Linking employee green behavior and green innovation to green human resource management: Insights from a construction company

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ABSTRACT

This study aims to examine the influence of employee green behavior and green innovation on green human resource management within a construction company context. A quantitative explanatory approach was employed, using survey data collected from employees and analyzed through partial least squares structural equation modeling. The findings indicate that both employee green behavior and green innovation play important roles in shaping green human resource management practices, with employee driven environmental behavior emerging as the more influential factor. Together, these variables explain nearly half of the variation in green human resource management, highlighting the importance of behavioral and innovation based mechanisms in institutionalizing sustainability practices. The study contributes to the literature by adopting a bottom up perspective, demonstrating that green human resource management may develop in response to employee actions and innovation initiatives rather than solely through managerial directives. This research is limited to a single organizational context, which may restrict generalizability. Future studies are encouraged to incorporate additional organizational factors and broader industry settings to enrich understanding of green human resource management development.

Keywords: *Green Human Resource Management; Employee Green Behavior; Green Innovation*

INTRODUCTION

Organizations worldwide are increasingly confronted with environmental challenges driven by climate change, environmental degradation, and the overexploitation of natural resources. According to the Intergovernmental Panel on Climate Change (IPCC), global surface temperatures have risen by approximately 1.1°C above pre-industrial levels, primarily due to human activities such as fossil fuel consumption, land-use change, and industrial production (IPCC, 2023). Among various economic sectors, the construction industry is recognized as one of the largest contributors to environmental pressure. Data from the United Nations Environment Programme indicate that the global buildings and construction sector accounts for nearly 37% of global energy-related CO_2 emissions and consumes more than 30% of total final energy use worldwide (UNEP, 2022). These figures highlight the significant environmental footprint of construction activities and underscore the urgency for organizations within this sector to adopt sustainability-oriented management practices.

In response to these environmental challenges, sustainability has emerged as a strategic priority for organizations, especially within the construction sector, where operational activities significantly contribute to global energy consumption, resource depletion, and carbon emissions. As one of the most environmentally impactful industries worldwide, the construction sector faces increasing pressure to integrate sustainability principles into organizational and managerial practices to support long-term environmental and economic performance (IEA, 2024; UNEP, 2025). Beyond technological solutions, human resources play a critical role in mitigating environmental impacts, as employees are directly involved in operational decisions and daily work practices (Yong et al., 2019). Green Human Resource Management (GHRM) has therefore emerged as a strategic approach that integrates environmental considerations into human resource policies and practices, including recruitment, training, performance appraisal, and reward systems (Renwick et al., 2013). Prior studies indicate that organizations implementing GHRM are better positioned to reduce environmental risks and support sustainable development goals by fostering environmentally responsible behavior and innovation among employees (Saeed et al., 2018). In the context of construction companies, where environmental risks are inherently high, GHRM is increasingly viewed as a necessary organizational response rather than an optional initiative.

Employee Green Behavior (EGB) refers to employees' voluntary and task-related actions that support environmental sustainability in the workplace, such as conserving energy, reducing waste, and participating in environmental initiatives (Ones & Dilchert, 2012). In construction companies, where operational activities directly affect environmental outcomes, employee green behavior becomes particularly important. Employees who consistently demonstrate green behavior contribute to reducing environmental risks and improving organizational environmental performance (Fawehinmi et al., 2020). Prior research indicates that organizations with higher levels of employee green behavior tend to exhibit stronger environmental management practices (Ababneh, 2021).

In addition to behavior, green innovation has become a key factor in organizational sustainability. Green innovation involves the development of environmentally friendly products, processes, or practices that reduce negative environmental impacts while maintaining or enhancing organizational performance (Chen et al., 2006). In the construction sector, green innovation may include the use of sustainable materials, energy-efficient construction methods, and environmentally

friendly technologies. Studies show that green innovation enhances competitiveness and supports long-term sustainability, particularly in environmentally sensitive industries (Cainelli et al., 2020; Zhang et al., 2022).

