UNLOCKING SUSTAINABILITY THROUGH INNOVATION: A GREEN HR APPROACH FOR THE HOSPITALITY INDUSTRY

Ida Bagus Ketut Surya, Sebastian Kot, I Putu Astawa, I Gede Rihayana, and I Made Risma M Arsha

Abstract. Bali’s tourism industry faces a critical challenge: achieving sustainable growth without sacrificing the environment. While green practices are gaining traction in hotels, the specific factors driving environmental performance remain unclear, this study investigates these relationships within Bali’s unique context, informed by the resource-based view and ability-motivation-opportunity theory. Unlike other Indonesian regions, Bali’s deeply rooted Tri Hita Karana philosophy, emphasizing harmony with the environment, creates fertile ground for eco-innovation in hotels. Understanding these drivers is crucial given Bali’s delicate ecosystem and booming tourism. A survey of 178 hotel employees reveals green innovation as the key mediator. Green transformational leadership and green HRM practices positively influence environmental performance through fostering eco-innovation. Notably, green HRM plays a critical role in this context due to the Tri Hita Karana Foundation. These findings offer valuable insights for hoteliers, policymakers, and researchers. By implementing strong green HRM practices and fostering eco-innovation, Balinese hotels can ensure long-term sustainability and preserve their cultural and environmental heritage for future generations. This ultimately contributes to a more sustainable tourism model for Bali.

Keywords: green transformational leadership; green innovation; environmental performance; AMO theory.
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1. Introduction

The global hospitality industry faces a complex dichotomy: fostering economic growth and profitability while minimizing environmental impact [1]. Hotels, with their substantial carbon footprint, are particularly scrutinized by stakeholders and environmentally conscious customers [2; 3]. Addressing this challenge requires integrating a green philosophy with innovative thinking and encouraging employee-driven initiatives toward eco-friendly solutions. In Bali, Indonesia, this challenge takes on a unique dimension. Tourists flock to the island, captivated by its cultural richness and pristine nature, yet their presence poses a potential threat to the elements that attract them [4; 5]. Central to this dynamic, the hospitality sector is increasingly called upon to adopt sustainable practices and embrace green innovation, encompassing eco-friendly products, processes, and services [6]. While green innovation is crucial for sustainable tourism [7], its adoption in Indonesian hotels faces unique challenges [8]. Indonesians prioritize tradition and proven effectiveness before embracing new practices [9]. Green Human Resource Management (GHRM) is known to support sustainability [10; 11]. However, the link between GHRM, green leadership [12], and green innovation in tourism remains unclear. This complexity is further heightened by Bali’s unique cultural context, heavily influenced by the Tri Hata Karana philosophy [13; 4]. This philosophy emphasizes harmony between humans, the environment, and the divine. Understanding how leadership, human resource practices, and innovation intertwine within this holistic worldview is crucial.

This research endeavors to bridge this scholarly gap by scrutinizing the complex interplay among these factors within Bali’s hotel sector. Grounded in the resource-based view [14] and the ability-motivation-opportunity (AMO) theory [15], we delve into how GHRM practices mediate the impact of green transformational leadership on green innovation, ultimately influencing a hotel’s environmental performance. This study examines how Green HR, green leadership, and innovation affect environmental performance in Bali hotels. Existing research offers conflicting views, so this study proposes a combined effect that considers Bali’s unique culture (Tri Hata Karana) and its influence on hotel professionals. This will provide a clearer picture of sustainability practices in Bali’s hotel industry.

2. Theoretical Background

Drawing on both the Resource-Based View (RBV) and Ability-Motivation-Opportunity (AMO) theory, the study argues that GHRM cultivates valuable human capital [16; 17]. Through development, motivation, and empowerment [18], GHRM creates a pool of skilled and environmentally conscious employees [10]. This aligns with the RBV perspective, where such human capital becomes a source of competitive advantage [19]. The AMO theory further strengthens this notion by highlighting how GHRM practices (attraction, motivation, reward) directed toward green behaviors drive innovation and ultimately superior environmental performance [20]. Furthermore, GHRM is an overarching framework encompassing green recruitment, training, performance-based rewards, and employee empowerment [21]. This fosters the attraction, development, and retention of green human talent, enabling continuous innovation in processes, products, and services and ultimately leading to enhanced green firm performance.

