan inovasi hijau sebagai variabel moderasi. Jurnal Ekonomi Trisakti, 3(2): 2349-2358. https://doi.org/10.25105/jet.v3i2.16982

[6] Singh, S.K., Del Giudice, M., Chiappetta Jabbour, C.J., Latan, H., Sohal, A.S. (2022). Stakeholder pressure, green innovation, and performance in small and medium-sized enterprises: The role of green dynamic capabilities. Business Strategy and the Environment, 31(1): 500-514. https://doi.org/10.1002/bse.2906

[7] Pamungkas, K., Sujatna, E.T.S., Heriyanto, R.H., Rosana, M.F., Melayu, P.P. (2021). Brand association of Ciletuh-Palabuhanratu Geopark towards COVID-19 pandemic and sustainable tourism. Planning, 16(8): 1563-1574. https://doi.org/10.18280/ijsdp.160817

[8] Walker, T.R., McGuinty, E., Charlebois, S., Music, J. (2021). Single-use plastic packaging in the Canadian food industry: Consumer behavior and perceptions. Humanities and Social Sciences Communications, 8(1): 1-11. https://doi.org/10.1057/s41599-021-00747-4

[9] Adomako, S., Simms, C., Vazquez-Brust, D., Nguyen, H.T. (2023). Stakeholder green pressure and new product performance in emerging countries: A cross-country study. British Journal of Management, 34(1): 299-320. https://doi.org/10.1111/1467-8551.12595

[10] Jayaraman, K., Jayashree, S., Dorasamy, M. (2023). The effects of green innovations in organizations: Influence

of stakeholders. Sustainability, 15(2): 1133. https://doi.org/10.3390/su15021133
[11] Chen, Y.S., Lai, S.B., Wen, C.T. (2006). The influence of green innovation performance on corporate advantage in Taiwan. Journal of Business Ethics, 67: 331-339. https://doi.org/10.1007/s10551-006-9025-5
[12] Yang, H., Zhu, X. (2022). Research on green innovation performance of manufacturing industry and its improvement path in China. Sustainability, 14(13): 8000. https://doi.org/10.3390/su14138000
Takalo, S.K., Tooranloo, H.S. (2021). Green innovation: A systematic literature review. Journal of Cleaner Production, 279: 122474. https://doi.org/10.1016/j.jclepro.2020.122474
[13] Zhao, W., Huang, L. (2022). The impact of green transformational leadership, green HRM, green innovation and organizational support on the sustainable business performance: Evidence from China. Economic Research-Ekonomska Istraživanja, 35(1): 6121-6141.
[14] Li, L., Wang, Y., Tan, M., Sun, H., Zhu, B. (2023). Effect of environmental regulation on energy-intensive enterprises' green innovation performance. Sustainability, 15(13): 10108. https://doi.org/10.3390/su151310108
[15] Guo, Y., Wang, L. (2022). Environmental entrepreneurial orientation and firm performance: The role of environmental innovation and stakeholder pressure. Sage Open, 12(1): 21582440211061354. https://doi.org/10.1177/21582440211061354
[16] Alfaiz, D.R., Aryati, T. (2019). Pengaruh tekanan stakeholder dan kinerja keuangan terhadap kualitas sustainability report dengan komite audit sebagai variabel moderasi. Methosika: Jurnal Akuntansi Dan Keuangan Methodist, 2(2): 112-130.
[17] Meixell, M.J., Luoma, P. (2015). Stakeholder pressure in sustainable supply chain management: A systematic review. International Journal of Physical Distribution & Logistics Management, 45(1/2): 69-89. https://doi.org/10.1108/IJPDLM-05-2013-0155
[18] Tasmara, T. (2002). Membudayakan etos kerja Islami. Gema Insani.
[19] Novitasari, M., Tarigan, Z.J.H. (2022). The role of green innovation in the effect of corporate social responsibility on firm performance. Economies, 10(5): 117. https://doi.org/10.3390/economies10050117
[20] Tolliver, C., Fujii, H., Keeley, A.R., Managi, S. (2021). Green innovation and finance in Asia. Asian Economic Policy Review, 16(1): 67-87. https://doi.org/10.1111/aepr.12320
[21] Zhang, Q., Zhu, X., Lee, M.J. (2024). Exploring institutional pressures, green innovation, and sustainable performance: Examining the mediated moderation role of entrepreneurial orientation. Sustainability, 16(5): 2058. https://doi.org/10.3390/su16052058
[22] Renwick, D.W., Redman, T., Maguire, S. (2013). Green human resource management: A review and research agenda. International Journal of Management Reviews, 15(1): 1-14. https://doi.org/10.1111/j.1468-2370.2011.00328.x
[23] Hameed, Z., Khan, I.U., Islam, T., Sheikh, Z., Naeem, R.M. (2020). Do green HRM practices influence employees' environmental performance? International Journal of Manpower, 41(7): 1061-1079. https://doi.org/10.1108/IJM-08-2019-0407
[24] Yong, J.Y., Yusliza, M.Y., Fawehinmi, O.O. (2020). Green human resource management: A systematic literature review from 2007 to 2019. Benchmarking: An International Journal, 27(7): 2005-2027. https://doi.org/10.1108/BIJ-12-2018-0438
[25] Guerci, M., Longoni, A., Luzzini, D. (2016). Translating stakeholder pressures into environmental performance–the mediating role of green HRM practices. The International Journal of Human Resource Management, 27(2): 262-289. https://doi.org/10.1080/09585192.2015.1065431
[26] Yong, J.Y., Yusliza, M.Y., Ramayah, T., Seles, B.M.R.P. (2022). Testing the stakeholder pressure, relative advantage, top management commitment and green human resource management linkage. Corporate Social Responsibility and Environmental Management, 29(5): 1283-1299. https://doi.org/10.1002/csr.2269
[27] Marrucci, L., Daddi, T., Iraldo, F. (2023). Institutional and stakeholder pressures on organisational performance and green human resources management. Corporate Social Responsibility and Environmental Management, 30(1): 324-341. https://doi.org/10.1002/csr.2357
[28] Vázquez-Brust, D., Jabbour, C.J.C., Plaza-Úbeda, J. A., Perez-Valls, M., de Sousa Jabbour, A.B.L., Renwick, D.W. (2023). The role of green human resource management in the translation of greening pressures into environmental protection practices. Business Strategy and the Environment, 32(6): 3628-3648. https://doi.org/10.1002/bse.3319
[29] Rimbawanto, N.A., Patria, D.N., Nilasari, B.M., Nisfiannoor, M., Dwita, F. (2023). The impact of stakeholder pressure on environmental performance with GHRM practice and green innovation as mediation. Journal of Economics, Finance and Management Studies, 6(1): 322-331. https://doi.org/10.47191/jefms/v6-i1-37
[30] Shahzad, M.A., Jianguo, D., Junaid, M. (2023). Impact of green HRM practices on sustainable performance: mediating role of green innovation, green culture, and green employees' behavior. Environmental Science and Pollution Research, 30(38): 88524-88547.
[31] Arulrajah, A.A., Opatha, H.H.D.N.P., Nawaratne, N.N.J. (2015). Green human resource management practices: A review. Sri Lankan Journal of Human Resource Management, 5(1): 1-16. http://dr.lib.sjp.ac.lk/handle/123456789/11110.
[32] Paulet, R., Holland, P., Morgan, D. (2021). A meta-review of 10 years of green human resource management: Is Green HRM headed towards a roadblock or a revitalisation? Asia Pacific Journal of Human Resources, 59(2): 159-183. https://doi.org/10.1111/1744-7941.12285
[33] Muisyo, P.K., Qin, S. (2021). Enhancing the FIRM'S green performance through green HRM: The moderating role of green innovation culture. Journal of Cleaner Production, 289: 125720. https://doi.org/10.1016/j.jclepro.2020.125720
[34] Song, W., Yu, H., Xu, H. (2021). Effects of green human resource management and managerial environmental concern on green innovation. European Journal of Innovation Management, 24(3): 951-967. https://doi.org/10.1108/EJIM-11-2019-0315
[35] Begum, S., Xia, E., Ali, F., Awan, U., Ashfaq, M. (2022). Achieving green product and process innovation through green leadership and creative engagement in

