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The Mediating Role of Green Human Capital in the Relationship Between Green Human Resource Management Practices and Green Employee Behavior for a Sustainable Future

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Abstract

Organizations are increasingly expected to integrate sustainability into their workforce systems. However, the pathways through which Green Human Resource Management practices influence Green Employee Behavior remain underexplored, particularly in developing country contexts. Building on the Ability–Motivation–Opportunity framework and Resource-Based View, this study examines the mediating role of Green Human Capital as a mechanism that links organizational practices with pro-environmental behavior. A quantitative research design was employed, with data collected from 171 rank-and-file employees in selected food service companies in Iligan City, Philippines. Partial Least Squares Structural Equation Modeling was used to analyze the relationships among the constructs, given its suitability for predictive models and modest sample sizes. The findings reveal that the direct effect of Green Human Resource Management practices on Green Employee Behavior is not significant. Instead, the indirect effect through Green Human Capital is substantial, confirming that Green Human Capital fully mediates the relationship between the two constructs. These results emphasize that developing employees' environmental knowledge, skills, and attitudes is the key pathway through which organizations can foster sustainability-oriented behaviors. By embedding Green Human Capital development in workforce strategies, organizations can strengthen their role in promoting environmental responsibility and contribute to a more sustainable future.

Keywords: green human resource management; green human capital; green employee behavior; sustainability



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1. Introduction

The escalating environmental crisis and the global call for sustainable development have compelled organizations to integrate sustainability into their strategies, operations, and workforce management practices. Human resource management has emerged as a pivotal lever in this transformation, particularly through the framework of Green Human Resource Management (GHRM), which embeds environmental considerations into core functions such as recruitment and selection, performance appraisal, training and development, compensation, and employee empowerment [1]. The central purpose of GHRM is

to align workforce practices with ecological objectives while fostering pro-environmental values and behaviors among employees.

Research has increasingly confirmed the positive association between GHRM and Green Employee Behavior (GEB), encompassing both task-related and voluntary actions that promote sustainability in the workplace [2–4]. Beyond behavioral outcomes, cumulative evidence links GHRM to green innovation, stronger environmental performance, and broader sustainability advantages at the firm level [5–7]. Nevertheless, scholars have cautioned that the relationship between GHRM and employee behavior is not always straightforward, implying the presence of mediating mechanisms that translate organizational practices into consistent behavioral outcomes [3,4].

One promising yet underexplored mediator is Green Human Capital (GHC), defined as the environmental knowledge, skills, attitudes, and values employees accumulate through organizational initiatives. Prior studies show that GHC (and its cognate, green intellectual capital) bolsters green innovation and environmental performance by equipping employees with domain-specific competencies that organizations can mobilize for sustainability goals [8–10]. However, the specific pathway by which GHC links GHRM to GEB remains insufficiently examined, especially in developing-country and service-sector contexts where operational routines, customer contact intensity, and resource constraints differ from manufacturing settings [1,11].

Two complementary theoretical perspectives justify this focus. The Ability–Motivation–Opportunity (AMO) framework posits that HRM practices influence behavior by shaping employees’ abilities, motivation, and opportunities to act; within this view, GHC constitutes the “ability” component that enables employees to enact pro-environmental routines reliably [12–14]. The Resource-Based View (RBV) further suggests that intangible, embedded resources such as GHC can yield a durable competitive advantage when they are valuable, rare, difficult to imitate, and organizationally embedded [15,16]. Together, AMO and RBV imply that GHRM practices develop GHC as a strategically significant capability that channels formal HR routines into day-to-day green behaviors.

The empirical context strengthens the rationale for this investigation. The food service industry in Iligan City, Philippines, is resource-intensive and environmentally sensitive, with material flows and customer-facing operations that make waste generation, energy consumption, and ecological footprint salient managerial challenges. Service-sector reviews, meta-analyses, and practice-oriented studies indicate both the promise and variability of GHRM effects on employee behavior in such settings, underscoring the importance of clarifying individual-level mechanisms [1,4,11]. Examining how GHRM fosters GHC—and how GHC, in turn, shapes GEB—offers both contextual and theoretical contributions.

Guided by this reasoning, the study addresses four questions:

1. Do GHRM practices have a positive and direct influence on GEB?
2. Do GHRM practices have a positive and direct influence on GHC?
3. Does GHC have a positive and direct influence on GEB?
4. Does GHC have a mediating effect on the relationship between GHRM practices and GEB?

This research contributes in three ways. First, it advances theory by integrating AMO and RBV to explain how HRM practices shape employee green behavior through the development of human capital. In doing so, it directly addresses whether GHRM influences GEB, whether GHRM fosters GHC, and whether GHC in turn drives GEB. Second, it provides robust empirical evidence on the mediating role of GHC in the GHRM–GEB relationship, thereby filling a notable gap in the literature and extending prior research that has primarily focused on direct effects. Third, it provides context-specific insights for

the Philippine food service sector, offering practical guidance for organizations seeking to align human resource systems with sustainability goals.

2. Theoretical Framework and Hypothesis Development

Based on the objectives and premises of this study, theoretical lenses are essential to justify and reinforce the hypothesized relationships among GHRM practices, GHC, and GEB. Two complementary theoretical perspectives—the AMO framework and the RBV—jointly underpin this research. While AMO operates primarily at the micro (individual and HR practice) level, RBV functions at the macro (organizational) level. Their integration provides a multi-level understanding of how employee-centered HR mechanisms translate into strategic organizational resources that support sustainable performance.

The AMO framework posits that employee performance results from the interplay of ability, motivation, and opportunity to participate and contribute effectively within the organization [12,17]. In the sustainability context, GHRM practices function as AMO-enhancing mechanisms that embed environmental priorities in workforce management [18]. Specifically, green recruitment and training programs develop employees' environmental knowledge and skills (ability), green rewards, and empowerment systems strengthen their willingness to act pro-environmentally (motivation), while participatory initiatives such as green committees or environmental decision-making platforms expand their avenues for contribution (opportunity) [19–22].

Through these mechanisms, GHRM creates an enabling environment that nurtures employees' green competencies and behavioral intentions. Prior studies confirm that when HRM systems effectively enhance AMO dimensions, employees demonstrate stronger environmental engagement and creativity, leading to enhanced organizational sustainability performance [13,14,23]. Thus, AMO provides a coherent explanation of how GHRM practices influence individual-level outcomes—by equipping employees with the knowledge, incentives, and opportunities necessary to express green behavior within the workplace.

Complementing this micro-foundation, the RBV emphasizes that organizational competitive advantage arises from the possession and development of resources that are valuable, rare, inimitable, and non-substitutable [15,24]. Among these, human capital—particularly when characterized by environmental expertise, ecological awareness, and green values—represents a dynamic and strategic resource that is difficult for competitors to replicate [25,26]. Through sustained implementation of GHRM practices, organizations can cultivate GHC as a core capability that integrates employees' collective green knowledge, skills, and attitudes into a strategic asset supporting innovation and environmental performance [16,27].

From this perspective, GHC serves as a bridge between micro-level behavioral mechanisms and macro-level strategic outcomes. The accumulation and institutionalization of employees' green abilities and behaviors (as described by AMO) generate firm-level resource advantages (as posited by RBV). By investing in green-oriented HRM systems—such as eco-centric training, sustainable leadership development, and environmentally linked rewards—organizations embed green competencies into their operational fabric, transforming individual behavior into an enduring source of sustainable competitive advantage [28–33].

This study integrates AMO and RBV through the mediating construct of GHC, thereby providing a theoretically coherent cross-level model. The AMO framework explains the process through which GHRM practices activate employees' abilities, motivations, and opportunities to perform green behaviors—constituting the micro-level mechanism of resource creation. The RBV explains the outcome—how these aggregated individual

competencies, when institutionalized as GHC, evolve into an organizational resource that supports environmental performance and competitiveness.

In this integrated model, GHC functions as both a mediating mechanism and a strategic resource. At the micro level, it mediates the relationship between GHRM and GEB by embodying employees' enhanced capabilities and environmental commitment. At the macro level, it represents the accumulation of these micro-level attributes into a collective strategic resource that underpins long-term sustainability. This dual-theory integration aligns with recent research emphasizing the micro-foundations of strategic management, demonstrating how individual-level HR practices and behaviors aggregate to firm-level outcomes [34,35].

