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GREEN HRM, EMPLOYEE BEHAVIOR, AND ORGANIZATIONAL INNOVATION: A MULTI-THEORETIC PATHWAY TO SUSTAINABLE COMPETITIVENESS

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Abstract

As sustainability imperatives reshape global tourism, this study investigates how Green Human Resource Management (GHRM) practices can serve as strategic levers for driving sustainability performance and competitive advantage within Indonesia's tourism sector. Amid rising environmental expectations and regulatory mandates, the research integrates Social Learning Theory, the Resource-Based View, and Institutional Theory to construct and test a model that links top management support, green organizational culture, and regulatory pressure to GHRM adoption. Using a cross-sectional survey of 510 employees and managers across eco-certified tourism firms in five Indonesian destinations, the study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze relationships among constructs. Findings revealed that GHRM practices foster both employee green behavior and organizational green innovation, two distinct internal mechanisms that jointly mediate the impact of HR systems on sustainability outcomes. These dual mediation pathways clarify how people-centered strategies transform environmental values into operational performance and market competitiveness. This study offers theoretical novelty by modeling the combined behavioral and innovation effects of GHRM in a service-based, emerging economy context. From a practical perspective, the results -provide insights for tourism regulators and business leaders that are seeking to align human resource strategies with China Sustainable Enterprise (CHSE) standards standards, green certifications, and Indonesia's national sustainability agenda.

Keywords: Competitive advantage; GHRM; Indonesia; Innovation; Sustainability performance; Tourism industry

1. Introduction

Tourism is increasingly recognized as both a vital engine for economic development and a significant contributor to environmental degradation. According to the United Nations World Tourism Organization, the tourism sector contributes approximately eight percent of global carbon emissions and is closely associated with pressures on water resources, land use, and biodiversity (Liu et al., 2025). The dual role of tourism as an economic driver and

environmental stressor has prompted extensive global debate on whether the sector can achieve genuine sustainability or whether growth inevitably conflicts with ecological limits. In Indonesia, tourism is central to national development strategies, generating foreign exchange, creating employment, and stimulating regional economies (Azizurrohman et al., 2021; Mulyawan & An, 2023; Yuli, 2024). However, the rapid expansion of mass tourism has intensified concerns about overtourism, cultural commodification, and ecological degradation in destinations such as Bali, Lombok, and Yogyakarta, raising critical questions about how tourism growth can be balanced with environmental stewardship.

Recent policy developments underscore the urgency of this challenge. Internationally, sustainability standards and green certification programs are becoming competitive benchmarks (Bianco et al., 2023), as tourists increasingly demand eco-friendly options and regulators impose stricter requirements. In Indonesia, the Ministry of Tourism and Creative Economy has promoted the Cleanliness, Health, Safety, and Environment (CHSE) certification to institutionalize environmental and social responsibility (Iqbal et al., 2025). However, the adoption of such initiatives is uneven, often limited to larger firms with greater resources, while smaller operators struggle to comply. This unevenness highlights a broader controversy in sustainable tourism research: extent to which sustainability is genuinely transformative rather than a form of "greenwashing" that masks ongoing ecological harm (Junior et al., 2019; Chen & Chang, 2013).

Against this backdrop, the role of organizations and their internal strategies has become a focal point of scholarly debate. Scholars increasingly argue that sustainability outcomes are determined not only by external policies or consumer pressure but also by firms' internal management of people and innovation (Ceptureanu et al., 2025; Wei et al., 2022). GHRM has emerged as a strategic mechanism for embedding environmental values into core human capital functions, including recruitment, training, appraisal, and reward systems (Zihan & Makhbul, 2024). GHRM is positioned as a bridge between aspirational sustainability commitments and day-to-day operational realities by aligning employee practices with ecological goals. Yet, the literature remains fragmented. Much of the empirical evidence -derived from manufacturing or large corporations in developed economies, with relatively limited attention to service-based industries such as tourism and emerging contexts such as like Indonesia, where institutional and cultural dynamics differ -substantially (Din et al., 2024; Perez et al., 2025; Zacher et al., 2023).

The theoretical debates surrounding GHRM further complicate the picture. From a Resource-Based View (RBV), GHRM is considered as an intangible capability that can generate a sustained competitive advantage if it is valuable, rare, and difficult to imitate (Shoaib et al., 2025). In contrast, Institutional Theory emphasizes that environmental practices are often shaped less by strategic choice and more by external pressures, such as regulatory requirements, certification systems, or normative expectations from stakeholders (Glover et al., 2014). Meanwhile, Social Learning Theory suggests that employees adopt green behaviors by observing role models, internalizing norms, and receiving reinforcement through HR systems (Al Halbusi et al., 2023). Critics have noted that these theoretical perspectives sometimes produce competing interpretations. For instance, while RBV emphasizes on firm-level agency and Institutional Theory highlights structural constraints, and whether these dynamics interact in resource-constrained contexts remains unclear. Moreover, whether GHRM primarily drives individual behavioral change or whether organizational innovation serves as the more decisive mechanism for achieving measurable sustainability outcomes remains controversial (Li & Li, 2025; Yunaningsih et al., 2024).

These ongoing debates underscore important research gaps. Empirical studies rarely examine the simultaneous role of employee green behavior and organizational green innovation as mediators, despite theories that both may jointly determine how HR practices translate into sustainability performance. Similarly, the influence of internal factors such as top management

support and green organizational culture, has not been comprehensively examined in tourism contexts when combined with external pressures, such as environmental regulations. This study addresses these gaps by developing and testing a comprehensive framework that integrates these antecedents and dual mediators to explain Indonesian tourism enterprises' sustainability performance and competitive advantage. By doing so, a multi-theoretic approach that captures the complex interplay of agency, institutional forces, and learning processes in shaping environmental transformation is advanced.