manufacturing. Journal of Manufacturing Technology Management, 33(4): 656-674. https://doi.org/10.1108/JMTM-01-2021-0003
[36] Ogiemwonyi, O., Alam, M.N., Hago, I.E., Azizan, N.A., Hashim, F., Hossain, M.S. (2023). Green innovation behaviour: Impact of industry 4.0 and open innovation. Heliyon, 9(6): e16524. https://doi.org/10.1016/j.heliyon.2023.e16524R
[37] Zhang, W.B., Xie, Z. H., Yu, C.J. (2024). The influence of industrial structure adjustment on carbon emissions: An analysis based on the threshold effect of green innovation. Sustainability, 16(16): 6935. https://doi.org/10.3390/su16166935
[38] Chang, C.H., Chen, Y.S. (2013). Green organizational identity and green innovation. Management Decision, 51(5): 1056-1070. https://doi.org/10.1108/MD-09-2011-0314
[39] Wang, C.H. (2019). How organizational green culture influences green performance and competitive advantage: The mediating role of green innovation. Journal of Manufacturing Technology Management, 30(4): 666-683. https://doi.org/10.1108/JMTM-09-2018-0314
[40] Siswanti, Y., Muafi, M. (2022). Ethical leadership style in moderating the influence of green organizational culture on green innovative behavior: SMES cases. International Journal of Sustainable Development & Planning, 17(4): 1153-1160. https://doi.org/10.18280/ijsdp.170413
[41] Chu, Z., Wang, L., Lai, F. (2019). Customer pressure and green innovations at third party logistics providers in China: The moderation effect of organizational culture. The International Journal of Logistics Management, 30(1): 57-75. https://doi.org/10.1108/IJLM-11-2017-0294
[42] Hair Jr, J., Page, M., Brunsveld, N. (2019). Essentials of Business Research Methods. Routledge.
[43] Henriques, I., Sadorsky, P. (1999). The relationship between environmental commitment and managerial perceptions of stakeholder importance. Academy of Management Journal, 42(1): 87-99.
[44] Roscoe, S., Subramanian, N., Jabbour, C.J., Chong, T. (2019). Green human resource management and the enablers of green organisational culture: Enhancing a firm's environmental performance for sustainable development. Business Strategy and the Environment, 28(5): 737-749. https://doi.org/10.5465/256876
[45] Fraj, E., Martínez, E., Matute, J. (2011). Green marketing strategy and the firm's performance: The moderating role of environmental culture. Journal of Strategic Marketing, 19(4): 339-355. https://doi.org/10.1080/0965254X.2011.581382
[46] Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. International Journal of e-Collaboration (IJEC), 11(4): 1-10. https://doi.org/10.4018/ijec.2015100101
[47] Wahyuningrum, I.F.S., Ihlashul'amal, M., Hidayah, R., Rizkyana, F.W. (2023). Stakeholder pressure and its effect on sustainability report. Jurnal Presipitasi: Media Komunikasi dan Pengembangan Teknik Lingkungan, 20(2): 494-506.