Despite the growing literature on GHRM, most empirical studies adopt a top-down perspective by positioning GHRM as an antecedent that influences employee green behavior and green innovation. While this approach has provided valuable insights, it overlooks the potential role of employees and innovation activities as drivers of GHRM itself. In practice, organizations may develop or strengthen green HR policies in response to employees' proactive environmental behaviors and innovation initiatives. Employees who actively engage in green practices and propose environmentally friendly innovations can influence management decisions and encourage the formalization of sustainability-oriented HR systems (Saeed et. al., 2018).

This issue is particularly relevant in construction companies operating in emerging economies, where sustainability practices are still evolving and formal green HR frameworks are not fully established. In such contexts, employee-driven initiatives and innovation activities often precede formal HR policy development. (Norton et. al., 2014). However, empirical evidence examining employee green behavior and green innovation as antecedents of green human resource management remains limited.

Based on this background, this study aims to analyze the effect of employee green behavior and green innovation on green human resource management. By focusing on a construction company context, this study seeks to contribute to the literature by offering a bottom-up perspective on GHRM development and providing practical insights for organizations seeking to institutionalize sustainability through human resource management.

LITERATURE REVIEW, RESEARCH FRAMEWORK, AND HYPOTHESES

Green Human Resources Management

Green Human Resource Management (GHRM) is a strategic approach that integrates environmental objectives into human resource policies and practices, positioning employees as key assets in achieving organizational sustainability (Renwick et al., 2013). Rather than serving merely as an administrative function, GHRM supports the development of a green organizational culture that enhances environmental performance, operational effectiveness, and innovation capability (Renwick et al., 2013). As environmental challenges intensify, human resource management increasingly functions as a strategic partner in facilitating the transition toward a green economy (Yong et al., 2019).

Jabbour and Jabbour (2016) emphasize that GHRM represents a strategic investment in human capital that enables organizations to build competitive advantage through green behavior and sustainability-oriented innovation. In this study, GHRM is measured using five dimensions proposed by Tang et al. (2018): green recruitment and selection, green training, green performance management, green pay and reward, and green involvement. These dimensions reflect organizational efforts to attract environmentally conscious employees, develop green competencies, align performance systems with environmental goals, and encourage active employee participation in sustainability initiatives.

Employee Green Behavior

Employee Green Behavior (EGB) refers to individual employee actions in the workplace that support environmental sustainability, including both discretionary and task-related

behaviors (Robertson & Barling, 2013). Such behaviors are influenced not only by personal environmental values but also by organizational culture, norms, and sustainability-supportive management systems, making EGB a socially embedded form of behavior (Ones & Dilchert, 2012). Employees therefore play an active role in translating environmental policies into daily operational practices.

Fawehinmi et al. (2020) describe EGB as employees' active participation in environmentally friendly workplace activities, while Opatha and Arulrajah (2014) identify green employee roles such as preservationist, conservationist, non-polluter, and maker. This study adopts the multidimensional framework of Zhang et al. (2021), which conceptualizes EGB through four indicators: green learning, individual practice, influencing others, and organizational voice. These indicators capture employees' environmental learning, direct pro-environmental actions, social influence, and willingness to contribute ideas that enhance organizational sustainability.

Green Innovation

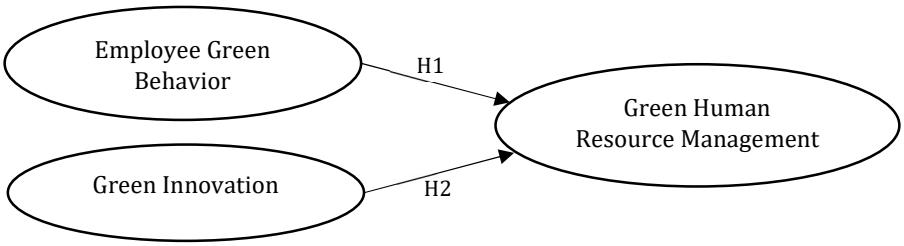
Green Innovation refers to organizational efforts to develop new or improved products, processes, or systems that reduce environmental impact while supporting sustainable development (Chen et al., 2006). Increasingly, green innovation is viewed as a strategic response to environmental challenges rather than merely a compliance mechanism, as it enables organizations to enhance efficiency, competitiveness, and long-term performance (Zhang et al., 2022).