The Indonesian tourism sector provides a compelling empirical context for this study. It is simultaneously a global tourism hotspot, a site of acute ecological vulnerability, and an emerging economy with distinctive institutional features such as fragmented regulatory enforcement and strong community-based cultural norms. By focusing on this setting, the study not only contributes to the development of theory but also provides context-specific insights into how HR-based strategies can support green transformation in resource-constrained environments.

2. Methods

2.1 Research design and methodology

In order to investigate how GHRM practices impact sustainability performance and competitive advantage through employee green behaviour and organisational green innovation in Indonesia's tourism and hospitality sector, this study used a quantitative, cross-sectional approach. Because it works well with predictive models that include intricate mediation structures and reflecting constructs, partial least squares structural equation modelling, or PLS-SEM, was chosen as the analytical technique (Hair et al., 2024). The study was carried out between January and March 2025, when the travel and tourist sector in Indonesia was actively participating in national sustainability certification schemes like CHSE (Cleanliness, Health, Safety, and Environment).

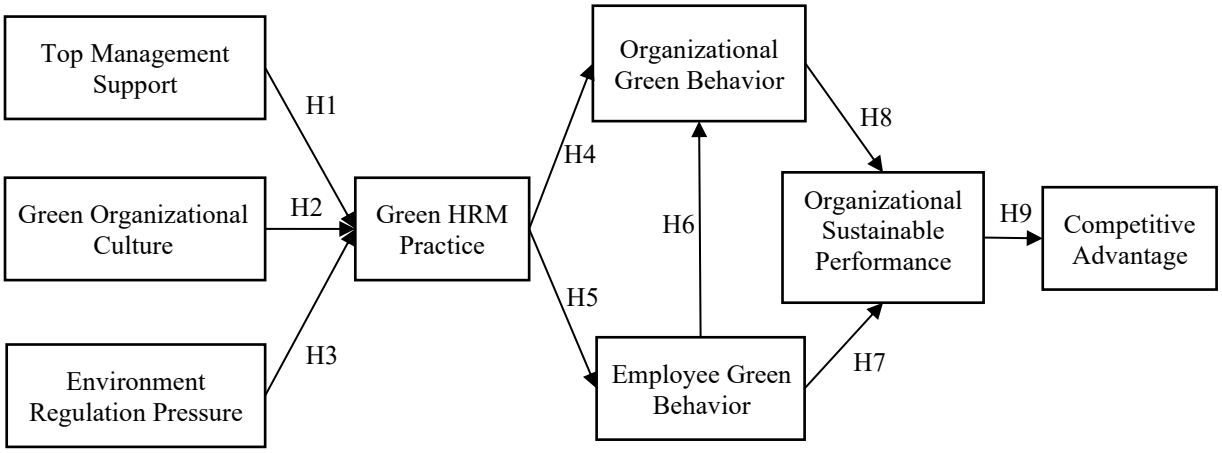

Figure 1. Research framework

2.2 Sampling and data collection

The study focused on five major urban and ecotourism destinations: Bali, Yogyakarta, Lombok, Bandung, and Jakarta. These locations were selected due to their high participation in eco-certification schemes and strategic importance to Indonesia's tourism economy. The target population consisted of operational employees, supervisors, and managers in hotels, resorts, travel agencies, and tourist attraction operators.

An initial list of 840 organizations was compiled using national green certification directories (Green Globe and CHSE) as well as publicly available sustainability reports. Following telephone-based screening to confirm ongoing environmental initiatives, 640 firms

agreed to participate. Questionnaires were distributed to approximately 10 staff members per firm, yielding a total of 8,400 invitations. Survey options—online and paper-based questionnaires—were offered to accommodate respondent preferences. After data cleaning to remove incomplete and patterned responses, 510 valid responses were retained, resulting in an individual-level response rate of 6.1% and a firm-level response rate of 79.7%.

2.3 Measurement and instrument development

All measurement items were adapted from well-established instruments published in prior studies. Given that the study was conducted in Indonesia with tourism-sector employees from diverse linguistic and educational backgrounds, a structured adaptation process was implemented to ensure cultural and semantic appropriateness.

First, the original English-language items were translated into Bahasa Indonesia using a double-back translation method. Three bilingual tourism academics with expertise in human resource management and sustainability independently reviewed both the source and target versions for semantic equivalence. To improve contextual fit, certain terminology was modified. For example, "our company" was replaced with "our hotel" or "our organization," and "green products" was reworded as "eco-friendly services" to better align with the vocabulary of the hospitality sector.

Second, a pilot test was conducted on the adapted items involving 32 tourism employees from different roles and locations. Participants were asked to assess item clarity, relevance, and ease of understanding. The pilot feedbackled to minor linguistic refinements. All constructs demonstrated satisfactory internal consistency during the pilot, with Cronbach's alpha values exceeding 0.80, confirming the adapted scales' reliability. Each construct was measured using a reflective multi-item scale rated on a 7-point Likert scale (1=strongly disagree to 7=strongly agree). Table 1 presents the final set of measurement items used in the study.

Table 1. Measurement items

Construct	Sample Items	Source
Top Management Support (TMS)	a. Top management actively supports environmental initiatives. b. Leaders communicate the importance of environmental management. c. Resources are allocated for environmental activities.	Adapted from Alkaf et al. (2023)
Green Organizational Culture (GOC)	a. Environmental values are embedded in our organizational culture. b. Employees are encouraged to act environmentally responsibly. c. Sustainability is a core component of our mission and vision.	Adapted from Aggarwal & Agarwala (2021)
Environmental Regulation Pressure (ERP)	a. This company comply with strict environmental regulations. b. Regulatory requirements influence our environmental strategies. c. External regulations drive our GHRM initiatives.	Adapted from Zhou et al. (2022)
Green Human Resource Management Practices (GHRM)	a. This company recruit employees who have environmental values. b. This company offer green training programs. c. The environmental performance is part of the evaluations. d. We reward green behavior. e. Employees are involved in green initiatives.	Adapted from Sharma & Gupta (2015)
Employee Green Behavior (EGB)	a. The employee actively conserve resources at work. b. The employee participate in environmental programs. c. The employee encourage others to act sustainably.	Adapted from Zacher et al. (2023)
Organizational Green Innovation (OGI)	a. This company develop eco-friendly services. b. This company adopt environmentally friendly technologies. c. This company innovate to reduce the environmental impact.	Adapted from Shah & Soomro (2023)
Organizational Sustainability Performance (OSP)	a. The environmental performance of this compaany has improved. b. The social responsibility activities of this company have increased. c. This company achieve operational efficiencies through sustainability.	Adapted from Abror & Muharam (2024)

