

(Research Article)

A Multilevel Examination of Pro-Environmental Behavior and Its Impact on Hotel Performance: Evidence from Green Hotels in Indonesia

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Abstract: This study adopts a multilevel analytical framework to investigate the implementation of pro-environmental behavior (PEB) and its implications for organizational performance in the context of Green Hotels in Semarang, Indonesia. Grounded in Social Exchange Theory, the Ability-Motivation-Opportunity (AMO) framework, and Social Identity Theory, the research explores how PEB at both individual and departmental levels contributes to environmental, financial, and operational performance metrics. Special attention is directed toward the role of young talent employees (<35 years) as strategic change agents in sustainability transitions. A qualitative case study methodology was employed, involving 35 informants across five certified Green Hotels. Data were collected through semi-structured interviews, direct observations, focus group discussions, and documentary analysis. Thematic coding and cross-level analysis were conducted using NVivo software to ensure methodological rigor and analytical depth. Findings reveal that departmental-level PEB exhibits a more structured and consistent implementation pattern, exerting a stronger impact on environmental and financial outcomes. In contrast, individual-level PEB predominantly influences operational efficiency. Importantly, the cross-level interaction between individual and departmental PEB generates multiplicative effects on guest satisfaction and synergistic effects on environmental performance. Five organizational enablers—executive support, pro-environmental culture, performance-based rewards, sustained training, and participatory decision-making—emerge as critical in optimizing young talent engagement in green practices. This study advances multilevel theorizing in green human resource management (GHRM) and provides actionable insights for practitioners seeking to institutionalize sustainability within hospitality operations in emerging markets.

Keywords: Green Human Resource Management, Hotel Performance, Multilevel Analysis, Pro-Environmental Behavior, Young Talent

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1. Introduction

The hospitality industry is increasingly subject to mounting global pressure to adopt sustainable practices in response to escalating environmental concerns and evolving stakeholder expectations. According to the United Nations World Tourism Organization (UNWTO), the hotel sector contributes approximately 1% of global carbon emissions and consumes 219 billion liters of water annually, underscoring its significant environmental footprint (Lenzen et al., 2018). In light of these challenges, hotels worldwide—including those in Indonesia—have begun to align with Sustainable Development Goals (SDGs), particularly Goal 12 (Responsible Consumption and Production) and Goal 13 (Climate Action), by embracing

the Green Hotel concept. This shift is driven not only by regulatory and societal demands but also by a surge in eco-conscious tourism preferences, with recent data indicating that 73% of global travelers now favor environmentally responsible accommodations (Booking.com, 2023).

In this context, Green Human Resource Management (GHRM) has emerged as a strategic approach to cultivating an environmentally literate and engaged workforce capable of operationalizing sustainability initiatives. GHRM is defined as “a relevant phenomenon for understanding the relationship between organizational activities impacting the natural environment and the design, evolution, implementation, and influence of human resource management systems” (Ren et al., 2018). Empirical studies have confirmed that GHRM significantly enhances employee participation in environmental practices and contributes to improved organizational environmental performance (S. H. Kim et al., 2019; Pham et al., 2020). A recent study by Vu et al. (2025) further substantiates the positive influence of GHRM on employees’ environmental knowledge, attitudes, and behaviors within the hospitality industry in Vietnam, ultimately improving hotel sustainability outcomes.

Employee pro-environmental behavior (PEB)—defined as voluntary actions aimed at environmental preservation—plays a pivotal role in the success of sustainability implementation in hotels. Prior research has shown that PEB not only drives environmental performance but also yields financial and operational benefits (Susmono Widagdo et al., 2022; Widagdo, Palupiningtyas, D., Nugraheni, et al., 2024). Nevertheless, the existing literature remains predominantly focused on single-level analyses—either individual or organizational—thus failing to capture the complex interplay between factors operating across multiple organizational strata.