Accordingly, AMO and RBV together offer a comprehensive explanation of the GHRM–GHC–GEB linkage: AMO provides the behavioral mechanism, and RBV provides the strategic rationale for how sustainable HRM systems translate individual green behaviors into organizational environmental advantage. This conceptual integration strengthens the theoretical coherence of the study and provides a solid foundation for examining the mediating role of GHC in fostering green employee behavior for a sustainable future.

2.1. Green Human Resource Management and Green Employee Behavior

GHRM has evolved from traditional HRM practices to explicitly include environmental management and sustainability in the organizational agenda. It is defined as a set of policies and practices designed to develop employees' green skills, awareness, and commitment, thereby enabling organizations to achieve ecological goals while maintaining competitiveness. Scholars argue that GHRM represents a strategic shift from a compliance-driven approach to a more holistic model that positions employees as agents of sustainability transformation [36]. Systematic reviews highlight that the construct of GHRM encompasses not only HR practices but also cultural and strategic integration of environmental priorities across organizations [1,37].

The adoption of GHRM is shaped by external and internal drivers. Externally, increasing regulatory requirements, stakeholder pressures, and consumer demand for environmentally responsible practices have encouraged organizations to adopt GHRM frameworks [38]. Internally, leadership commitment, managerial environmental concern, and strategic orientation toward sustainability have been identified as critical antecedents of GHRM implementation [5,11]. In the hospitality sector, empirical evidence shows that GHRM practices significantly enhance corporate sustainability performance and employee retention when mediated by green innovation and an environmentally supportive culture [39]. Similarly, findings indicate that GHRM plays a vital role in improving environmental performance in service organizations by fostering a workplace culture that values green practices and ecological awareness [40]. Organizations that embed environmental values into their HR strategies tend to experience stronger employee alignment with green goals, thereby enhancing the effectiveness of GHRM practices.

Core practices of GHRM include green recruitment and selection, training and development, performance appraisal, compensation, and empowerment. These mechanisms are designed to foster green awareness, build competencies, and reinforce pro-environmental behaviors. For example, green recruitment emphasizes attracting candidates with sustainability values, while training programs cultivate green knowledge and skills. Performance appraisal and reward systems integrate ecological criteria, ensuring accountability and motivation for sustainability outcomes [7,41]. Such practices not only institutionalize environmental standards but also shape organizational culture by embedding sustainability in daily work routines. Empirical evidence from the hospitality industry confirms that

these practices are more effective when complemented by a green psychological climate and when employees exhibit high levels of environmental sensitivity and altruism [42].

Evidence consistently demonstrates the positive impacts of GHRM on environmental performance, innovation, and employee behavior [43,44]. Empirical studies show that GHRM enhances employees' pro-environmental performance and contributes to sustainable innovation when combined with green leadership and supportive organizational strategies [7,45]. In particular, research from European contexts highlights that while GHRM provides significant environmental and organizational benefits, contextual constraints—such as cultural norms and institutional support—may influence its overall effectiveness [46]. These findings emphasize the importance of adapting HRM strategies to local institutional and cultural conditions to fully realize sustainability objectives.

GHRM has also been linked to improvements in corporate sustainability outcomes, as organizations leverage employees' environmental knowledge and behaviors to reduce ecological footprints [6,47]. Moreover, research suggests that GHRM practices not only foster environmental performance but also promote employee innovative behavior and social sustainability, underscoring its multidimensional impact [48].

Theoretical contributions highlight that GHRM extends traditional HRM models by embedding sustainability into organizational strategy. Scholars emphasize that employees are not merely implementers of environmental policies but also co-creators of green innovation and sustainability initiatives [44]. The service sector, in particular, has been identified as a fertile ground for GHRM research, as employee behaviors directly shape customer perceptions and environmental outcomes [11]. In practice, organizations are encouraged to institutionalize GHRM through systematic integration across HR functions, supported by managerial commitment and organizational learning mechanisms.

The strategic significance of GHRM in creating environmentally conscious organizations is highlighted throughout the literature. It is essential to attaining long-term organizational resilience and environmental stewardship because of its ability to promote eco-friendly behaviors, foster innovation, and enhance overall sustainability performance.

2.1.1. Green Recruitment and Selection

Green Recruitment and Selection (GRS) has become a fundamental element of GHRM, embedding sustainability considerations into the earliest stages of organizational staffing. Unlike traditional recruitment and selection processes that focus primarily on technical skills and organizational fit, GRS incorporates environmental values and competencies as essential qualifications, ensuring that employees are predisposed toward ecological awareness and capable of supporting long-term sustainability objectives [49].

GRS functions as both a signaling and capability-enhancing mechanism. By integrating eco-centric values into job descriptions, recruitment campaigns, and selection assessments, organizations demonstrate their environmental commitment, thereby attracting applicants motivated by sustainability-oriented missions [50]. This signaling effect fosters alignment between employee expectations and organizational green goals, leading to stronger engagement, lower turnover risk, and enhanced retention of environmentally conscious employees [49].

Beyond signaling effects, GRS enhances organizational environmental performance by ensuring that new hires possess values and knowledge conducive to sustainability initiatives. Employees with pre-existing pro-environmental orientations are more receptive to ecological training and behavioral change, enabling organizations to maximize the impact of subsequent green development programs [51]. Studies further indicate that recruitment policies aligned with sustainability standards contribute to measurable improvements in

environmental performance when integrated with other GHRM practices, such as green training, performance management, and compensation [13,52].

Psychological mechanisms also shape the effectiveness of GRS. Evidence highlights that motivation plays a moderating role in the relationship between green hiring policies and employee pro-environmental behavior. Autonomous motivation, driven by internalized environmental values, strengthens the link between GRS and sustainability performance, while controlled motivation, driven by external pressures, weakens this relationship [53].

The strategic significance of GRS extends beyond workforce composition to organizational legitimacy and reputation. Organizations recognized for adopting green hiring practices enhance their employer branding, which positively influences both talent acquisition and stakeholder trust [54]. Such practices serve as credible signals of environmental responsibility, reinforcing corporate reputation and strengthening long-term sustainability positioning [36].

In summary, GRS operates as a strategic driver of corporate sustainability by embedding environmental values at the entry point of employment. Through value alignment, motivational pathways, and reputational gains, GRS ensures that employees are both willing and capable of advancing green initiatives, thereby contributing to sustainable organizational performance.

2.1.2. Green Training and Development

Green Training and Development (GTD) has emerged as a cornerstone of GHRM, equipping employees with the knowledge, skills, and competencies necessary to engage in environmentally responsible practices. As organizations face growing institutional and societal pressures to integrate sustainability, training interventions become a vital mechanism to transform employee awareness into actionable pro-environmental behaviors.

GTD emphasizes the systematic development of employees' environmental literacy, technical skills, and eco-conscious values to foster long-term sustainability outcomes. Evidence shows that well-structured training enhances employees' green competencies and motivation, which, in turn, translate into measurable improvements in environmental performance [55,56]. By embedding sustainability into training programs, organizations not only build green knowledge but also foster green self-efficacy, thereby shaping employees' readiness to act on sustainability objectives within and beyond the workplace [57].

Training programs tailored toward sustainability extend beyond technical knowledge, nurturing creativity and innovation in environmental practices. Studies in hospitality and service industries confirm that green training cultivates creative problem-solving abilities that encourage employees to design and implement eco-friendly solutions in daily operations [58]. In higher education, GTD has been found to mediate the relationship between GHRM and institutional sustainability, underscoring its pivotal role in capacity building for sustainable development [59].

A growing body of research highlights the link between GTD and pro-environmental behaviors. Evidence from healthcare, IT, and industrial sectors shows that green training directly influences employees' workplace green behavior and job satisfaction [60,61]. Similarly, organizational-level outcomes such as improved environmental performance and sustainability-driven innovation are frequently attributed to structured green training initiatives [62].