Competitive Advantage (CA)	a. The sustainability practice of this company enhances customer loyalty. b. The sustainability practices of this company differentiate it from the competitors. c. This company gain market advantages through our environmental initiatives.	Adapted from Ha et al. (2021)

2.4 Data analysis procedure

SmartPLS 4.0 was used for data analysis. The analysis followed a two-step approach. First, the measurement model was evaluated for reliability and validity using Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), Fornell–Larcker criteria, and Heterotrait-Monotrait (HTMT) ratio. All constructs met or exceeded the recommended thresholds, confirming internal consistency, convergent validity, and discriminant validity. Second, the structural model was assessed to test the hypothesized relationships. Bootstrapping was performed with 5,000 subsamples to determine the significance the path coefficients. In addition, R^2, f^2, and Q^2 statistics were examined to evaluate the explained variance, effect sizes, and predictive relevance.

To address potential common method variance (CMV), both procedural and statistical controls were implemented. Procedural safeguards included anonymity assurances, item order randomization, and predictor and criterion variables separation within the questionnaire. Statistically, Harman's single-factor test showed that no single factor dominated the variance. In addition full collinearity Variance Inflation Factor (VIF) values were below the conservative threshold of 3.3, indicating that CMV was not a major concern.

3. Results and Discussions

3.1 Descriptive statistics of the study

Table 2 presents the demographic characteristics of the 510 respondents who participated in the study. The gender distribution was nearly balanced, with 50.6% male and 49.4% female participants. Most respondents were -between 25 and 34 years old (42.9%), followed by those under 25 years old (24.3%), reflecting a predominantly young workforce in the Indonesian tourism and hospitality sector. In terms of educational background, most respondents (61.0%) held a diploma or bachelor's degree, 28.8 had completed senior high school and 10.2% possessed a master's degree or higher. Regarding job positions, 60.4% of the respondents were operational staff, 24.5% were supervisors, and 15.1% occupied middle management roles. In terms of work experience, 42.2% of the respondents had between two and five years of experience, while 30.0% had more than five years, suggesting a moderately experienced sample. For the organizational distribution, most-respondents were employed in hotels and resorts (65.5%), followed by tour and travel agencies (19.0%), and tourist attraction operators (15.5%).

Table 2. Respondent's demographic profile

Variable	Category	Frequency	Percentage
Gender	Male	258	50.6
	Female	252	49.4
Age	<25 years	124	24.3
	25–34 years	219	42.9
	35–44 years	116	22.7
	≥45 years	51	10.0
Education	Senior High School	147	28.8
	Diploma/Bachelor's	311	61.0
	Master's Degree or higher	52	10.2
Job Position	Operational Staff	308	60.4
	Supervisor	125	24.5
	Middle Manager	77	15.1

Length of Work Experience	<2 years	142	27.8
	2–5 years	215	42.2
	>5 years	153	30.0
Organization Type	Hotel/Resort	334	65.5
	Tour and Travel Agency	97	19.0
	Tourist Attraction Op.	79	15.5

Table 3 reports the descriptive statistics for all main constructs. The constructs' mean scores ranged from 5.21 to 5.61 on a seven-point Likert scale, indicating a generally favorable perception toward green human resource management practices, employee green behavior, organizational green innovation, sustainability performance, and competitive advantage. The standard deviations ranged between 0.83 and 0.94, suggesting a moderate dispersion around the mean and thus reflecting a reasonable variability in respondents' perceptions. The minimum and maximum values confirmed that the full range of the scale was utilized, ensuring that the data captured diverse viewpoints across respondents. These initial descriptive results suggest a generally positive orientation toward green initiatives among employees in the Indonesian tourism and hospitality sector, providing a solid foundation for subsequent structural model analysis.

Table 3. Descriptive statistics

Construct	Mean	Standard Deviation	Min	Max
Top Management Support	5.42	0.91	2	7
Green Organizational Culture	5.58	0.87	3	7
Environmental Regulation Pressure	5.21	0.94	2	7
GHRM Practices	5.47	0.89	2	7
Employee Green Behavior	5.61	0.83	3	7
Organizational Green Innovation	5.36	0.88	2	7
Org. Sustainability Performance	5.52	0.85	2	7
Competitive Advantage	5.48	0.86	2	7

3.2 Evaluation of the measurement model

Prior to evaluating the structural model, the validity and reliability of the measurement model were evaluated. Internal consistency reliability was satisfactory for all constructs (Table 4). Cronbach's alpha values exceeded the suggested cutoff of 0.7, ranging from 0.841 to 0.889 (Hair et al., 2024). Additionally, CR ratings varied from 0.892 to 0.921, indicating that all constructs had excellent internal consistency. Convergent validity was established using the AVE values, which exceeded the minimum permissible value of 0.5 and varied from 0.697 to 0.782. These findings demonstrate the model's high reliability and convergent validity as well as the assessment items' acceptable representation of their respective constructs.

Table 4. Reliability and validity test results

Construct	Cronbach's Alpha	CR	AVE
TMS	0.843	0.901	0.753
GOC	0.856	0.911	0.774
ERP	0.832	0.892	0.735
GHRM	0.889	0.921	0.697
EGB	0.864	0.915	0.782
OGI	0.847	0.905	0.760
OSP	0.859	0.915	0.782
CA	0.841	0.901	0.753

The Fornell-Larcker criterion was used to evaluate discriminant validity. The square root of each construct's AVE (given on the diagonal in bold) was higher than its correlations with other constructs, as Table 5 illustrates. This satisfies the Fornell-Larcker criterion for

discriminant validity by confirming that each construct shares more variance with its indicators than with other constructs in the model (Hair et al., 2024). The moderate correlations between the constructs indicate that although they are related, they are not the same.