Cainelli et al. (2020) argue that environmental regulations and market demand for green products drive the adoption of resource-efficient technologies and environmentally friendly practices. This study adopts the framework of Chen, Lai, and Wen (2006), which distinguishes between green product innovation and green process innovation. In the construction sector, green product innovation focuses on environmentally friendly materials and building systems, while green process innovation emphasizes improvements in construction methods that reduce energy use, emissions, and waste, thereby supporting sustainable development and project performance (Ding, 2008; Azhar et al., 2012).

Research Framework

The research framework of this study is grounded in the perspective that organizational sustainability practices may evolve through bottom-up mechanisms driven by employees' behavior and innovation activities. As illustrated in the framework, Employee Green Behavior and Green Innovation are positioned as key antecedents of Green Human Resource Management (GHRM).

This framework illustrates the proposed relationship between employee green behavior and green innovation toward the implementation of Green Human Resource Management (GHRM). As presented in Figure 1, proactive environmental behavior at the employee level and innovation initiatives within organizations are assumed to contribute to the development and institutionalization of sustainable human resource management practices



Source : Constructed by the author for this study, 2026

Figure 1
Research Framework

Employee green behavior represents employees' voluntary and task-related actions that support environmental sustainability in the workplace. When such behaviors are consistently demonstrated, they contribute to shaping organizational norms, strengthening green culture, and signaling the importance of environmental values to management. As a result, organizations may respond by formalizing these values through green-oriented HR practices, such as green training, performance evaluation, and employee involvement mechanisms. Therefore, employee green behavior is expected to play a significant role in encouraging the development and implementation of GHRM.

Green innovation reflects organizational efforts to develop environmentally friendly products and processes that reduce environmental impact and improve resource efficiency. The implementation of green innovation often requires new competencies, skills, and performance standards, which necessitate adjustments in human resource systems. Consequently, organizations engaged in green innovation are more likely to strengthen green HRM practices to support innovation processes, align employee competencies with sustainability goals, and ensure the long-term effectiveness of environmental initiatives.

Based on the proposed research framework, the following hypotheses are formulated:

H1: Employee green behavior positively affects green human resource management in a construction company in Indonesia.

H2: Green innovation positively affects green human resource management in a construction company in Indonesia.

METHOD

This study employs a quantitative explanatory research design to examine the relationships between employee green behavior, green innovation, and green human resource management. The study is conducted within the scope of a construction company in Indonesia, given the sector's significant environmental impact and relevance to sustainability-oriented management practices. The population consists of employees working at the head office of the selected construction company located in Jakarta, with a total population of 3,543 employees as of June 2025. The minimum sample size required was calculated using the Slovin formula, resulting in a minimum of 359 respondents, and a total of 361 valid responses were obtained and subsequently analyzed.

Primary data were collected through a structured questionnaire adapted from validated instruments used in previous studies on green human resource management, employee green behavior, and green innovation. Responses were measured using a

Likert scale. Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM).