Recent studies highlight the mediating role of organizational culture and climate in strengthening the impact of GTD. Green training contributes to the creation of a green-supporting climate that fosters voluntary workplace green behavior and enhances employees' satisfaction with their organization's sustainability agenda [63]. Furthermore, the

establishment of a collective green culture and work ethic through training initiatives has been shown to significantly mediate the relationship between GTD and employee green performance, particularly in sectors such as mining, where environmental impacts are critical [64].

The influence of GTD extends beyond organizational boundaries. Training not only promotes eco-friendly practices at work but also spills over to influence employees' private lives, shaping their personal commitment to sustainability [57]. This suggests that green training strengthens the sustainability mindset holistically, creating a workforce that embodies green values both professionally and socially.

Moreover, GTD also contributes to individual career development, as employees trained in sustainability acquire competitive skills that enhance employability and long-term professional growth [65]. Out-of-classroom initiatives, such as green traineeship programs, also demonstrate how experiential learning fosters stronger commitments to environmental stewardship [66]. At the global level, integration of training with the Sustainable Development Goals (SDGs) ensures alignment of organizational strategies with broader international sustainability frameworks [67].

Taken together, the literature suggests that GTD serves as a critical mechanism for embedding sustainability into organizational systems. It enhances employees' competencies, fosters pro-environmental behaviors, and reinforces green organizational cultures, ultimately leading to improved environmental and organizational performance. Additionally, its spillover effects highlight the transformative potential of training in shaping sustainable futures both within and outside organizational contexts. Thus, GTD represents not only a functional HR practice but also a strategic pathway toward achieving sustainability goals.

2.1.3. Green Performance Management and Appraisal

Green Performance Management and Appraisal (GPMA) is a critical practice within GHRM that integrates environmental considerations into employee evaluation systems. Unlike traditional appraisals focused mainly on productivity and financial indicators, GPMA emphasizes ecological performance criteria, aligning individual efforts with organizational sustainability objectives. By embedding green standards into appraisal mechanisms, organizations promote accountability for environmental outcomes and encourage employees to adopt eco-friendly practices that contribute to long-term sustainability [68].

Research shows that GPMA enhances both environmental and organizational performance by linking employee assessments with sustainability outcomes. Green-focused performance systems have been found to strengthen employee engagement in environmental initiatives and improve collective ecological performance at the organizational level [52,69]. Evidence also indicates that incorporating environmental metrics into appraisal frameworks reinforces organizational commitment to sustainability and drives consistent pro-environmental actions across the workforce [53].

Recent studies further highlight the strategic role of GPMA in mediating the relationship between GHRM practices and broader environmental outcomes. Incorporating green objectives into appraisal systems has been shown to foster innovation, improve environmental practices, and strengthen sustainability performance [70]. These findings underscore that GPMA is not only a performance evaluation tool but also a mechanism for embedding ecological responsibility into organizational culture and ensuring alignment between individual performance and sustainability goals.

2.1.4. Green Rewards and Compensation

Green Rewards and Compensation (GRC) represent a pivotal dimension of GHRM as they directly influence employee motivation and shape organizational sustainabil-

ity outcomes. The strategic alignment of incentives with environmental objectives ensures that employees are not only encouraged but also rewarded for engaging in pro-environmental practices. By linking financial and non-financial rewards to ecological performance, organizations create a culture where sustainability becomes an integral element of workplace behavior.

Recent studies highlight that green compensation frameworks, when properly designed, can promote managerial and employee pro-environmental behaviors through clear goal-framing mechanisms that align individual objectives with organizational sustainability goals [71]. Compensation policies that embed ecological performance indicators into reward systems enhance employees' environmental accountability and strengthen corporate sustainability performance [54]. The introduction of dynamic strategies, such as reward and penalty mechanisms in green building projects, demonstrates that adaptive incentive systems can effectively encourage compliance with environmental standards and innovation in eco-friendly practices [72].

Evidence also indicates that the effectiveness of green compensation is contingent on its congruence with employees' values and environmental conscientiousness. When employees perceive fairness and alignment between their pro-environmental values and organizational reward systems, they display stronger green behaviors [73]. Conversely, misaligned compensation structures risk fostering greenwashing behaviors, particularly when executive incentives prioritize financial metrics at the expense of genuine sustainability outcomes [74]. This concern is reinforced by findings that CEO compensation, if not carefully structured, can either foster genuine environmental commitment or perpetuate symbolic compliance [75].

At the executive level, compensation schemes serve as critical levers for driving corporate environmental performance. Linking executive pay to environmental, social, and governance (ESG) outcomes encourages green innovation, particularly in industries with high environmental impacts [76]. Research further suggests that improved executive compensation frameworks in traditionally resource-intensive sectors, such as fossil fuels, are essential for advancing corporate transitions toward sustainability [77]. However, the challenge remains in balancing long-term sustainability goals with short-term financial imperatives to avoid superficial compliance.

From a broader perspective, compensation and reward mechanisms are not limited to corporate contexts but extend to community-level environmental services, especially in developing economies. Incentive structures for ecological stewardship, such as payments for environmental services, demonstrate the potential of compensation systems to motivate sustainable practices across diverse socio-economic settings [78]. In organizational settings, such practices manifest as non-financial recognition, career advancement opportunities, and symbolic rewards that enhance employees' sense of environmental contribution [79].

Moreover, the integration of green compensation within the broader GHRM framework enhances both environmental and employee performance. Evidence suggests that green rewards not only drive sustainability initiatives but also improve employee outcomes such as engagement, morale, and commitment [69]. By adopting structured evaluation models such as the Analytic Hierarchy Process (AHP) and Fuzzy AHP (FAHP), organizations in emerging economies have also identified green compensation as a critical pathway toward achieving environmental sustainability [80]. Similarly, reward systems that emphasize pro-environmental contributions have been shown to directly foster GEB, reinforcing the instrumental role of compensation in sustainability transitions [51].

In sum, green rewards and compensation serve as both extrinsic and intrinsic motivators that bridge the gap between organizational sustainability goals and individual employee behaviors. Well-structured compensation systems not only incentivize eco-

friendly practices but also safeguard against symbolic actions, ensuring that sustainability commitments translate into tangible outcomes. The literature underscores that the strategic design, fairness, and alignment of green compensation are essential to mobilize employees, executives, and stakeholders in advancing sustainable futures.

2.1.5. Green Empowerment

Green empowerment (GE) has emerged as a critical dimension of GHRM, emphasizing the active involvement of employees in ecological decision-making and sustainability initiatives. Rather than treating employees as passive executors of environmental policies, GE positions them as co-creators of organizational sustainability efforts by granting autonomy, responsibility, and resources to implement eco-friendly practices. This empowerment not only enhances individual environmental commitment but also fosters collective ownership of organizational green goals.

Research has shown that empowerment plays a vital role in bridging the gap between GHRM practices and actual green outcomes. Systematic reviews of GHRM literature highlight that employee empowerment enables organizations to embed ecological consciousness into the daily tasks of their workforce, thereby increasing pro-environmental behavior at work [81]. By fostering a culture of shared responsibility, empowerment creates a sense of accountability and psychological ownership toward ecological performance. This resonates with findings that employees who feel empowered are more likely to initiate and sustain environmentally responsible behaviors, even in the absence of direct managerial oversight [82].

Recent empirical studies further expand the role of GE as both a mediator and enabler of sustainable practices. Evidence suggests that empowerment mediates the relationship between GHRM and organizational environmental performance by giving employees the confidence and autonomy to act on their environmental knowledge and values [83]. Similarly, research on the hospitality sector reveals that transformational leadership strengthens empowerment by boosting employees' green self-efficacy and engagement in environmental initiatives [84,85]. These findings suggest that empowerment mechanisms—such as participatory decision-making, recognition systems, and resource provision—are essential for translating green HR policies into measurable performance outcomes.

Beyond organizational settings, empowerment also shapes broader societal engagement with environmental policies. Studies on citizen willingness to contribute to sustainability initiatives demonstrate that empowerment fosters collective responsibility in implementing urban restoration laws and ecological projects [86]. In workplace contexts, collectivist-oriented cultures enhance empowerment by strengthening employees' environmental self-identity and responsiveness to ecological stimuli, leading to increased green behaviors [87]. This indicates that empowerment operates both at the individual and collective levels, serving as a bridge between personal ecological values and organizational or societal sustainability objectives.