Table 5. Fornell Larcker criterion

Construct	TMS	GOC	ERP	GHRM	EGB	OGI	OSP	CA
TMS	0.868							
GOC	0.612	0.880						
ERP	0.591	0.575	0.857					
GHRM	0.653	0.661	0.598	0.835				
EGB	0.598	0.623	0.570	0.638	0.884			
OGI	0.585	0.601	0.561	0.621	0.671	0.872		
OSP	0.607	0.626	0.578	0.648	0.691	0.679	0.884	
CA	0.589	0.605	0.563	0.629	0.665	0.673	0.686	0.868

Furthermore, discriminant validity was evaluated by the use of correlations' HTMT. All of the HTMT values, which ranged from 0.599 to 0.734, were below the conservative cutoff of 0.85, as shown in Table 6. Given that the constructs are empirically distinct and not overly correlated, this further supports the accomplishment of discriminant validity. The measurement model's sufficient psychometric qualities are confirmed by the reliability and validity test results, guaranteeing that further studies of the structural model can be carried out with assurance.

Table 6. Heterotrait-Monotrait ratio

Construct	TMS	GOC	ERP	GHRM	EGB	OGI	OSP	CA
TMS								
GOC	0.693							
ERP	0.645	0.631						
GHRM	0.707	0.693	0.662					
EGB	0.649	0.673	0.618	0.689				
OGI	0.628	0.656	0.599	0.668	0.724			
OSP	0.662	0.681	0.634	0.697	0.734	0.718		
CA	0.644	0.669	0.610	0.682	0.711	0.719	0.731	

3.3 Common Method Variance (CMV)

The risk of CMV was carefully considered because the data for every variable came from the same respondents using a single survey instrument. The validity of the research findings may be threatened by CMV's ability to artificially inflate or deflate apparent connections between constructs (Kock, 2017). To lessen CMV, both statistical and procedural remedies were used. In order to minimise evaluation anxiety and answer biases, the questionnaire design used randomised item order, and respondent anonymity was maintained throughout the survey procedure. Additionally, explicit instructions made it apparent that responders should answer honestly and that there were no right or incorrect responses.

Table 7. Harman’s Single-Factor test results

Factor	Variance Explained (%)
Factor 1	31.4
Remaining Factors	68.6

Two tests were performed: the full collinearity test and Harman's single-factor test. First, all measuring items were entered into an unrotated exploratory factor analysis in order to run Harman's single-factor test. The findings demonstrated that CMV was not a significant worry because the first factor only explained 31.4% of the overall variance, much below the crucial 50% threshold.

Table 8. Full Collinearity VIF test results

Construct	VIF
Top Management Support	2.21
Green Organizational Culture	2.09
Environmental Regulation Pressure	2.14
GHRM Practices	2.47
Employee Green Behavior	2.36
Organizational Green Innovation	2.28
Organizational Sustainability Performance	2.42
Competitive Advantage	2.31

Second, the Kock (2015) suggested comprehensive collinearity evaluation method was used. For every latent construct, the VIF values were calculated. The fact that all VIF values were below the cautious cutoff point of 3.3 further supported the notion that common technique bias was not likely to be an issue. Strong evidence that CMV poses no significant danger to the validity of the study's conclusions can be found in the results of both the comprehensive collinearity test and Harman's single-factor test.

3.4 Evaluation of the structural model

The structural model was examined to investigate the proposed links between the constructs after the measurement model was evaluated. The direct impacts analysis results are shown in Figure 2 and Table 9. At the 0.001 level, every direct path coefficient was positive and statistically significant. GHRM practices were significantly positively impacted by top management support (β=0.312, t=5.774, p<0.001), green organisational culture (β=0.347, t=6.912, p<0.001), and environmental regulation pressure (β=0.261, t=4.483, p<0.001), supporting H1, H2, and H3, respectively.