Multilevel approaches have been widely acknowledged as a more comprehensive framework for understanding organizational behavior phenomena (Kozlowski & Klein, 2000). Within the hospitality context, such an approach is particularly pertinent, as the implementation of environmental practices is shaped by both individual-level characteristics (e.g., motivation, attitudes) and departmental-level factors (e.g., leadership, organizational culture, and management systems). While Zhang et al., (2021) highlight the necessity of examining cross-level influences on workplace green behavior, empirical studies applying this approach in hospitality remain limited.

This study places particular emphasis on young talent employees—those under 35 years of age—who possess distinct generational attributes relevant to sustainability engagement. Millennials and Generation Z employees tend to exhibit higher environmental awareness and hold strong pro-sustainability values, positioning them as potential agents of organizational transformation (Palupiningtyas et al., 2024; Widagdo, Palupiningtyas, et al., 2024). However, their effectiveness is often constrained by limited training opportunities and insufficient managerial support. Evidence from Putra et al. (2024) suggests that while young hospitality workers demonstrate high motivation to engage in environmental initiatives, their participation is significantly influenced by the robustness of the GHRM framework.

Despite the growing interest in GHRM and PEB, several research gaps remain salient. First, the predominance of single-level analyses constrains a holistic understanding of cross-level dynamics in green behavior adoption (Norton et al., 2017). Second, integrated studies simultaneously analyzing individual and departmental influences on environmental performance are scarce, despite the interdepartmental nature of hotel operations. Third, the extant literature is geographically concentrated in developed economies, limiting generalizability to emerging markets such as Indonesia. Fourth, the strategic role of young talent as sustainability change agents remains underexplored.

Focusing on Semarang—a rapidly developing urban tourism hub in Central Java with unique environmental challenges such as tidal flooding, air pollution, and inadequate waste management—this study addresses a critical knowledge gap. While several hotels in the region have begun to adopt Green Hotel principles, little is known about the actual effectiveness of these initiatives, particularly when analyzed through a multilevel lens.

The urgency of this inquiry lies in its multifaceted contribution. Theoretically, it advances understanding of the multilevel mechanisms linking GHRM and PEB to performance outcomes. Practically, it provides evidence-based guidance for hotel management seeking to enhance employee engagement in sustainability. From a policy standpoint, it informs the development of regulatory frameworks that support sustainable transitions in Indonesia’s hospitality sector.

In response to these research gaps, the present study aims to: (1) investigate the implementation of pro-environmental practices at individual and departmental levels in Green Hotels in Semarang, (2) assess the impact of individual-level PEB on hotel performance, (3) evaluate the influence of departmental-level PEB on performance outcomes, (4) explore the interaction effects between individual and departmental PEB, and (5) identify organizational and contextual factors that facilitate or hinder PEB implementation, with a specific focus on the role of young talent as sustainability champions.

2. Preliminaries or Related Work or Literature Review

2.1 Green Human Resource Management in the Hospitality Industry

Green Human Resource Management (GHRM) has become a prominent research domain within hospitality studies, reflecting the strategic alignment between human capital development and environmental sustainability. A systematic review conducted by Alreahi et al. (2022), synthesizing 59 peer-reviewed articles from Scopus and Web of Science, identifies four key relational dimensions of GHRM in hospitality: employee engagement, corporate social responsibility (CSR) and marketing systems, leadership and management practices, and organizational culture. Recent empirical findings by Vu et al. (2025) confirm that GHRM significantly enhances environmental knowledge, pro-environmental attitudes, and behaviors among hotel employees in Vietnam, using covariance-based structural equation modeling (CB-SEM) on a sample of 393 hospitality workers.

The theoretical foundations of GHRM in the hospitality sector are largely drawn from the Ability-Motivation-Opportunity (AMO) framework and Social Exchange Theory (SET). Ahmad et al. (2024) demonstrate that GHRM practices—particularly green training, recruitment, and the institutionalization of green culture—significantly predict organizational citizenship behavior for the environment (OCBE). Their study, based on partial least squares structural equation modeling (PLS-SEM) of 292 hotel managers in Pakistan, further identifies OCBE as a mediator between GHRM and environmental performance, with green organizational culture serving as a moderating variable.