GE is also linked to green creativity and innovation. By granting employees autonomy and encouraging knowledge sharing, organizations stimulate creative problem-solving for environmental challenges. Evidence from the hotel industry shows that empowerment, combined with green values and knowledge exchange, significantly enhances green creativity and innovation capacity [88]. This aligns with broader findings that empowerment allows employees to generate, test, and implement eco-innovative ideas that extend beyond routine compliance, contributing to long-term sustainability strategies [7].

Overall, the literature demonstrates that GE is a cornerstone of sustainable organizational practices, enabling employees to transform environmental intentions into tangible behaviors and innovations. It functions as both a psychological mechanism and a structural

enabler, ensuring that green HR policies are internalized and acted upon. By empowering employees and fostering collective ecological responsibility, organizations enhance their capacity to achieve sustainability-oriented performance while also contributing to broader environmental governance.

GEB has emerged as a central construct in organizational sustainability research, representing individual actions within the workplace that contribute to environmental protection and resource efficiency. These behaviors include both task-related actions, such as energy conservation and waste reduction, and voluntary initiatives, such as participating in environmental campaigns and advocating for sustainability in daily work practices. Meta-analytic evidence underscores GEB as a multidimensional construct encompassing required behaviors mandated by organizational policies as well as discretionary behaviors driven by personal values and motivation [4,89]. As such, GEB is increasingly recognized as the behavioral foundation for building environmentally sustainable organizations [90].

Organizational factors play a critical role in shaping GEB. Supportive structures, green-oriented human resource systems, and the establishment of a green psychological climate provide employees with both the opportunity and motivation to act sustainably [91,92]. The alignment of organizational goals with sustainability values not only signals the importance of pro-environmental action but also reduces the gap between employees' green intentions and their actual behaviors. Review studies further emphasize that leadership commitment, policy integration, and workplace incentives are instrumental in embedding sustainability into the daily routines of employees [93].

At the individual level, employees' pro-environmental attitudes and motivational states strongly predict the likelihood of engaging in GEB. Empirical evidence demonstrates that when employees perceive a strong green work climate and feel intrinsically motivated, their pro-environmental attitudes are more likely to translate into observable green behaviors [94]. Furthermore, personality traits, values, and moral norms reinforce an individual's readiness to engage in environmentally responsible actions. These findings suggest that GEB is shaped not only by external organizational systems but also by internal psychological processes.

Beyond organizational sustainability outcomes, GEB has been shown to yield positive implications for employees themselves. Research indicates that engaging in pro-environmental behaviors enhances employee well-being, fostering a sense of purpose, satisfaction, and alignment between personal and organizational values [95]. By creating meaning and promoting ecological responsibility, GEB contributes to healthier work environments and stronger employee identification with their organizations' sustainability agendas.

Scholars have increasingly positioned GEB as the core mechanism through which organizations achieve their environmental objectives. By integrating individual-level behaviors into broader corporate sustainability strategies, organizations not only reduce their ecological footprint but also strengthen their legitimacy and competitive positioning in the market [90,93]. This highlights the dual role of GEB as both an enabler of ecological outcomes and a strategic resource for organizational resilience in the face of environmental challenges.

The growing global emphasis on sustainability has heightened the role of organizations in embedding environmental concerns within their human resource systems to stimulate pro-environmental workplace behavior. GHRM has thus become a vital organizational mechanism to foster GEB, broadly defined as voluntary or in-role actions that contribute to environmental sustainability in the workplace. Empirical and theoretical research underscores the interconnectedness of these two constructs, with GHRM practices serving as levers that promote both individual and collective green behaviors across industries.

Early empirical studies demonstrated that GHRM policies—covering recruitment, training, performance management, and reward systems—significantly influence employees' pro-environmental actions. GHRM facilitates employees' sense of responsibility toward sustainability by embedding ecological values into organizational practices, thus encouraging them to engage in eco-friendly behaviors both within and beyond their roles [2,51]. More recent evidence reinforces this view, showing that GHRM systems foster employees' willingness to conserve resources, adopt waste-reduction practices, and actively participate in green initiatives [3,96,97].

Several studies have clarified the mechanisms through which GHRM stimulates GEB. The green psychological climate emerges as a critical mediating pathway, where organizational cues about sustainability reinforce employees' perception that pro-environmental behaviors are valued and rewarded [98,99]. Similarly, research indicates that perceived behavioral control, green attitudes, and organizational culture act as sequential mediators, enabling GHRM to transform structural policies into individual green actions [100–102]. These findings confirm that GHRM's influence extends beyond direct behavioral outcomes, working through socio-cognitive processes that strengthen green identity, values, and motivation [103–105].

The role of leadership and organizational support is also pivotal in strengthening the GHRM–GEB relationship. Green transformational leadership has been shown to complement HRM systems by modeling environmentally responsible behavior, thereby amplifying employees' commitment to sustainability [106–108]. Moreover, studies demonstrate that inclusive and green leadership styles enhance the impact of GHRM on innovative green behavior [23,109,110]. Beyond leadership, organizational culture and perceived green support are equally influential, as they provide an enabling environment for employees to enact green behaviors without fear of misalignment with institutional priorities [111,112].

Beyond traditional HRM perspectives, recent studies highlight the theoretical expansion of the GHRM–GEB relationship. For instance, technology acceptance theory has been used to explain how GHRM systems shape employees' openness to adopting eco-innovation [113,114]. Other studies integrate social exchange theory and conservation of resources theory to show that employees reciprocate organizational sustainability investments with green behaviors, thereby contributing to competitive advantage [115,116]. The dynamic interaction between GHRM systems and leadership traits further emphasizes the dual mechanisms—structural and psychological—that govern voluntary green behavior [114].

Recent works extend the analysis of GHRM and GEB into diverse organizational contexts. In hospitality and tourism, GHRM significantly enhances employees' green performance by aligning environmental training with guest expectations [117,118]. In nonprofit organizations, perceived green organizational support strengthens the effects of GHRM on pro-environmental behavior, highlighting the role of mission-driven cultures [111]. Similarly, in education and youth employment settings, GHRM influences prospective employees' environmental attitudes, underscoring its role in shaping the future workforce [119]. Research also suggests that the interplay between top management support, green intellectual capital, and HRM policies can create synergistic effects in advancing employee green practices [120].

Collectively, the literature demonstrates that GHRM practices exert both direct and indirect influences on GEB, mediated through psychological climates, green identity, and leadership reinforcement. Employees respond to green HR systems not merely because of organizational directives, but because these practices shape intrinsic motivation, pro-environmental norms, and perceived support for sustainability. The evidence affirms that GHRM is not only a mechanism for improving environmental outcomes but also a

strategic driver of employee engagement, innovation, and organizational resilience in the sustainability era [115,121]. The current study, therefore, posits the following hypothesis.

H1. *GHRM has a positive and direct influence on GEB in the food service industry in Iligan City, Philippines.*

2.2. Green Human Resource Management and Green Human Capital

GHC has emerged as a vital component of organizational sustainability, reflecting the knowledge, skills, attitudes, and values that enable employees to contribute toward environmental goals. As organizations transition toward sustainable development, GHC is increasingly viewed as a key intangible resource that drives green innovation, competitive advantage, and ecological responsibility.

The concept of GHC builds upon the broader notion of human capital, extending it to encompass pro-environmental attributes. It represents the accumulated environmental knowledge, competencies, and awareness that employees leverage in decision-making and organizational practices [8]. The significance of GHC lies in its ability to translate environmental commitment into concrete workplace actions, enabling organizations to align their workforce with sustainability imperatives [117]. Early scholarship on human capital and sustainability emphasized the interdependence between knowledge assets and ecological performance [122], establishing the foundation for GHC as a strategic organizational resource.