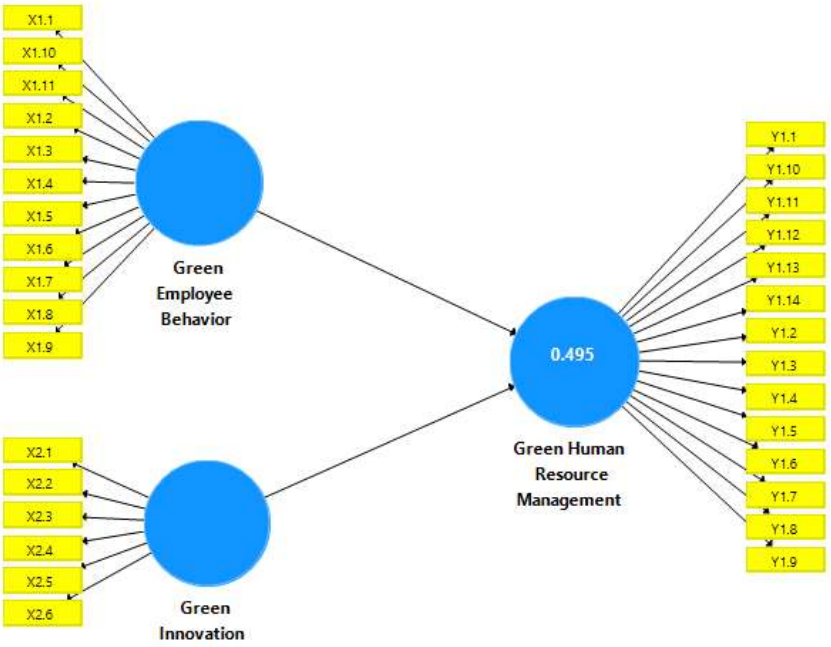
RESULTS AND DISCUSSION

Data Analysis

Prior to hypothesis testing, the measurement model was assessed to ensure construct validity and reliability following the criteria commonly applied in partial least squares structural equation modeling. The results indicate that all constructs achieved adequate convergent validity, as reflected by Average Variance Extracted values exceeding the minimum threshold of 0.50, which suggests that the latent variables explain more than half of the variance of their indicators (Hair et al., 2019).

Furthermore, the reliability assessment shows that Cronbach's Alpha and Composite Reliability values for all constructs were above 0.70, indicating satisfactory internal consistency and measurement reliability (Hair et al., 2019). Based on these criteria, the measurement model is considered valid and reliable, allowing further interpretation of the structural relationships among employee green behavior, green innovation, and green human resource management with sufficient methodological rigor. To illustrate the structural relationships among the variables examined in this study,

Figure 2 presents the structural model results, including the relationships between employee green behavior, green innovation, and green human resource management, along with the coefficient of determination (R^2) value obtained from the analysis.



Source : Data analyzed, 2026

Figure 2
The Structural Model Results

Based on Figure 2, the coefficient of determination R square indicates that Green Human Resource Management is explained by Employee Green Behavior and Green Innovation with an R square value of 0.495. This result suggests that approximately 49.5

percent of the variance in green human resource management can be jointly explained by the two independent variables included in the model.

According to the criteria commonly used in PLS SEM analysis, this value reflects a moderate explanatory power (Hair et al., 2019), indicating that employee driven environmental behavior and innovation oriented sustainability initiatives play a substantial role in shaping green human resource management practices. The remaining variance is likely influenced by other organizational factors not included in this model. Overall, the R square result confirms that the proposed research model has adequate predictive relevance and supports the importance of behavioral and innovation based mechanisms in the development of green human resource management within the construction company context.

The findings of this study as addressed on Table 1 provide empirical evidence that both proposed hypotheses are supported, indicating that employee green behavior and green innovation significantly influence green human resource management. The structural model results show that both relationships are positive and statistically significant, confirming the relevance of behavioral and innovation driven mechanisms in shaping sustainability oriented human resource practices.

Table 1
Hypothesis Testing Results

	Original Sample	T Statistics	P Values	Conclusion
Employee Green Behavior → Green Human Resource Management	0,445	5,521	0,000	Supported
Green Innovation → Green Human Resource Management	0,294	3,751	0,000	Supported

Source : Data analyzed, 2026

These results suggest that green human resource management does not solely emerge from top down managerial decisions, but is also shaped by operational level behaviors and innovation initiatives within the organization. This general pattern is consistent with the discussion in the seminar study, which emphasizes the importance of internal organizational dynamics in the institutionalization of sustainability practices.