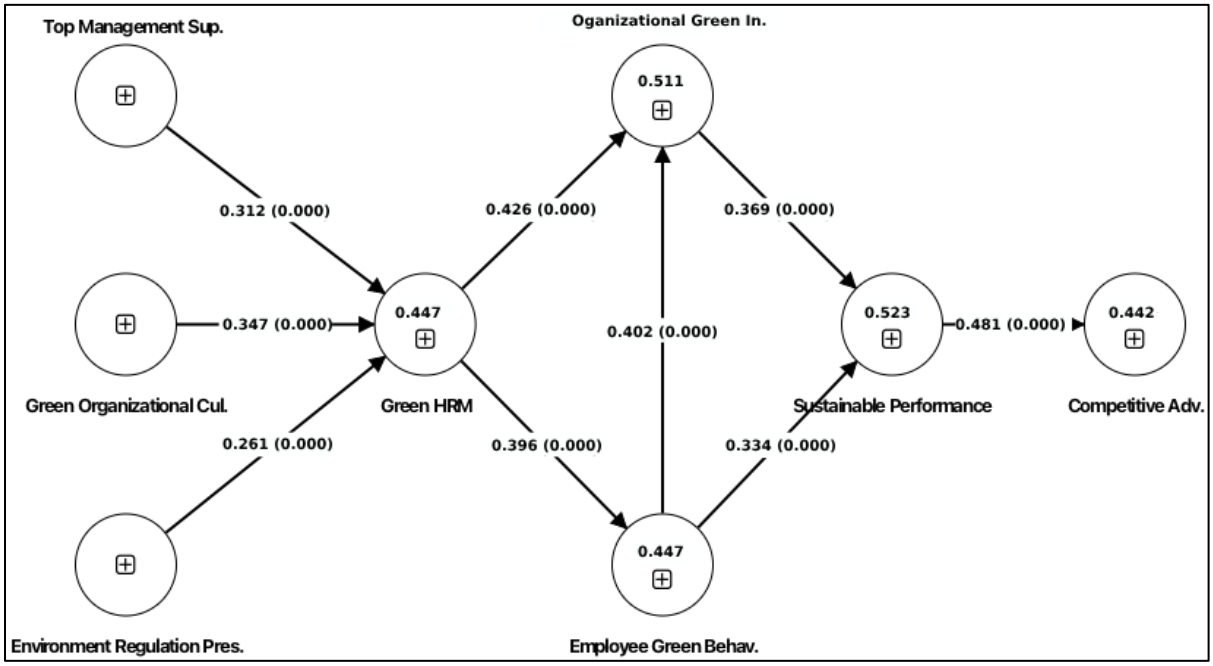

Figure 3. Path Result

GHRM practices were found to significantly influence both employee green behavior (β=0.428, t=8.021, p<0.001) and organizational green innovation (β=0.396, t=7.582, p<0.001), thus supporting H4 and H5. Employee green behavior also had a significant positive impact on organizational green innovation (β=0.402, t=7.214, p<0.001), supporting H6. Furthermore, employee green behavior (β=0.334, t=5.938, p<0.001) and organizational green innovation (β=0.369, t=6.317, p<0.001) significantly enhanced organizational sustainability performance,

supporting H7 and H8. Finally, organizational sustainability performance had a strong positive effect on competitive advantage (β=0.481, t=9.224, p<0.001), supporting H11. These results indicate that the model's direct effects are robust and statistically significant.

Table 9. Direct effects and hypotheses testing results

Hypothesis	Path	β	t-value	p-value	Decision
H1	TMS → GHRM	0.312	5.774	<0.001	Supported
H2	GOC → GHRM	0.347	6.912	<0.001	Supported
H3	ERP → GHRM	0.261	4.483	<0.001	Supported
H4	GHRM → EGB	0.428	8.021	<0.001	Supported
H5	GHRM → OGI	0.396	7.582	<0.001	Supported
H6	EGB → OGI	0.402	7.214	<0.001	Supported
H7	EGB → OSP	0.334	5.938	<0.001	Supported
H8	OGI → OSP	0.369	6.317	<0.001	Supported
H11	OSP → CA	0.481	9.224	<0.001	Supported

Beyond the direct effects, mediation analysis was conducted to test the indirect effects of GHRM practices on organizational sustainability performance through employee green behavior and organizational green innovation. As shown in Table 10, the indirect effect of GHRM practices on organizational sustainability performance via employee green behavior was positive and significant (β=0.143, t=4.271, p<0.001), supporting H9. Similarly, the indirect effect of GHRM practices on organizational sustainability performance via organizational green innovation was also positive and significant (β=0.146, t=4.588, p<0.001), supporting H10.

The significant results of both indirect pathways suggest that employee green behavior and organizational green innovation act as partial mediators. Thus, GHRM practices not only exert direct impacts but also influence sustainability performance through these critical internal mechanisms, providing a deeper understanding of how green workforce strategies translate into broader organizational outcomes.

Table 10. Mediation analysis

Hypothesis	Indirect Path	Indirect Effect (β)	t-value	p-value	Decision
H9	GHRM → EGB → OSP	0.143	4.271	< 0.001	Supported
H10	GHRM → OGI → OSP	0.146	4.588	< 0.001	Supported

The structural model explains a sizeable share of tourism firms' key outcomes. In practice, an R^2 of 0.523 for Organisational Sustainability Performance means that just over half of the variation in a hotel or tour operator's sustainability results can be traced back to the three HR-centric levers studied here: GHRM practices, employee green behaviour and green innovation after controlling for other influences. For managers, this indicates that investing in people-focused sustainability initiatives can move the organisation's environmental "scoreboard" more than many external factors such as destination infrastructure or market fluctuations. Similarly, an R^2 of 0.442 for Competitive Advantage shows that the sustainability gains generated through HR channels translate into nearly one-half of a firm's perceived market edge, underlining the strategic, value of GHRM.

The large effect sizes ($f^2 \approx 0.30$) highlight the most influential drivers within the model. The strong contribution of GHRM to both employee behaviour and green innovation signals that HR departments should prioritize green recruitment, training and reward systems before investing in expensive technology upgrades; as behaviour-driven innovation is already delivering a substantial portion of sustainability outcomes.

Predictive relevance values ($Q^2 \approx 0.33$) confirm that the model can forecast sustainability and advantage beyond the sample used. For practitioners, this indicates that the identified relationships are sufficiently robust to inform policy guidelines, such as CHSE implementation

checklists, and to justify allocating budget to staff-centred green initiatives with confidence that the results will generalize to similar tourism enterprises

Table 11. Structural model summary

Endogenous Construct	R^2	f^2 (Effect Size)	Q^2 (Predictive Relevance)
GHRM Practices	0.447	-	-
Employee Green Behavior	0.447	0.287 (large)	0.318
Organizational Green Innovation	0.511	0.312 (large)	0.349
Organizational Sustainability Performance	0.523	0.334 (large)	0.371
Competitive Advantage	0.442	0.293 (large)	0.337

Global fit indices reinforce that the model is well specified. The Standardized Root Mean Square Residual (SRMR) of 0.063, Normed Fit Index (NFI) of 0.91, and low distance measures indicate that the theoretical framework accurately represents real-world patterns. These results suggest that the observed findings are not statistical artefacts but reflect meaningful patterns that managers can act upon with confidence. Together, these evidences shift the discussion from abstract numbers to actionable guidance: by focusing on HR-driven green culture and innovationtourism enterprises in Indonesia can influence over half of their measurable sustainability performance and nearly half of their competitive positioning in increasingly eco-aware markets.