A growing body of empirical studies highlights GHC as a driver of sustainable growth and green innovation. Evidence demonstrates that entrepreneurs with higher levels of GHC are more likely to pursue pro-environmental innovations and practices [123]. Similarly, the integration of GHC into industries has been shown to foster environmental regulation compliance, promote industrial upgrading, and enhance green innovation capabilities, all of which contribute to sustainable development pathways [124]. In a regional perspective, GHC plays a significant role in accelerating green economic transitions, as evidenced in the Asia-Pacific, where human capital investment has correlated strongly with ecological sustainability [125]. Parallel research also confirms that human capital serves as a critical enabler of green growth by creating transmission channels through which environmental knowledge influences industrial performance [126].

At the organizational level, GHC has been associated with improved competitiveness and multidimensional performance outcomes. Firms with stronger GHC capabilities are better positioned to implement green logistics practices, which enhance both social and financial performance [127]. Furthermore, investments in GHC are not only linked to environmental sustainability but also to long-term economic resilience, thereby strengthening the alignment between ecological responsibility and profitability [128]. This underscores GHC as a resource that enables organizations to simultaneously pursue competitive advantage and sustainability objectives.

GHC is increasingly conceptualized as a sub-dimension of green intellectual capital (GIC), which integrates human, structural, and relational knowledge assets for sustainability. Within this framework, GHC represents the human-centered element, directly influencing employee green competencies and corporate environmental performance [129]. The literature on GIC emphasizes that human expertise and environmental awareness are indispensable for translating strategic intent into sustainable innovation outcomes [130]. Green innovation strategies anchored on GHC have been proven effective in improving long-term organizational sustainability [10]. Classic research already highlighted the positive effect of GHC—particularly human capital—on firms' competitive advantage [131], which continues to be reaffirmed in contemporary contexts such as healthcare sustainabil-

ity [132]. Comprehensive reviews also establish that the management of GIC, with GHC as its core, remains central to advancing environmental and organizational performance [133].

GHRM has emerged as a strategic organizational approach for embedding sustainability within the workforce by integrating ecological objectives into human resource practices. Core functions such as green recruitment, selection, training, performance management, and rewards are intentionally designed to align employee capabilities with organizational sustainability goals. These practices ensure that employees develop not only the technical skills necessary for eco-efficient performance but also the commitment and motivation to engage in pro-environmental behavior, thereby enhancing overall organizational performance [134,135].

Recent scholarship highlights that GHRM is most effective when combined with knowledge-based resources, particularly green intellectual capital and GHC, which transform HRM practices into sustained organizational advantage [136,137]. Such practices act as enablers, strengthening the link between human resource policies and innovative outcomes while reinforcing organizational environmental performance [138,139].

GHC refers to the environmental knowledge, skills, values, and competencies that employees acquire and apply in their work. It represents a critical organizational resource that enhances creativity, fosters eco-innovation, and drives sustainable transformation. Empirical studies reveal that GHC mediates the relationship between GHRM and various sustainability outcomes such as green innovation, environmental performance, and corporate commitment [140,141]. For instance, through green training and leadership support, organizations build employee capabilities that translate into innovative practices addressing ecological challenges [129,142].

Moreover, GHC strengthens workforce adaptability and supports organizations in cultivating an environmentally conscious culture that sustains pro-environmental behaviors. Evidence suggests that organizations leveraging GHC as a mediator between GHRM and innovation not only improve performance but also achieve a competitive advantage by embedding sustainability into core capabilities [143,144].

The literature further underscores the interdependence between GHRM, green intellectual capital, and GHC. Studies argue that green intellectual capital, encompassing human, structural, and relational capital, enhances the absorptive capacity of organizations to integrate sustainability into their business models [145,146]. Within this framework, GHC emerges as the most dynamic component, reflecting the direct contribution of employees' knowledge and behavior to environmental outcomes. GHRM practices serve as catalysts by channeling resources toward developing GHC, which in turn supports organizational ambidexterity in pursuing both incremental and radical eco-innovation [147,148]. This interconnection becomes particularly salient in industries where ecological concerns and consumer expectations for sustainability are high. By aligning HR practices with green intellectual capital, organizations foster an environmental climate conducive to employee engagement, creativity, and innovation, thereby amplifying the role of GHC in achieving sustainability [138,143].

Collectively, the reviewed literature establishes that GHRM practices do not directly guarantee environmental performance unless they effectively cultivate GHC. The development of employees' green skills and competencies bridges the gap between policy and practice, transforming sustainability from an organizational mandate into an operational reality. Thus, GHC functions as both a mediator and a multiplier, amplifying the impact of GHRM on innovation, performance, and competitive advantage [136,142]. This suggests that organizations in diverse sectors—from hospitality and tourism to manufacturing, finance, and services—must prioritize green-focused HR initiatives that build GHC to

sustain long-term ecological and business outcomes [141,144]. Thus, the study proposes the following hypothesis.

H2. *GHRM has a positive and direct influence on GHC in the food service industry in Iligan City, Philippines.*

2.3. Green Human Capital and Green Employee Behavior

GHC, often conceptualized within the broader domain of green intellectual capital, represents the environmental knowledge, skills, and capabilities possessed by employees that enable organizations to pursue sustainability-oriented goals. Research emphasizes that GHC not only facilitates innovation but also enhances environmental performance when strategically cultivated through human resource management practices. Empirical findings indicate that GHC serves as the foundation of green intellectual capital, which drives ambidextrous green innovation and contributes to sustainable competitiveness in diverse industries, including manufacturing, services, and energy sectors [9,10,149,150]. Similarly, in small and medium-sized enterprises (SMEs), the development of GHC has been found to link directly with green innovation, environmental responsibility, and sustainable business performance [151–153].

The mediating role of GHC in sustainability outcomes has also been confirmed in studies where green intellectual capital enhances environmental performance through the implementation of environmental performance measurement systems [154]. In hospitality and service industries, GHC fosters innovative work behaviors that accelerate green process innovation, suggesting its relevance in high-turnover, customer-centric environments such as fast food [130,155]. Moreover, green-oriented leadership expectations and intellectual stimulation have been found to amplify employees' creative capacities, reinforcing the critical role of GHC as a driver of sustainable practices [156].

The relationship between GHC and GEB has gained scholarly attention as organizations recognize employees as the primary agents of ecological transformation. GHC equips employees with the cognitive and behavioral capacities to enact pro-environmental behaviors, ranging from routine conservation practices to engagement in green innovation initiatives. Studies demonstrate that components of green intellectual capital—particularly GHC—significantly influence employees' green behavior in energy-intensive sectors, underscoring its behavioral relevance in sustainability transitions [157]. Furthermore, the integration of GHC with green organizational climates strengthens employee motivation toward environmental citizenship behaviors, highlighting its psychosocial impact on workplace sustainability [143,158].

Findings also suggest that GHC enhances organizational agility and green creativity, which in turn mediates the link between intellectual capital and employee environmental citizenship behaviors [158]. This indicates that GHC not only provides employees with technical expertise but also cultivates adaptive, innovative mindsets essential for sustainability-oriented transformations. In addition, research across manufacturing and textile industries confirms that the interplay between GHC, psychological green climate, and intellectual capital collectively fosters green behaviors and creativity at the employee level [143,159].

The strategic integration of GHC into HRM systems provides a pathway to cultivate GEB systematically across organizational contexts. Evidence shows that green innovation strategies built on GHC enhance both firm-level sustainability outcomes and individual-level behavioral engagement [9,152]. The empirical link between GHC and GEB thus underscores the importance of capability-building initiatives—such as green training, empowerment, and leadership stimulation—in reinforcing employees' pro-environmental

behaviors. In contexts like fast food industries, where environmental footprints are highly visible yet often overlooked, investing in GHC offers a dual advantage: strengthening organizational performance while fostering employees' ecological responsibility.