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Virtual Economics, Vol. 7, No. 2, 2024
Hotels seeking sustainability can benefit from green transformational leadership (GTFL) [22]. It inspires personnel to achieve environmental goals, surpassing traditional leadership [23]. This promotes environmental awareness and inspires employees to change through sustainability training [22]. GTFL also inspires employees to learn new skills and create eco-friendly products and services [24]. This improves the hotel's environmental performance [25]. The growing need for sustainable practices requires green innovation—creating eco-friendly products, processes, and services. GTFL helps green innovation thrive on this path. GTFL goes beyond standard leadership methods, inspiring people to support environmental goals. Empowered people actively seek knowledge, innovate green, and contribute to the company's eco-friendly change.

Empirical evidence confirms the impact of GTFL. Studies by [26] and [27] demonstrate increased green innovation and eco-friendly product development in hotels with GTFL, reducing environmental impact and attracting environmentally conscious customers. [28] further highlight how GTFL in hospitality industries fosters green innovation-driven solutions, enhancing environmental performance. Thus, it is hypothesised that:

Hypothesis 1. Green transformational leaders in hotels will hire more ecologically creative people, promoting green innovation.

As firms seek sustainability, green innovation—sustainable products and processes—is rising [29]. This includes adopting greener materials, eco-design to reduce material use, and lowering emissions, water use, and resource dependence [30]. Green innovation boosts organisational success, according to research. Companies benefit from green innovation in environmental performance, financial performance, brand reputation, and stakeholder satisfaction [31].

The field of Green Human Resource Management (GHRM) is promising for understanding how HR practices might generate innovation [32; 33]. GHRM can inspire and train personnel to create sustainable innovations by promoting environmental responsibility [34]. However, the relationship between HRM and innovation is complex [35], depending on the type of innovation, organisational setting, and HRM effectiveness. This calls for more research on using GHRM to foster green innovation. Using the Ability-Motivation-Opportunity (AMO) theory [20], we argue that companies that value and maximise human talent are more likely to adopt green innovation practices. Therefore, we hypothesise that:

Hypothesis 2. Individual green ability predicts green innovation in environmentally sensitive industries like hotels.

Hypothesis 3. Green innovation efforts in ecologically sensitive industries like hotels are considerably improved by employee green motivation.

Hypothesis 4. The availability of green opportunities within an organisation significantly facilitates the development and implementation of green innovation practices.

Environmental performance goes beyond following regulations. It reflects a company's commitment to minimizing its environmental impact and exceeding societal expectations [36]. This includes a firm's entire ecological footprint, from resource consumption to product design.
while still adhering to legal requirements [37]. Environmental performance is driven by green innovation and good environmental management [38]. Green efforts, employee involvement, and environmental strategies drive hotel environmental performance [39]. Beyond its environmental benefits, green innovation can improve financial and social performance by reducing waste and costs [40]. This requires rethinking green innovation as a proactive and planned sustainability strategy rather than a reactive response to stakeholder pressure [41]. Thus, we hypothesise that:

**Hypothesis 5.** Implementing green innovation practices within environmentally sensitive industries like hotels significantly improves environmental performance.

Existing research lacks clarity on how Green Transformational Leadership (GTFL) and Green Human Resource Management (GHRM) influence firm performance [42]. This gap is crucial in today's sustainability-driven environment [43]. While transformational leaders foster innovation [43], GTFL's emphasis on environmental values aligns with promoting eco-friendly behaviours [44; 45]. Building on this connection, research suggests green innovation mediates the link between leadership and positive environmental outcomes [46]. Therefore, we hypothesise that:

**Hypothesis 6.** Implementing GTFL practices within an organisation significantly improves its environmental performance, mediated by adopting green innovation practices.

Building on existing research [47–50], this study proposes that Green Human Resource Management (GHRM) practices indirectly influence environmental performance by fostering green processes and product innovation. GHRM's multifaceted impact on innovation, including overcoming resource constraints and fostering employee commitment, suggests its potential to drive environmentally friendly advancements.

**Hypothesis 7.** Individual green ability positively influences an organisation's environmental performance through the mediating mechanism of green innovation.

**Hypothesis 8.** Individual green motivation positively influences an organisation's environmental performance through the mediating mechanism of green innovation.

**Hypothesis 9.** The availability of green opportunities within an organisation positively influences its environmental performance through the mediating mechanism of green innovation.