2.2 Pro-Environmental Behavior and Its Determinants

Pro-Environmental Behavior (PEB) in organizational contexts is a multidimensional construct encompassing voluntary actions by employees aimed at environmental preservation. Kim et al. (2019) drawing from Social Identity Theory, provide evidence that GHRM fosters organizational commitment, which subsequently enhances employees' eco-friendly behavior and improves environmental performance. Their study, set in South Korea's hospitality sector, positions organizational commitment as a full mediator in the GHRM-PEB link.

A more recent development in the literature is the emergence of the "extraordinary pro-environmental behavior" (E-PEB) framework, introduced by Carvache-Franco et al. (2024). Through a systematic review of 79 articles across 11 top-tier journals, the authors propose E-PEB as an evolved form of PEB, integrating emotional engagement and empathy across all levels of an organization. This perspective calls for a shift from reactive to proactive environmental behaviors that transcend internal processes and extend to broader organizational engagement with sustainability.

2.3 Multilevel Approaches in Organizational Research

Despite the theoretical relevance of multilevel perspectives, their application in GHRM and PEB research within the hospitality domain remains scarce. An integrative systematic review by Abdulrab et al. (2024), analyzing 77 empirical studies using the Antecedents-Decisions-Outcomes (ADO) and Theories-Contexts-Methods (TCM) frameworks, highlights a fragmentation in the literature and a lack of methodological rigor in capturing cross-level effects. Notably, the review calls for greater integration of multilevel models to explain the dynamic interplay between individual and organizational variables in sustainability initiatives.

Zhang et al. (2021) make a notable contribution by developing a multilevel dual-process model linking responsible leadership to voluntary workplace green behavior. Utilizing data from 357 employees and 71 teams in China, their study shows that individual- and team-level mechanisms operate distinctly, emphasizing the importance of cross-level analytical designs to capture the full scope of green behavior determinants in hospitality workplaces.

2.4 Linking GHRM, PEB, and Hotel Performance

Extant empirical research consistently establishes a positive association between GHRM, PEB, and various dimensions of hotel performance. For instance, Pham et al. (2020) employed mediation and interaction analysis to examine the pathways through which GHRM affects environmental outcomes via OCBE. Using data from 800 hotel employees in Manila, the study confirms that employee involvement and environmental training jointly enhance commitment, OCBE, and ultimately, environmental performance. The interaction effect further strengthens this relationship, highlighting the synergy between engagement mechanisms.

Al-Romeedy & Alharethi (2025) extend this understanding by proposing a mediation model wherein green entrepreneurial orientation, green innovation, and green organizational identity mediate the relationship between GHRM and green reputation. Based on PLS-SEM analysis of 866 responses from travel agencies in Saudi Arabia, the study demonstrates that GHRM exerts both direct and indirect influences on organizational reputation, mediated by multiple organizational constructs. This reveals the layered complexity of the GHRM–performance nexus in tourism and hospitality contexts.

2.5 Identified Research Gaps and Theoretical Positioning

Despite growing interest in green human capital strategies, several theoretical and empirical gaps persist. First, most existing studies adopt a single-level approach, which fails to capture the interactive mechanisms across organizational strata. Second, few studies concurrently examine individual- and departmental-level influences on sustainability performance, despite the cross-functional nature of hospitality operations. Third, empirical research in the field remains concentrated in developed countries and East Asia, limiting the transferability of findings to developing contexts such as Indonesia. Fourth, the specific role of young talent employees—who represent a demographically and psychologically distinct workforce cohort—remains underexplored in sustainability research.

Addressing these gaps, the present study adopts a multilevel qualitative design to examine how PEB functions across individual and departmental levels in the Indonesian hospitality sector. By focusing on young talent employees and their interactions with departmental systems, this research contributes novel theoretical insights and practical implications for multilevel sustainability implementation in emerging markets.

3. Proposed Method

3.1 Research Design

This study adopts a qualitative case study approach to explore the multilevel dynamics of pro-environmental behavior (PEB) within the hospitality sector. The case study design is particularly suitable for capturing complex social phenomena within real-world contexts where the boundaries between the phenomenon and its context are indistinct (Yin, 2018). A multilevel analytical lens was applied to examine interactions between individual and departmental factors influencing PEB, following the framework proposed by Kozlowski and Klein (2000) for organizational multilevel research. This design enables an in-depth understanding of how green human resource management (GHRM) practices operate across different organizational levels in enhancing hotel sustainability performance.