Collectively, the literature establishes GHC as a strategic antecedent of GEB, positioning it as both a tangible and intangible asset that bridges organizational sustainability goals with employee-level ecological action. This dual role highlights the criticality of embedding GHC into GHRM practices to enable a workforce that is environmentally conscious, behaviorally engaged, and strategically aligned toward sustainable futures. Grounded in the above rationale, the following hypothesis is formulated:

H3. *GHC has a positive and direct influence on GEB in the food service industry in Iligan City, Philippines.*

2.4. The Mediating Role of Green Human Capital

GHC is the collective environmental knowledge, skills, and competencies of employees, is increasingly recognized as a pivotal resource in advancing organizational sustainability. As a strategic form of human capital, GHC enables individuals to internalize and enact pro-environmental values, transforming abstract sustainability goals into concrete workplace practices. Within organizational systems, GHC functions as a bridge between managerial interventions and behavioral outcomes, serving as the mechanism through which GHRM practices are translated into GEB. Without the enhancement of GHC, GHRM initiatives such as recruitment, training, and performance management risk remaining symbolic, as employees may lack the capabilities to effectively engage in environmentally responsible actions. This positions GHC not only as a valuable outcome of sustainable HR practices but also as the central mediator that ensures these practices yield tangible behavioral change aligned with organizational sustainability objectives.

Evidence suggests that GHC is a critical mechanism that strengthens the GHRM–GEB relationship by providing employees with the competencies necessary to engage in environmentally responsible actions. GHRM practices such as recruitment, training, and performance evaluation enrich environmental capabilities, thereby promoting green innovation and workplace sustainability [140]. Empirical analysis has also shown that GHC mediates the relationship between GHRM and organizational commitment, highlighting its role in bridging structural HR practices with behavioral outcomes [139]. Similarly, GHC has been found to mediate the effects of GHRM on organizational performance, reinforcing its strategic importance for sustainability [160].

The mediating role of GHC is further emphasized when considering the behavioral complexities of employees. While GHRM can shape environmental attitudes, the transformation into consistent green actions often requires capability building through GHC. Moral norms and environmental values amplify these effects when employees are equipped with relevant skills and competencies [100]. This indicates that GHC acts as a bridge, ensuring that formal HR practices evolve into meaningful green behavior.

Research also highlights that contextual conditions affect the strength of this mediation. Employee participation, involvement, and training reinforce the GHRM–GEB relationship by enabling the development of GHC [161]. Leadership styles play a similar role, with responsible leadership shown to strengthen the pathway from GHRM to GEB through enhanced human capital [104]. These findings suggest that organizational contexts serve as enablers for GHC to effectively channel HRM practices into green behaviors.

At the organizational level, complementary mediators such as green culture and intellectual capital have been identified alongside GHC. Green organizational culture has been shown to mediate the GHRM–performance relationship in ways similar to GHC,

suggesting the interconnectedness of human and cultural resources [162]. Likewise, green intellectual capital, reinforced by top management commitment, enhances organizational environmental reputation and performance, underscoring the strategic role of employee-based competencies [163]. These perspectives indicate that GHC is not only an individual-level mediator but also part of a broader system of intellectual resources.

Furthermore, perceptions of GHRM among prospective employees demonstrate that the foundations of GHC can form even prior to employment, broadening the scope of its mediating role in predicting future green behavior [119].

Taken together, the literature establishes that while GHRM creates the structural foundation for sustainability, GHC provides the functional capability that enables employees to act on these initiatives. By embedding environmental knowledge and skills into the workforce, organizations enhance the effectiveness of GHRM in promoting GEB, making GHC a pivotal mediator for long-term sustainable outcomes. According to the aforementioned arguments, the following hypothesis is shaped:

H4. *GHC has a mediating effect on the relationship between GHRM and GEB in the food service industry in Iligan City, Philippines.*

The research model presented in Figure 1 reflects a growing scholarly effort to understand employee behavior in the context of organizational sustainability. It shows the influence of GHRM practices on GEB, suggesting both direct effects and indirect pathways mediated by GHC. Positioned as an intermediary construct, GHC captures the environmental competencies, awareness, and values that are fostered through deliberate HR strategies. These internalized capabilities serve as a foundation for encouraging environmentally responsible actions among employees, linking organizational practices to individual behavior in a meaningful and measurable way.

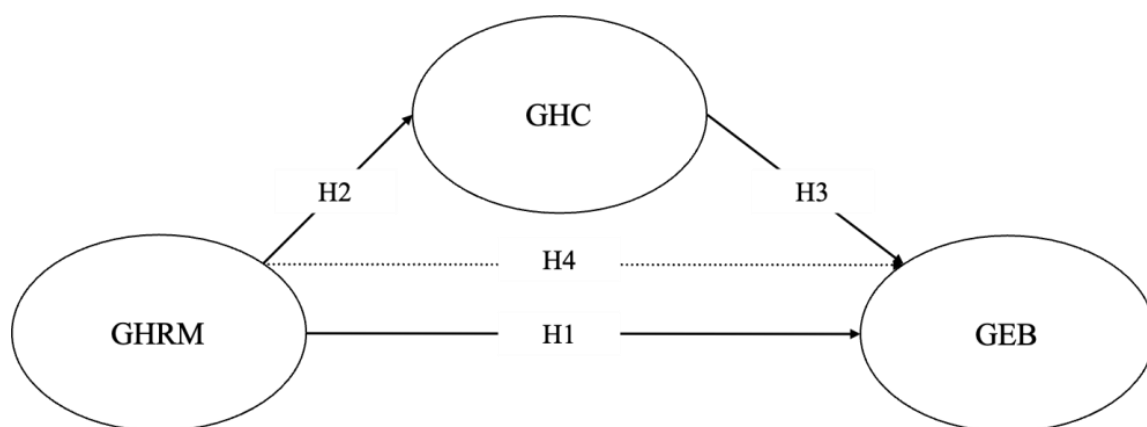


Figure 1. Research Model.

3. Methodology and Design

3.1. Research Design

This study employed a quantitative research approach, utilizing a causal research design to investigate the mechanisms and pathways through which GHRM practices influence GEB, with GHC as a mediating variable. Mediation analysis was utilized to explore the indirect connection between GHRM practices and GEB, concentrating on uncovering the function of GHC as a possible mediating variable. This analytical method facilitated a deeper comprehension of the ways GHRM practices can affect pro-environmental behavior at work by improving employees' environmental skills.

3.2. Sampling

Based on the hypotheses, theoretical setting, and the aims of the research, a quantitative approach using questionnaires was deemed appropriate to collect data from fast food employees currently employed in the industry in Iligan City, Philippines. To determine the adequate sample size, Krejcie & Morgan's sample size determination table was used [164]. This setting showed that a total of 171 samples was required. The data were collected between November and December 2024 using purposive sampling techniques. A purposive sampling technique was employed to guarantee the contextual suitability and relevance of the data. These individuals were chosen due to their active involvement in daily operations and their keen interest in organizational procedures and sustainability initiatives. Their frontline work experiences gave them valuable perspectives on how GHRM initiatives are perceived, implemented, and carried out in their specific organizational environments. The researchers submitted a request letter to establish the necessary links with managers of over seven fast food companies in Iligan City, Philippines, among which one was used for pilot testing, and six were identified as having a good fit in the current context. Permission was obtained, and the managers of each fast-food company were informed of the purpose of the study. The aforementioned pilot test was conducted with 30 employees of the fast-food company that was not included in the final dataset (no items were removed during the pilot test). A total of 180 surveys were distributed in person, combined with a consent form explaining the nature and purpose of the research study. With a total of 171 qualified surveys (9 incomplete—95% response rate), the statistical criteria were satisfied. All participants were allowed to withdraw from the survey at any stage, while their availability and willingness were highly considered. Confidentiality and anonymity were guaranteed to participants.

3.3. Measurements

A fully adopted standardized survey questionnaire served as the main data collection tool for this investigation. The tool's three primary sections—GHRM practices, GHC, and GEB—all addressed one of the study's central ideas.

The [165] model, from which the GHRM practices section was derived, featured five elements that are well known in the literature: green empowerment, sustainable rewards and compensation, environmentally conscious performance management and assessment, environmentally friendly training and development, and environmentally friendly hiring and selection. This section of the instrument included forty-four items (44): nine (9) that assessed green recruitment and selection, eight (8) that assessed performance management and evaluation, twelve (12) that assessed training and development, nine (9) that assessed rewards and compensation, and six (6) that assessed empowerment. A five-point Likert scale was used to collect responses, where 1 meant "does not apply" and 5 meant "always applies."