3. Methodology

Data collection commenced on May 25th, 2023, and concluded on October 24th, 2023, spanning five months. This study used a web-based survey (cross-sectional design) to collect data from 200 Bali hotel employees (May 25th – Oct 24th, 2023). Snowball sampling was used due to difficulty reaching the target population. After data cleaning, 178 usable responses remained (89% completion rate). This study examined numerous contributing elements of Balinese hotel environmental performance [51] and measured how managers encourage staff to achieve environmental goals to evaluate green leadership approaches. An instrument derived from [52; 15] examined employees' green talents (skills and knowledge), green motivation
attitudes and values), and green opportunity [47] and [53] analysed the hotel's eco-friendly innovative activities using a scale. Finally, a technique created by [54] and tested in Southeast Asia analysed the hotel's environmental impact.

The link was examined using SPSS Amos structural equation modelling. Each item was rated on a seven-point Likert scale (1—strongly disagree; 7—strongly agree). A thorough measurement supported the model's correlations. [54] found that the primary justification measures were Chi-square ($\chi^2$), minimal sample discrepancy function ($\chi^2$/df), goodness-of-fit index (GFI), modified GFI, CFI, and RMSEA. Direct and indirect effects on each path were examined to test hypotheses. A substantial effect requires a chance of ≤0.05 for each path. Only items with factor loading above 0.50 were kept in the model to assess discriminant validity [56]. To assess reliability, coefficient alpha values of 0.60 or above [57] were analysed.

This study examines the mediating effect of green innovation (GINOV) on the relationship between green transformational leadership (GTL), green HRM (GHRM), and environmental performance (EPERF). Two main mediation analysis methods exist, namely, implicit and explicit procedures. Implicit procedures are simpler and involve testing the significance of specific paths in the model [58]. However, they have limitations [59; 60]. Despite these limitations, the implicit approach was chosen due to its simplicity, suitability for this research question, and interpretability, aligning with the desire for clear results [9].

4. Results and Discussion

A Bali five-star hotel study reveals a female-dominated workforce (65%) with a majority over 35 (52%) and high education (66% with degrees). Two employment patterns emerge, namely, long-term employees (57%) and a younger group with 5 years of experience (41.6%). This demographic profile (female, experienced, educated) provides a starting point, but further analysis is needed to understand their openness to sustainability practices. While high education suggests potential for green knowledge, it’s unclear if it translates to action.

Assessing sustainability highlighted strengths and shortcomings. Employee skills (4.59) and resources (4.97) were strong, whereas green leadership had moderate influence (3.80). However, sustainability employee motivation (3.67) was lower. Interestingly, the hotel scored well in innovation (5.05) and environmental performance (5.47). Creative alternatives with favourable environmental effects are suggested. The review shows development opportunities, particularly in worker motivation, for a sustainable future.

Table 1 shows instrument implementation and confirmation. All items have CFA factor loadings above 0.50 [56]. Additionally, the Cronbach $\alpha$ coefficient for each construct exceeds the 0.60 requirement, as reported by [57]. Therefore, validity and reliability are met. Table 2 shows structural equation modelling results. All paths are significant, as seen in the table. The full research model adheres to established model fit criteria according to [61]. The chi-square statistic ($\chi^2$) falls below the threshold of 639,232, and the probability (P) is 0.05, indicating a good fit. Additionally, [54] confirm this positive assessment: the CMIN/DF ratio is 1.932 (ideally below 2), GFI is 0.987 (exceeding 0.90), AGFI is 0.993 (exceeding 0.90), CFI is 0.988 (exceeding 0.95), TLI is 0.982 (exceeding 0.95), and RMSEA is 0.089 (slightly above the 0.080 threshold). These collectively suggest a well-fitting model for further analysis.
### Table 1. Factor Loading and Scale Reliabilities