3.2 Site Selection and Sampling Strategy

The empirical investigation was conducted in five star-rated hotels located in Semarang, Central Java, Indonesia, each of which had adopted the Green Hotel concept. The selection criteria for these cases included: (1) possession of formal certification or recognition for environmental practices, (2) documented sustainability policies and programs, and (3) active implementation of GHRM practices for at least one year.

A purposive sampling strategy (Creswell & Poth, 2018) was employed to identify information-rich participants aligned with the study objectives. The sample comprised 35 individuals, categorized as follows: (a) 20 young talent employees under the age of 35 from various departments (four per hotel), (b) 10 departmental managers responsible for environmentally significant functions (e.g., housekeeping, engineering, food & beverage; two per hotel), and (c) five senior managers representing hotel leadership (one per hotel). Inclusion criteria for young talent included a minimum tenure of one year and prior involvement in environmental training or sustainability initiatives.

3.3 Data Collection Techniques

Data collection employed method triangulation to enhance the credibility, transferability, and dependability of findings (Stake, 2005). Four complementary qualitative techniques were used:

- a) **Semi-Structured Interviews:** In-depth interviews were conducted with all participants using a protocol derived from established GHRM and PEB frameworks. Each session lasted between 60–90 minutes, was audio-recorded with consent, and focused on experiences with sustainability implementation and perceived impacts on hotel performance.
- b) **Direct Observation:** On-site observations were conducted to capture real-time environmental practices at both individual and departmental levels. Observational data included employee participation in sustainability initiatives, visible green behaviors, and departmental enforcement of environmental policies.
- c) **Focus Group Discussions (FGDs):** FGDs were held separately with young talent employees and departmental managers to capture collective perspectives and group-level dynamics concerning pro-environmental practices and organizational performance.
- d) **Document Analysis:** Relevant organizational documents—including sustainability policies, training materials, performance reports, and internal communication related to environmental programs—were reviewed to triangulate and contextualize verbal data.

3.4 Data Analysis Procedures

Thematic analysis was applied using the six-phase framework by Braun & Clarke (2006): familiarization with data, initial coding, theme development, theme review, theme definition, and final reporting. NVivo software was employed for data management and analytical coding to ensure rigor and traceability (Paulus & Lester, 2021). Themes were generated inductively while remaining informed by key theoretical frameworks, particularly the AMO model and Social Exchange Theory.

To address the study's multilevel focus, a cross-level analytical approach was employed as per Kozlowski and Klein (2000). The data were interpreted using a two-tiered structure:

- a) **Level 1 (Individual):** Individual-level PEB was analyzed in relation to personal motivations, green self-efficacy, and environmental awareness.
- b) **Level 2 (Departmental):** Departmental-level PEB was examined through departmental culture, leadership practices, and environmental management systems.
- c) **Cross-Level Interactions:** Organizational performance outcomes were analyzed as a function of the interaction between individual and departmental PEB, including contextual moderators.

This analytical framework facilitated the identification of additive, synergistic, and multiplicative effects across levels, with attention to both convergence and divergence in PEB patterns.

3.5 Validity and Reliability Measures

To ensure methodological rigor and trustworthiness (Lincoln & Guba, 1985), the following strategies were implemented:

- a) **Triangulation:** Multiple sources (employees, managers, executives), methods (interviews, observation, FGDs, document review), and coders were engaged to enhance data credibility and reduce bias.
- b) **Member Checking:** Preliminary findings were validated with selected participants to confirm interpretive accuracy and enhance authenticity.
- c) **Audit Trail:** A comprehensive log of methodological decisions, coding iterations, and analytical reflections was maintained to ensure dependability and facilitate replication.
- d) **Thick Description:** Rich contextual details were provided to enhance transferability to other hospitality settings in emerging markets.
- e) **Inter-Coder Reliability:** Double coding of 20% of the dataset yielded an agreement level of 85%, indicating consistency in analytical interpretation (Fuchs, 2023). The coding process continued iteratively until data saturation was reached, with no new themes emerging.