The study evaluated the attitudes, skills, and environmental awareness of the workers using a five-item scale that was adopted from [131]. Responses were gathered using a seven-point Likert scale, where 1 meant "strongly disagree" and 7 meant "strongly agree."

GEB was measured using a six-item scale that was adopted from [43] and covered a variety of aspects of environmentally conscious workplace behavior. This section employed a seven-point Likert scale, which followed the same agreement spectrum as the GHC section.

The researchers took a number of aspects of common method bias (CMB) into consideration to increase willingness to participate while reducing response errors. To minimize the potential for CMB resulting from single-source, self-reported data, several procedural safeguards were implemented. These included ensuring anonymity and confidentiality of

participants, emphasizing voluntary participation and ethical compliance, and providing clear instructions that reduced evaluation apprehension and social desirability effects [166].

4. Analysis and Results

Based on the context, approach, and framework of the study, partial least squares structural equation modeling (PLS-SEM) was deployed as the analytical technique via Smart-PLS software version 4. Notably, the current model fits the criteria for this particular analytical technique (i.e., relatively small sample size, no concern for normal distribution, set statistical power, and inclusion of a latent variable) [167,168].

4.1. Measurement Model Assessment

The measurement model demonstrated satisfactory reliability and validity across all constructs. As shown in Table 1, Cronbach's alpha (CA) values ranged from 0.930 to 0.980, exceeding the recommended threshold of 0.70, indicating strong internal consistency. Similarly, composite reliability (CR) values were consistently above 0.90, confirming the reliability of the constructs. Convergent validity was also established, as the average variance extracted (AVE) values ranged from 0.545 to 0.878, all surpassing the acceptable cutoff of 0.50. Factor loadings for the indicators varied between 0.618 and 0.950, with most exceeding the 0.70 benchmark, signifying adequate indicator reliability. Although a few items loaded slightly below 0.70 (e.g., GPMA at 0.618 and GRS at 0.691), their retention is justified since the overall construct reliability and AVE values remained well above the recommended thresholds. These results collectively confirm that the measurement model demonstrates robust reliability and convergent validity, providing a sound basis for subsequent structural model analysis.

Table 1. Measurement model assessment.

Constructs	Cronbach's Alpha	Composite Reliability	AVE	Factor Loading
GHRM	0.980	0.981	0.545	0.684–0.804
GRS	0.944	0.953	0.692	0.691–0.869
GTD	0.945	0.952	0.626	0.754–0.792
GPMA	0.949	0.958	0.731	0.618–0.926
GRC	0.93	0.955	0.721	0.820–0.883
GE	0.951	0.961	0.801	0.826–0.909
GHC	0.963	0.971	0.865	0.886–0.947
GEB	0.974	0.979	0.878	0.863–0.950

Table 2 presents the Fornell–Larcker criterion [169] was originally applied to assess discriminant validity, which determines whether constructs in the model are empirically distinct. According to this rule, the square root of the Average Variance Extracted (AVE) for each construct—displayed along the diagonal—should exceed its correlations with other constructs. However, several constructs such as GHRM, GHC, and GEB exhibited inter-construct correlations that were equal to or greater than their diagonal values, suggesting possible construct overlap. This overlap is theoretically plausible since employees' accumulated GHC can naturally translate into observable GEB. Nonetheless, recent methodological research has criticized the Fornell–Larcker criterion for its limited ability to detect discriminant validity problems, often yielding misleading conclusions when constructs are conceptually related [170,171]. To address this limitation, the study adopted the more rigorous and statistically robust Heterotrait–Monotrait Ratio (HTMT) as recommended in contemporary PLS-SEM guidelines to provide a more accurate assessment of discriminant validity.

Table 2. Fornell-Larcker.

Constructs	GHRM	GRS	GTD	GPMA	GRC	GE	GHC	GEB
GHRM	0.855							
GRS	0.793	0.795						
GTD	0.772	0.789	0.738					
GPMA	0.819	0.839	0.834	0.849				
GRC	0.810	0.639	0.758	0.707	0.832			
GE	0.895	0.712	0.789	0.705	0.848	0.897		
GHC	0.846	0.676	0.808	0.723	0.820	0.784	0.915	
GEB	0.832	0.695	0.797	0.710	0.799	0.747	0.930	0.938

GHRM: Green Human Resource Management; GRS = Green Recruitment and Selection; GTD = Training and Development; GPMA = Green Performance Management and Appraisal; GRC = Green Rewards and Compensation; GE = Green Empowerment; GHC = Green Human Capital; GEB = Green Employee Behavior.

To overcome the limitations of the Fornell–Larcker criterion, discriminant validity was re-evaluated using the HTMT, a more robust and reliable approach [170]. The HTMT compares the average correlations between constructs measuring different heterotrait–heteromethod concepts with those measuring the same monotrait–heteromethod construct to assess construct distinctiveness. As presented in Table 3, all HTMT values were below the conservative threshold of 0.85, confirming adequate discriminant validity among the constructs. Although the Fornell–Larcker matrix indicated some overlap, the HTMT analysis demonstrates that the constructs remain empirically distinct and that discriminant validity concerns are minimal. The highest HTMT value, 0.922, which is between GHRM and GPMA, falls within the acceptable liberal threshold of 0.90, while most values range from 0.70 to 0.85, reflecting theoretically consistent yet non-redundant relationships. These findings affirm that the HTMT criterion successfully addresses the Fornell–Larcker limitation and aligns with contemporary methodological recommendations recognizing HTMT as the most reliable indicator of discriminant validity in variance-based SEM [171]. Notably, strong correlations were observed between GHRM and its sub-dimensions, reflecting the integrative nature of green HR practices, while GHC exhibited moderate to high associations with GHRM, emphasizing its mediating role in linking HRM practices to employee outcomes. The significant correlations of GHC and GHRM with GEB further support the proposition that green competencies developed through HRM practices are translated into pro-environmental behaviors, validating the robustness of the measurement model for examining the mediating role of GHC in the GHRM–GEB relationship.

Table 3. Heterotrait-Monotrait Ratio (HTMT).

Constructs	GHRM	GRS	GTD	GPMA	GRC	GE	GHC	GEB
GHRM								
GRS	0.896							
GTD	0.872	0.788						
GPMA	0.922	0.841	0.834					
GRC	0.809	0.637	0.856	0.705				

Table 3. Cont.

Constructs	GHRM	GRS	GTD	GPMA	GRC	GE	GHC	GEB
GE	0.890	0.710	0.787	0.704	0.843			
GHC	0.846	0.841	0.807	0.722	0.705	0.782		
GEB	0.830	0.695	0.796	0.707	0.799	0.746	0.844	

GHRM: Green Human Resource Management; GRS = Green Recruitment and Selection; GTD = Training and Development; GPMA = Green Performance Management and Appraisal; GRC = Green Rewards and Compensation; GE = Green Empowerment; GHC = Green Human Capital; GEB = Green Employee Behavior.

4.2. Structural Model Assessment

The results of the PLS-SEM with bootstrapping to 5,000 subsamples, as illustrated in Figure 2, indicated that GHRM significantly influenced GHC ($\beta = 0.846$, $t = 15.935$, $p < 0.001$), and GHC, in turn, significantly predicted GEB ($\beta = 0.815$, $t = 8.701$, $p < 0.001$). However, the direct relationship between GHRM and GEB was not significant ($\beta = 0.143$, $t = 1.277$, $p = 0.202$), suggesting that GHRM alone does not directly affect GEB. Instead, the indirect effect of GHRM on GEB via GHC was significant ($\beta = 0.689$, $t = 8.273$, $p < 0.001$). This pattern of findings supports a full mediation model, where GHC fully transmits the influence of GHRM to GEB.