Table 12. Model fit

Global Fit Index	Observed value	Recommended	Assessment
SRMR	0.063	<0.08	Acceptable
NFI	0.91	≥0.90	Acceptable
dULS	0.785	Should be below the 95 % bootstrap cut-off	Acceptable
dG	0.432	Should be below the 95 % bootstrap cut-off	Acceptable

Notes: SRMR: Standardized Root Mean Square Residual; NFI: Normed Fit Index; dULS: Discrepancy Unweighted Least Squares; dG: Geodesic Discrepancy

3.5 Discussion

This study investigated the mechanisms through which GHRM practices shape sustainability performance and competitive advantage in Indonesia's tourism and hospitality sector. The findings confirm that top management support, green organizational culture, and environmental regulation pressure are important antecedents of GHRM adoption, reinforcing prior research that positions leadership commitment and cultural alignment as critical enablers of environmental strategies (Din et al., 2025; Zahari et al., 2024). In the Indonesian context, where regulatory enforcement is uneven and firms operate with varied resource capacities, these internal and external drivers appear to complement one another. This finding aligns with Rahmaniati & Ekawati (2024) who argued that HR-based environmental initiatives are most effective when both internal legitimacy and institutional pressure support them.

The results further demonstrate that GHRM significantly fosters employee green behavior and organizational green innovation, both of which act as dual mediators between HR practices and sustainability performance. This dual mediation mechanism extends existing literature in several ways. While earlier studies often treated behavior and innovation as independent outcomes of GHRM (Kuo et al., 2022; Shah & Soomro, 2023), this study findings suggest that they-operate interactively, mutually reinforcing one another to translate HR strategies into organizational outcomes. For example, employee behaviors such as resource conservation and participation in environmental programs may provide the groundwork for innovation processes that generate eco-friendly services or technologies. The stronger relative effect of organizational green innovation (β=0.369) compared to employee behavior (β=0.334) underscores the organizational-level visibility of innovation outcomes. This resonates with Qin et al. (2025) who found that innovation was a more salient driver of sustainability in Chinese

hospitality firms. However, this study nuance this claim by showing that in Indonesia, behavior remains essential but less measurable precursor.

At the theoretical level, the study simultaneously contributes to three frameworks. The Social Learning Theory (SLT) perspective, the findings reinforce the importance of modeling and reinforcement in service industries, where employees' exposure to peer norms and managerial cues strongly influences pro-environmental conduct (McDonald, 2014; Mouro et al., 2021). This study extends this theory by demonstrating that learning mechanisms not only encourage behavior but also indirectly facilitate organizational innovation, suggesting a more dynamic link between individual-level imitation and firm-level transformation.

The RBV is expanded by identifying green innovation as an intangible asset that mediates the pathway to competitive advantage. Traditionally, RBV emphasizes tangible resources or formalized capabilities, yet this study supports the argument that environmental consciousness increasingly shapes employee-driven practices such as waste segregation, eco-friendly amenities, and service innovations into valuable, rare, and inimitable resources in tourism markets (Meng et al., 2025). At the same time, the findings challenge the RBV assumption of resource stability,where in Indonesia's fragmented tourism sector, such capabilities may be fragile and dependent on leadership continuity or external support.

Institutional Theory is also validated, as environmental regulation pressure significantly shapes GHRM adoption. However, rather than operating as a coercive force, regulation in Indonesia appears to be more normative, signaling legitimacy expectations from government programs such as CHSE certification and from eco-conscious tourists, rather than binding firms to compliance. This contrasts with findings from Germany (Käsbohrer et al., 2025) and China (Ma & Yee, 2024), where regulatory enforcement and organizational capacity are stronger. In Indonesia, informal and small-scale tourism actors often lack the resources to pursue certification, which highlights the institutional effects' contextual contingency.

These results carry broader implications for debates on sustainable tourism. First, they contribute to the ongoing controversy about whether GHRM is primarily symbolic or transformative. This study suggest that GHRM can indeed deliver measurable sustainability and competitive outcomes, but only when embedded within supportive organizational and institutional conditions. Second, they respond to calls for research in emerging economies, where much of the GHRM literature remains underdeveloped. This study provides empirical evidence that GHRM is not confined to advanced industrial contexts but can be adapted to service-based economies in the Global South by showing that dual mediators operate effectively even in resource-constrained environments.

At the same time, important practical challenges also emerge. Many Indonesian tourism firms, particularly small and family-run operations, lack financial and managerial resources to formalize GHRM practices, echoing concerns raised by Madrid-Guijarro & Duréndez (2023) regarding sustainability barriers in SMEs. Resistance to change, weak green leadership, and limited institutional enforcement further constrain the adoption of green leadership. The demographic profile of respondents provides additional insights: Indonesian tourism firms may benefit from generational openness to sustainability with a predominantly young workforce under 35 years of age. Younger employees, particularly those in frontline roles, can act as change agents if organizations design HR systems that channel their enthusiasm into structured innovation and behavior change.

Finally, the consistency of significant relationships in the model raises important questions. While it confirms the framework's robustness, it also suggests that future research should examine contexts in which GHRM pathways are less effective. For instance, high staff turnover, inadequate training infrastructure, or weak cultural alignment that may dilute the impact of HR initiatives. Longitudinal and comparative studies could help uncover when and where GHRM produces uneven outcomes, thereby refining theoretical generalizations.

In summary, this study confirms the strategic role of GHRM in shaping both environmental and competitive performance, while extending theoretical debates by integrating behavioral and innovation pathways and contextualizing institutional influences in an emerging economy. By positioning Indonesia's tourism industry within global conversations, it demonstrates that sustainable transformation is possible but contingent, requiring both internal commitment and adaptive responses to fragmented regulatory landscapes.

4. Conclusion

This study demonstrates that GHRM practices, supported by leadership, organizational culture, and regulatory context, significantly enhance Indonesia's tourism sector's sustainability performance and competitive advantage. By validating the dual mediating roles of employee green behavior and organizational green innovation, GHRM theory is advanced through an integrative framework that combines Social Learning Theory, the Resource-Based View, and Institutional Theory.