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
<th>Factors Loading</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Transformatiomial Leadership (GTFL)</td>
<td>1. Implementing an environmental plan.</td>
<td>0.721</td>
<td>0.765</td>
</tr>
<tr>
<td></td>
<td>2. Providing a clear environmental vision.</td>
<td>0.737</td>
<td>0.769</td>
</tr>
<tr>
<td></td>
<td>3. Fostering environmental participation.</td>
<td>0.716</td>
<td>0.767</td>
</tr>
<tr>
<td></td>
<td>4. Setting achievable environmental targets</td>
<td>0.724</td>
<td>0.763</td>
</tr>
<tr>
<td></td>
<td>5. Encouraging decision-making through employee viewpoints.</td>
<td>0.726</td>
<td>0.765</td>
</tr>
<tr>
<td></td>
<td>6. Empowering staff to promote green innovation.</td>
<td>0.750</td>
<td>0.766</td>
</tr>
<tr>
<td>Green Ability (GAB)</td>
<td>1. Selecting a green person requires considerable effort.</td>
<td>0.803</td>
<td>0.775</td>
</tr>
<tr>
<td></td>
<td>2. Only environmentally conscious people work at the hotel.</td>
<td>0.788</td>
<td>0.776</td>
</tr>
<tr>
<td></td>
<td>3. The green service procedure is emphasised.</td>
<td>0.698</td>
<td>0.777</td>
</tr>
<tr>
<td></td>
<td>4. All personnel must complete environmental training.</td>
<td>0.766</td>
<td>0.778</td>
</tr>
<tr>
<td></td>
<td>5. Environmental training aims to enhance employees' awareness.</td>
<td>0.653</td>
<td>0.779</td>
</tr>
<tr>
<td>Green Motivation (GMO)</td>
<td>1. The evaluation of performance records environmental performance.</td>
<td>0.774</td>
<td>0.766</td>
</tr>
<tr>
<td></td>
<td>2. Performance assessments include environmental concerns.</td>
<td>0.725</td>
<td>0.781</td>
</tr>
<tr>
<td></td>
<td>3. Employees receive environmental management rewards.</td>
<td>0.671</td>
<td>0.780</td>
</tr>
<tr>
<td></td>
<td>4. Employees are rewarded for environmental competencies</td>
<td>0.686</td>
<td>0.780</td>
</tr>
<tr>
<td>Green Opportunity (GOP)</td>
<td>1. Employees make environmental efforts.</td>
<td>0.528</td>
<td>0.781</td>
</tr>
<tr>
<td></td>
<td>2. Environmental issues are discussed through teamwork.</td>
<td>0.584</td>
<td>0.781</td>
</tr>
<tr>
<td></td>
<td>3. Employees discuss environmental issues in team meetings.</td>
<td>0.580</td>
<td>0.783</td>
</tr>
<tr>
<td>Green Innovation (GINOV)</td>
<td>1. To reduce pollution, the company uses eco-friendly materials.</td>
<td>0.720</td>
<td>0.769</td>
</tr>
<tr>
<td></td>
<td>2. Our company uses energy- and resource-efficient materials.</td>
<td>0.713</td>
<td>0.769</td>
</tr>
<tr>
<td></td>
<td>3. My company uses safer ingredients to make eco-friendly items.</td>
<td>0.700</td>
<td>0.771</td>
</tr>
<tr>
<td></td>
<td>4. My company uses recyclable, compostable, and reusable materials.</td>
<td>0.741</td>
<td>0.768</td>
</tr>
</tbody>
</table>

| Environmental Performance (EPERF)  | 1. Employees make environmental efforts.                              | 0.633           | 0.776          |
|                                    | 2. Environmental issues are discussed through teamwork.               | 0.560           | 0.778          |
|                                    | 3. Optimised energy usage                                            | 0.572           | 0.780          |
|                                    | 4. Reduced non-renewable resource                                    | 0.650           | 0.775          |
|                                    | 5. Cost reductions                                                   | 0.775           | 0.785          |
|                                    | 6. Elevated industry standing                                        | 0.762           | 0.784          |
|                                    | 7. Reputation enhancement                                            | 0.768           | 0.783          |

Source: Developed by the authors.

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Table 2. Summary of path relationship among constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Estimate</th>
<th>SE.</th>
<th>CR.</th>
<th>P.</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTFL → GINOV</td>
<td>0.134</td>
<td>0.061</td>
<td>2.217</td>
<td>0.00</td>
<td>Significant</td>
</tr>
<tr>
<td>GAB → GINOV</td>
<td>0.184</td>
<td>0.066</td>
<td>2.772</td>
<td>0.03</td>
<td>Significant</td>
</tr>
<tr>
<td>GMO → GINOV</td>
<td>0.238</td>
<td>0.065</td>
<td>3.671</td>
<td>0.01</td>
<td>Significant</td>
</tr>
<tr>
<td>GOP → GINOV</td>
<td>0.222</td>
<td>0.061</td>
<td>3.667</td>
<td>0.00</td>
<td>Significant</td>
</tr>
<tr>
<td>GINOV → EPERF</td>
<td>0.735</td>
<td>0.064</td>
<td>11.496</td>
<td>0.00</td>
<td>Significant</td>
</tr>
</tbody>
</table>

This study shows that Balinese hotels’ Green HRM, GTFL, Innovation, and Environmental Performance are linked. All hypothesised links were substantial, indicating a common path to hospitality industry environmental improvement. GTFL is vital to employee environmental creativity and Green Innovation. Research supports leadership's impact on the sustainability of organisational culture [27–28]. Transformational leaders develop clear visions, foster cooperation, and support green innovation to show environmental commitment. Employees are inspired and empowered to create sustainable environmental solutions.