4. Results and Discussion

4.1 Multilevel Implementation Patterns of Pro-Environmental Behavior

The thematic analysis revealed differentiated patterns of PEB implementation at individual and departmental levels across the five Green Hotels studied. Departmental-level PEB exhibited higher levels of structural formalization and policy alignment, reflected in the consistent application of green standard operating procedures (SOPs), periodic environmental audits, and integration of sustainability indicators in departmental KPIs. In contrast, individual-level PEB was characterized by variation in behavior, ranging from habitual actions (e.g., energy and water conservation) to discretionary green initiatives (e.g., eco-innovation projects led by young staff).

Quantitative tabulations of observed practices indicated that departmental PEB achieved high implementation levels in green policy enforcement (80%) and leadership engagement (73%), while individual PEB showed strong adherence to waste management (85%) and energy conservation (78%). These findings suggest that organizational systems and leadership structures play a critical role in anchoring sustainable behaviors at the departmental level, while individual agency remains contingent upon environmental self-efficacy and perceived organizational support.

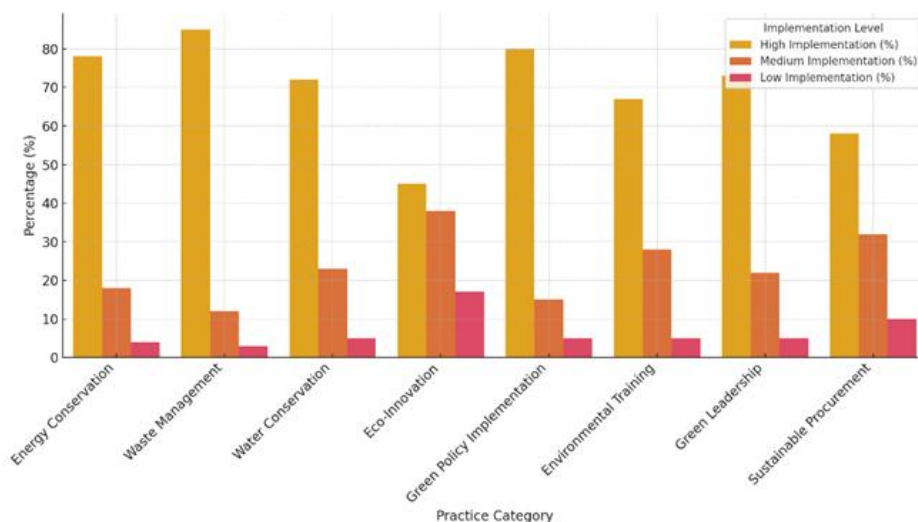


Figure 1. Multilevel Implementation of Pro-Environmental Practices

4.2 Impact of PEB on Hotel Performance Dimensions

The study identified distinct yet complementary impacts of PEB at each level on key hotel performance indicators. Departmental PEB demonstrated a robust influence on environmental compliance, energy efficiency, and cost reduction, confirming theoretical expectations grounded in the AMO framework that systemic opportunity structures enhance behavioral outcomes. Conversely, individual PEB contributed more directly to operational efficiency and service-level outcomes, such as faster resource recovery, reduced error rates in eco-protocols, and improved guest interaction regarding sustainability policies.

Critically, the interaction between individual and departmental PEB produced synergistic and multiplicative effects. For instance, hotels exhibiting strong alignment between staff-led initiatives and departmental strategies reported significantly higher guest satisfaction scores and stronger performance in sustainability certifications. This empirical finding supports propositions in Social Identity Theory—particularly the role of value congruence in strengthening environmental citizenship behavior across organizational levels (A. Kim et al., 2017)