The practical implications include the need for regulators to extend support to both formal and informal operators through simplified certification models, localized toolkits, and training programs. Meanwhile tourism enterprises should embed Green Key Performance Indicators (Green KPIs) and empower frontline staff to foster bottom-up innovation. The study is not without limitations. The cross-sectional design constrains causal inference, the focus on registered firms in five destinations limits generalizability, and reliance on self-reported data may introduce bias. Moreover, while PLS-SEM effectively models mediation, it is less suitable for testing boundary conditions.Future research should employ longitudinal and comparative designs, investigate informal and rural enterprises, and integrate qualitative methods to capture cultural dynamics. Examining digital transformation as a complement to GHRM also offers promising avenues for future research.

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Author Contribution

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Not applicable.

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Informed consent was obtained from all subjects involved in the study.

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The data of this research is available upon reasonable request.

Conflicts of Interest
The authors declare no conflict of interest.

References
Abror, G., & Muharam, H. (2024). Impact of Ultramicro Holding on Financial Performance and Business Sustainability. *Research Horizon*, *4*(4), 47–54. https://doi.org/10.54518/rh.4.4.2024.47-54

Aggarwal, P., & Agarwala, T. (2021). Green Organizational Culture: An Exploration of Dimensions. *Global Business Review*, *26*(4), 1103-1126.. https://doi.org/10.1177/09721509211049890

Al Halbusi, H., Ruiz-Palomino, P., & Williams, K. A. (2023). Ethical leadership, subordinates' moral identity and self-control: Two- and three-way interaction effect on subordinates' ethical behavior. *Journal of Business Research*, *165*, 114044. https://doi.org/10.1016/j.jbusres.2023.114044

Alkaf, A. R., Yusliza, M. Y., Ehido, A. J., Saputra, J., & Muhammad, Z. (2023). Top management support, green intellectual capital and green HRM: A proposed framework for sustainability. *Journal of Environmental Management & Tourism*, *14*(5), 2308–2318. https://doi.org/10.14505/jemt.v14.5(69).12

Azizurrohman, M., Hartarto, R. B., Lin, Y.-M., & Nahar, F. H. (2021). The Role of Foreign Tourists in Economic Growth: Evidence from Indonesia. *Jurnal Ekonomi & Studi Pembangunan*, *22*(2), 313–322. https://doi.org/10.18196/jesp.v22i2.11591

Bianco, S., Bernard, S., & Singal, M. (2023). The impact of sustainability certifications on performance and competitive action in hotels. *International Journal of Hospitality Management*, *108*, 103379. https://doi.org/10.1016/j.ijhm.2022.103379

Ceptureanu, S.-I., Ceptureanu, E.-G., Georgescu, B., & Iancu, A. L. (2025). Sustainability, innovation and knowledge: A complex relationship based on an empirical study. *Soft Computing*, *29*(6), 3047–3062. https://doi.org/10.1007/s00500-025-10574-3

Chen, Y.-S., & Chang, C.-H. (2013). Greenwash and Green Trust: The Mediation Effects of Green Consumer Confusion and Green Perceived Risk. *Journal of Business Ethics*, *114*(3), 489–500. https://doi.org/10.1007/s10551-012-1360-0

Din, A. U., Yang, Y., Yan, R., Wei, A., & Ali, M. (2024). Growing success with sustainability: The influence of green HRM, innovation, and competitive advantage on environmental performance in the manufacturing industry. *Heliyon*, *10*(10), e30855. https://doi.org/10.1016/j.heliyon.2024.e30855

Din, M. ud, Tanveer, M., & Khan, M. F. (2025). The green shift: Harnessing leadership, HR, and culture for sustainable success. *Waste Management Bulletin*, *3*(4), 100220. https://doi.org/10.1016/j.wmb.2025.100220

Glover, J. L., Champion, D., Daniels, K. J., & Dainty, A. J. D. (2014). An Institutional Theory perspective on sustainable practices across the dairy supply chain. *International Journal of Production Economics*, *152*, 102–111. https://doi.org/10.1016/j.ijpe.2013.12.027

Ha, J.-C., Lee, J.-W., & Seong, J. Y. (2021). Sustainable competitive advantage through entrepreneurship, market-oriented culture, and trust. *Sustainability*, *13*(7), 3986. https://doi.org/10.3390/su13073986

Hair, J. F., Sarstedt, M., Ringle, C. M., Sharma, P. N., & Liengaard, B. D. (2024). Going beyond the untold facts in PLS–SEM and moving forward. *European Journal of Marketing*, *58*(13), 81–106. https://doi.org/10.1108/EJM-08-2023-0645

Iqbal, M., Riyanto, Wilopo, Supriono, Yudiono, N., & Fahmi, M. R. A. (2025). The 'clean, health, safety and environment sustainability' (CHSE) in tourism in the post-COVID19:

A shared value perspective in Malang Regency, Indonesia. *Cogent Social Sciences, 11*(1). https://doi.org/10.1080/23311886.2025.2454741

Junior, S. B., Martínez, M. P., Correa, C. M., Moura-Leite, R. C., & Da Silva, D. (2019). Greenwashing effect, attitudes, and beliefs in green consumption. *RAUSP Management Journal*, *54*(2), 226–241. https://doi.org/10.1108/RAUSP-08-2018-0070

Käsbohrer, A., Rogge, K. S., & Zademach, H.-M. (2025). Regulatory state capacity for accelerating net-zero transitions: Lessons learned from governing electricity storage in Germany. *Energy Policy*, *205*, 114659. https://doi.org/10.1016/j.enpol.2025.114659

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

Kock, N. (2017). Common Method Bias: A Full Collinearity Assessment Method for PLS-SEM. In H. Latan & R. Noonan (Eds.), *Partial Least Squares Path Modeling* (pp. 245–257). Springer International Publishing. https://doi.org/10.1007/978-3-319-64069-3_11

Kuo, Y.-K., Khan, T. I., Islam, S. U., Abdullah, F. Z., Pradana, M., & Kaewsaeng-on, R. (2022). Impact of Green HRM Practices on Environmental Performance: The Mediating Role of Green Innovation. *Frontiers in Psychology*, *13*, 916723. https://doi.org/10.3389/fpsyg.2022.916723