The Influence of Employee Green Behavior on Green Human Resource Management

The results indicate that employee green behavior has a strong and significant effect on green human resource management, as evidenced by a path coefficient of 0.445, a T statistic of 5.521, and a p value lower than 0.001. These statistical values explain why the first hypothesis is accepted, demonstrating that employee driven environmental behavior is a key determinant of green human resource management practices. The relatively high path coefficient indicates that changes in employee green behavior are associated with substantial improvements in the implementation of green oriented HR systems.

This finding aligns with the seminar study discussion, which highlights that employees who actively engage in green learning, apply environmentally responsible practices in daily operations, influence colleagues, and express constructive environmental ideas contribute to the formation of a green organizational climate. When such behaviors become consistent and visible, management tends to respond by formalizing sustainability values through structured human resource mechanisms such

as green training programs, environmentally oriented performance evaluation, and employee involvement initiatives. This result supports previous empirical studies which conclude that employee green behavior strengthens the legitimacy and effectiveness of green human resource management by embedding sustainability values at the operational level (Ones and Dilchert, 2012; Zhang et al., 2021; Ababneh, 2021).

The Influence of Green Innovation on Green Human Resource Management

The results also show that green innovation has a positive and statistically significant influence on green human resource management, with a path coefficient of 0.294, a T statistic of 3.751, and a p value lower than 0.001. These values indicate that the second hypothesis is supported, although the magnitude of the effect is lower than that of employee green behavior. This suggests that green innovation contributes to the development of green human resource management, but its impact is more complementary rather than dominant.

Consistent with the seminar study discussion, green innovation in the construction context often involves the adoption of environmentally friendly methods, materials, and processes that require specific competencies and environmental awareness from employees. As a result, organizations are encouraged to adjust recruitment standards, training content, performance management systems, and reward structures to support innovation-oriented sustainability initiatives. This finding is in line with previous research which emphasizes that green innovation and green human resource management are mutually reinforcing, as innovation driven sustainability initiatives create the need for formal HR systems that support skill development and performance alignment (Chen et al., 2006; Cainelli et al., 2020; Yong et al., 2019).

Overall, the empirical results demonstrate that both employee green behavior and green innovation significantly contribute to the development of green human resource management, with employee green behavior emerging as the stronger predictor. The higher path coefficient and t statistic associated with employee green behavior indicate that sustainability initiatives in construction companies are primarily driven by operational level behaviors before being institutionalized through formal HR systems. This pattern is consistent with prior studies conducted in emerging economy contexts, which show that green human resource management often evolves as a response to employee-initiated sustainability practices rather than solely through top-down managerial directives.

Therefore, the findings of this study not only support previous research but also strengthen the argument that bottom-up mechanisms play a critical role in the successful implementation of green human resource management in construction organizations.

CONCLUSION AND SUGGESTION

The findings indicate that employee green behavior and green innovation play important roles in shaping green human resource management within a construction company context. Environmentally responsible behavior exhibited by employees, together with sustainability oriented innovation initiatives, contributes substantially to the institutionalization of green human resource practices, with both variables jointly explaining nearly half of the variation in green human resource management.

This research contributes to the sustainability and human resource management literature by providing empirical support for a bottom up perspective, demonstrating that green human resource management may emerge as a response to employee driven environmental behavior and innovation rather than solely from top down managerial

directives. From a practical standpoint, the results imply that construction organizations can strengthen green human resource management by fostering pro environmental behavior among employees and aligning innovation initiatives with human resource policies to support long term sustainability.

Future research is encouraged to extend the present model by incorporating additional organizational factors such as leadership commitment, organizational culture, or external environmental pressures to further explain the development of green human resource management. In addition, longitudinal and multi organizational studies are recommended to capture the dynamic nature of sustainability practices and to enhance the generalizability of the findings across different organizational and industry contexts.

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