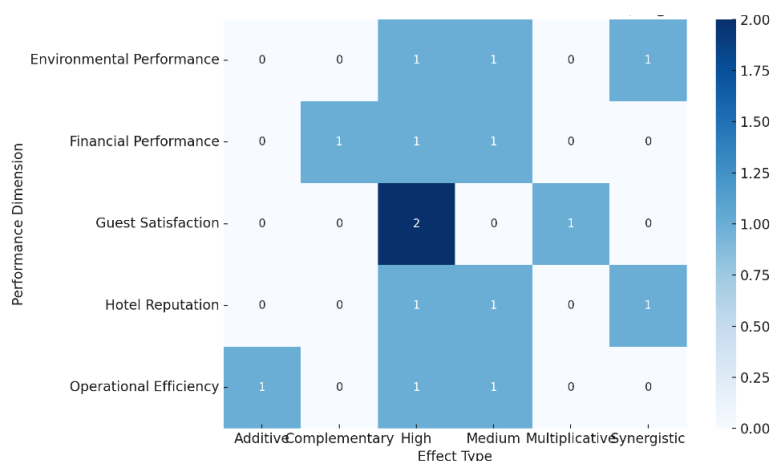


Figure 2. Contribution of PEB to Hotel Performance Dimensions

4.3 Key Enablers of PEB Among Young Talent

The effectiveness of young talent in driving environmental initiatives was strongly moderated by five interrelated organizational enablers: (1) top management support that legitimized bottom-up innovation; (2) a pro-environmental culture that normalized sustainable behavior; (3) a reward and recognition system aligned with green performance; (4) continuous training programs that developed environmental competencies; and (5) participatory decision-making structures that empowered young employees.

These findings align with Saleem et al. (2020), who emphasize the role of leadership behavior and organizational climate in fostering green employee behavior. Moreover, the data reveal that when these enablers are absent or inconsistently applied, young talent engagement declines, leading to fragmented and unsustainable environmental practices.

4.4 Theoretical and Managerial Implications

Theoretically, this study extends multilevel theory in the context of GHRM by empirically demonstrating that cross-level interactions between individual and departmental PEB generate non-linear effects on diverse performance dimensions. The integrative use of AMO, SET, and Social Identity Theory provides a robust explanatory lens for understanding how individual motivations, organizational structures, and identity alignment jointly shape sustainability outcomes.

From a managerial perspective, the findings suggest the necessity of adopting a dual-track strategy that simultaneously empowers individual green initiatives and institutionalizes departmental systems. Hotel managers should prioritize environmental leadership development at the mid-management level while fostering a culture of innovation among younger staff. Embedding sustainability metrics into performance appraisal and reward systems also emerged as a critical mechanism for behavioral reinforcement.

5. Conclusions

This study offers novel empirical insights into the multilevel dynamics of pro-environmental behavior in the hospitality sector, based on an in-depth qualitative investigation of five certified Green Hotels in Semarang, Indonesia. It establishes that departmental-level PEB is more structured and consistent, exerting substantial influence on environmental and financial performance metrics. In contrast, individual-level PEB has a more pronounced effect on operational efficiency and guest-facing outcomes. Crucially, the intersection of individual and departmental PEB produces multiplicative and synergistic effects—underscoring the value of a cross-level approach to sustainability implementation.

The study successfully addresses its five research objectives by identifying specific implementation patterns, performance impacts, and enabling factors for young talent-driven sustainability behavior. By highlighting the importance of top management support, organizational culture, green-focused HR systems, and participative structures, the study provides practical guidance for hospitality organizations seeking to institutionalize green practices through human capital strategies.

Theoretically, the research contributes to the advancement of multilevel theory by integrating AMO, SET, and Social Identity Theory into a comprehensive explanatory model of green behavior in service organizations. Methodologically, it represents a rare example of cross-level qualitative analysis within GHRM research, addressing long-standing calls for greater depth and contextual nuance in sustainability scholarship.

Despite its contributions, the study has limitations in terms of geographic scope and cross-sectional design. Future research should consider comparative studies across diverse hotel categories and regions to validate the generalizability of the findings. Longitudinal designs are also recommended to capture the dynamic evolution of PEB and its sustained impact on hotel performance. Additionally, exploring the mediating role of digital technology and institutional policy frameworks in shaping multilevel green behavior constitutes a promising direction for further inquiry.

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