Li, Y., & Li, Y. (2025). Enhancing Pro-Environmental Behavior Through Green HRM: Mediating Roles of Green Mindfulness and Knowledge Sharing for Sustainable Outcomes. *Sustainability*, *17*(6), 2411. https://doi.org/10.3390/su17062411

Liu, D., Ji, J., & Wu, M. (2025). Tourism Carbon Emissions: A Systematic Review of Research Based on Bibliometric Methods. *Journal of Quality Assurance in Hospitality & Tourism, 26*(4), 833–853. https://doi.org/10.1080/1528008X.2023.2266861

Ma, R., & Yee, W.-H. (2024). Designing intermediary-involved regulatory system: Organizational capacities and institutional conditions for NGO regulatory intermediation. *Policy Studies,* 1–22. https://doi.org/10.1080/01442872.2024.2439853

Madrid-Guijarro, A., & Duréndez, A. (2023). Sustainable development barriers and pressures in SMEs: The mediating effect of management commitment to environmental practices. *Business Strategy and the Environment*, *33*(2), 949–967. https://doi.org/10.1002/bse.3537

McDonald, F. V. (2014). Developing an Integrated Conceptual Framework of Pro-Environmental Behavior in the Workplace through Synthesis of the Current Literature. *Administrative Sciences*, *4*(3), 276–303. https://doi.org/10.3390/admsci4030276

Meng, J., Begum, M., Na, M., & Shah Alam, S. (2025). The Impact of Innovative Culture on Adaptive Marketing and Service Innovation in Hospitality: A Strategic Perspective. *Journal of Quality Assurance in Hospitality & Tourism*, 1–38. https://doi.org/10.1080/1528008X.2025.2509230

Mouro, C., Lomba, V., & Duarte, A. P. (2021). Pro-Environmental Behaviours at Work: The Interactive Role of Norms and Attitudinal Ambivalence. *Sustainability*, *13*(21), 12003. https://doi.org/10.3390/su132112003

Mulyawan, F. B., & An, M. D. (2023). The Influence of Marketing Content to Motivate Tourists in Visiting The Lembar Selatan Area, West Lombok. *Advances in Tourism Studies*, *1*(3), 79–86. https://pkp.stpmataram.ac.id/index.php/ATS/article/view/22

Perez, J. A. E., Galindo, S. M., Farooq, M., Ejaz, S., Ahmed, S., & Ejaz, F. (2025). Examining pro-environmental behavior through green human resource management and green innovation moderating role of environmental strategy. *Asia Pacific Management Review*, *30*(1), 100345. https://doi.org/10.1016/j.apmrv.2024.100345

Qin, H., Li, Y., & Hossain, M. B. (2025). Key Drivers of Sustainable Marketing in the Chinese Hotel Industry: The Mediating Role of Big Data Applications and Marketing Innovation. *Sustainability*, *17*(10), 4425. https://doi.org/10.3390/su17104425

Rahmaniati, N. P. G., & Ekawati, E. (2024). The role of Indonesian regulators on the effectiveness of ESG implementation in improving firms' non-financial performance. *Cogent Business & Management, 11*(1). https://doi.org/10.1080/23311975.2023.2293302

Shah, N., & Soomro, B. A. (2023). Effects of green human resource management practices on green innovation and behavior. *Management Decision*, *61*(1), 290–312. https://doi.org/10.1108/MD-07-2021-0869

Sharma, R., & Gupta, N. (2015). Green HRM: An innovative approach to environmental sustainability. *Proceeding of the Twelfth AIMS International Conference on Management*, 2–5. https://www.aims-international.org/aims12/12A-CD/PDF/K723-final.pdf

Shoaib, M., Qadeer, N., Zámečník, R., Javed, M., & Nawal, A. (2025). Towards a greener tomorrow: Investigating the nexus of GHRM, technology innovation, and employee green behavior in driving sustainable performance. *Cogent Business & Management, 12*(1). https://doi.org/10.1080/23311975.2024.2442095

Wei, J., Li, Y., Liu, X., & Du, Y. (2022). Enterprise characteristics and external influencing factors of sustainable innovation: Based on China's innovation survey. *Journal of Cleaner Production*, *372*, 133461. https://doi.org/10.1016/j.jclepro.2022.133461

Yuli, S. B. C. (2024). Understanding the Dynamics of Tourist Experience through a Qualitative Lens: A Case Study Approach in Indonesia. *Global Review of Tourism and Social Sciences*, *1*(1), 30–40. https://doi.org/10.53893/grtss.v1i1.323

Yunaningsih, A., Johan, A., & Rahmayanti, R. (2024). Fostering innovation through green HRM: The mediating role of organizational support and green commitment. *Asian Management and Business Review*, 293–307. https://doi.org/10.20885/AMBR.vol4.iss2.art8

Zacher, H., Rudolph, C. W., & Katz, I. M. (2023). Employee Green Behavior as the Core of Environmentally Sustainable Organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, *10*(1), 465–494. https://doi.org/10.1146/annurev-orgpsych-120920-050421

Zahari, A. I., Said, J., Muhamad, N., & Ramly, S. M. (2024). Ethical culture and leadership for sustainability and governance in public sector organisations within the ESG framework. *Journal of Open Innovation: Technology, Market, and Complexity*, *10*(1), 100219. https://doi.org/10.1016/j.joitmc.2024.100219

Zhou, Y., Luo, L., & Shen, H. (2022). Community pressure, regulatory pressure and corporate environmental performance. *Australian Journal of Management*, *47*(2), 368–392. https://doi.org/10.1177/03128962211017172

Zihan, W., & Makhbul, Z. K. M. (2024). Green Human Resource Management as a Catalyst for Sustainable Performance: Unveiling the Role of Green Innovations. *Sustainability*, *16*(4), 1453. https://doi.org/10.3390/su16041453