The study confirms that GTFL drives environmental performance in Balinese hotels. It resonates with the local Tri Hita Karana (THK) philosophy, emphasizing harmony with nature [4] GTFL leaders act as responsible stewards (Divine Resonance), empower employees for collaboration (Social Synergy), and translate vision into action (Nature in Action), aligning with THK principles. Furthermore, GHRM fosters green innovation through employee ability, motivation, and opportunity (AMO theory) [31; 32; 34; 46; 62–71]. This empowers hotels to achieve both economic success and environmental sustainability.

By impacting green ability, motivation, and opportunity in the workforce, GHRM practices can boost green process and product innovation and environmental performance. This theoretical foundation significantly supports the idea that GHRM indirectly improves environmental performance through green innovation, emphasising the strategic necessity of designing and implementing integrated GHRM practices to improve environmental results. Bundled HR practices promote GHRM’s indirect impact on environmental performance through green innovation [15] and [72] show that coupled HR strategies can encourage green innovation even in resource-constrained contexts [48]. The study [49] also shows how HR practices boost employee commitment, supporting the study [50] claim that such practices boost internal creativity. Collaboration-oriented strategies that enable access to external information and resources foster green innovation. But why does GHRM work so well here? Its unique compatibility with Balinese culture’s THK concept is the answer. GHRM practices inspire employees to serve the community and environment as their spiritual obligation. Environmental awareness and parahyangan (harmonious relationship with God) are linked by training programmes that include traditional wisdom and spiritual understanding of the land. The sense of responsibility beyond profit motivates employees to be environmental stewards. Green practices that recognise and safeguard sacred sites and natural wonders, typically with spiritual significance, motivate employees and fit with parahyangan. Green efforts help the local community and create shared wealth due to GHRM’s focus on pawongan (harmonious relationship with humans). This GHRM-THK partnership boosts green innovation. GHRM helps hotels succeed economically and preserve Bali’s natural beauty, cultural legacy, and spirituality by promoting environmental responsibility, community well-being, and spiritual awareness.

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Embracing Bali's THK philosophy offers hotels a strategic edge in sustainability and competitive advantage. THK principles resonate with eco-conscious guests and employees, fostering a deeper connection and intrinsic motivation that surpasses mere compliance. This empowers hotels to move beyond isolated green practices. By involving local communities in environmental initiatives, hotels cultivate a sense of shared ownership and long-term sustainability. Furthermore, THK alignment positions hotels as leaders in responsible tourism, showcasing cultural understanding and a genuine commitment to the environment and community. This attracts environmentally conscious travellers and strengthens Bali's unique heritage.

5. Conclusions

This study examines the interplay between green human resource management, green transformational leadership, green innovation, and environmental performance in Bali's hotel industry. Unlike other Indonesian regions, Bali's deeply ingrained Tri Hita Karana philosophy, emphasizing environmental harmony, fosters a unique context for eco-innovation. Our findings reveal green innovation as a crucial mediator, bridging GTL and GHRM with improved environmental performance. GTL cultivates a culture of environmental responsibility and empowers employees to innovate, while GHRM equips them with the necessary skills and motivation. This highlights the underappreciated role of GHRM in fostering eco-innovation within Bali's unique cultural and environmental context. While limitations exist (self-reported data, specific sample region), this study offers valuable insights for hotels seeking to cultivate a "green workforce" and drive sustainable practices through a THK-aligned approach.

Author Contributions: Conceptualization, I.B.K.S and I.G.R.; methodology, I.P.A. and I.G.R.; software, I.G.R.; validation, S.K. and I.M.R.M.A; formal analysis, S.K. (Sebastian Kot); resources, I.M.R.M.A; data curation, I.B.K.S; writing—original draft preparation, I.G.R.; writing—review and editing, S.K.; visualisation, I.G.R., I.P.A and S.K.; project administration, I.M.R.M.A; funding acquisition, I.B.K.S and I.G.R. All authors have read and agreed to the published version of the manuscript.

Funding: The research has not received any financial support

Data Availability Statement: Not applicable

Acknowledgements: Not applicable

Conflicts of Interest: All authors declare no conflict of interest in the manuscript

References


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*Virtual Economics, Vol. 7, No. 2, 2024*