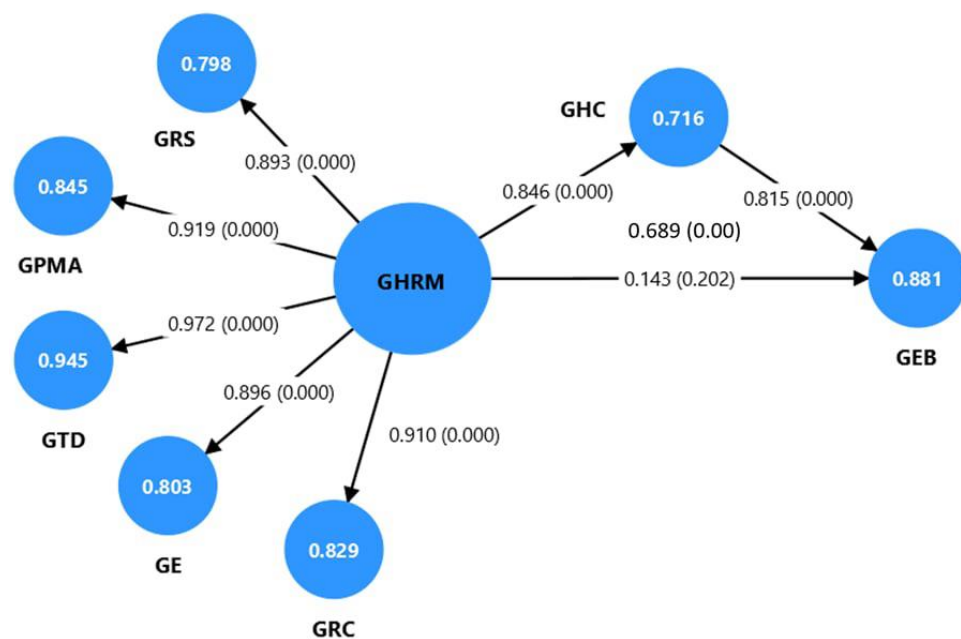


Figure 2. Partial Least Squares Structural Equation Modeling Mediation Analysis Plot.

The structural model demonstrated substantial explanatory and predictive power. GEB showed an R^2 value of 0.879, signifying that 87.9% of its variance was accounted for by GHRM and GHC. Likewise, GHC had an R^2 value of 0.713, indicating that 71.3% of its variance was explained by GHRM. R^2 values above 0.50 represent substantial explanatory power [171]. The predictive relevance (Q^2) values were 0.588 for GEB and 0.472 for GHC, both exceeding the threshold of zero, confirming that the model has large predictive relevance for the endogenous constructs. Effect size (F^2) analysis further revealed that GHRM exerted a large effect on GHC ($F^2 = 2.596$) and a small effect on GEB ($F^2 = 0.048$). In contrast, GHC had a large effect on GEB ($F^2 = 1.546$). These results suggest that GHRM substantially influences the development of GHC, which in turn strongly affects GEB, implying a significant mediating role of GHC between GHRM and GEB. Overall, the

findings indicate that the model possesses strong explanatory and predictive capabilities, with GHC serving as a critical pathway through which GHRM enhances GEB.

In addition, the measurement of the second-order construct of GHRM was validated, as all first-order dimensions—GRS, GPMA, GTD, GRC, and GE—loaded strongly and significantly onto GHRM, with *t*-values ranging from 11.978 to 59.091 (all $p < 0.001$).

As Table 4 shows, the first hypothesis of the study, which addresses the direct influence of GHRM on GEB, is not supported ($\beta = 0.143$, $p = 0.202$). This result diverges from studies that reported a significant direct association between GHRM and green behaviors in organizational contexts [2,3], but aligns with growing evidence that the relationship is often indirect, requiring mediating mechanisms such as knowledge, skills, and self-efficacy [69,91]. In the fast-food industry of Iligan City, the absence of a direct link may be attributed to standardized and routinized work processes that limit employees' discretion, suggesting that policy-level green HRM initiatives are insufficient unless accompanied by capability-building measures.

Table 4. Hypothesis Testing.

Effects	Relations	β	T Statistics	F^2	p Values	Decision
Direct						
H1	GHRM $\rightarrow$ GEB	0.143	1.277	0.048	0.202	Not Significant
H2	GHRM $\rightarrow$ GHC	0.846	15.935	2.596	<0.001 *	Significant
H3	GHC $\rightarrow$ GEB	0.815	8.701	1.546	<0.001 *	Significant
Mediation						
H4	GHRM $\rightarrow$ GHC $\rightarrow$ GEB	0.689	8.273		<0.001 *	Significant
Second-Order Constructs						
	GRS $\leftarrow$ GHRM	0.893	11.978		<0.001 *	Significant
	GTD $\leftarrow$ GHRM	0.972	59.091		<0.001 *	Significant
	GPMA $\leftarrow$ GHRM	0.919	22.349		<0.001 *	Significant
	GRC $\leftarrow$ GHRM	0.910	25.590		<0.001 *	Significant
	GE $\leftarrow$ GHRM	0.896	33.550		<0.001 *	Significant
$R^2_{\text{GEB}} = 0.879 / Q^2_{\text{GEB}} = 0.588$ $R^2_{\text{GHC}} = 0.713 / Q^2_{\text{GHC}} = 0.472$						

Note: * p -value < 0.01.

The second hypothesis (H2), which tested the direct effect of GHRM on GHC, is supported ($\beta = 0.846$, $p < 0.001$). This indicates that GHRM practices such as green training, performance appraisal, and rewards are effective in enhancing employees' sustainability-oriented competencies, consistent with the AMO theory [13] and prior studies showing that GHRM systematically develops employees' green knowledge and skills [54,61].

The third hypothesis (H3), which examined the direct effect of GHC on GEB, is also supported ($\beta = 0.815$, $p < 0.001$), affirming that employees who acquire green competencies are more likely to engage in pro-environmental workplace behaviors. This is in line with the Resource-Based View (RBV), which regards human capital as a valuable and rare resource that strengthens organizational competitiveness when embedded in employee behavior [71,165].

The mediation analysis (H4) confirms that GHC fully mediates the GHRM–GEB relationship ($\beta = 0.689$, $p < 0.001$). These finding highlights that the influence of GHRM practices on employees' green behaviors manifests only when mediated through the development of GHC. This supports theoretical arguments that HR practices affect behaviors indirectly by shaping underlying competencies and attitudes [13,61]. In the context of fast-

food operations, this means that without skill-building and continuous training, GHRM remains symbolic rather than transformational.

The second-order construct analysis further reinforces these conclusions. Among the five dimensions of GHRM, GTD ($\beta = 0.972$) emerged as the most influential, followed by GPMA ($\beta = 0.919$) and GRC ($\beta = 0.910$). This emphasizes that continuous learning opportunities, performance systems aligned with sustainability goals, and incentive structures play critical roles in shaping GHC, echoing findings in previous research [42,59,71]. GRS and GE also loaded significantly, suggesting that value-congruent hiring and discretion in decision-making contribute to GHC, but their effects materialize more strongly when reinforced by training and appraisal [49,81].

The findings contribute to theory by validating the full mediation role of GHC in the GHRM–GEB relationship. This extends AMO theory by clarifying that the “ability” dimension, embodied in GHC, is the essential mechanism for behavioral outcomes. Similarly, it enriches RBV by showing how GHRM practices systematically accumulate GHC, a non-substitutable resource that drives sustainable advantage [13,54].

These results contribute to the literature by empirically validating that in service-intensive and fast-paced industries such as the fast-food sector, GHRM is effective only when it builds employees’ green competencies. This highlights the necessity of investing in training and empowerment to create sustainable employee behavior. Moreover, it underscores the applicability of GHRM practices beyond manufacturing and hospitality, extending their relevance to the foodservice industry in emerging economies. From a practical perspective, the findings imply that managers of fast-food chains in Iligan City should prioritize green capability-building strategies, such as training modules, competency-based recruitment, empowerment initiatives, and rewards tied to green outcomes. These practices will not only foster green behaviors among employees but also strengthen the firm’s internal sustainability culture.

Taken together, the findings highlight that GHRM practices are most effective when mediated by GHC, reinforcing the notion that human capital is the cornerstone of organizational sustainability. By equipping employees with the environmental knowledge, skills, and abilities necessary to act on green policies, organizations can transform strategic intent into tangible behavioral outcomes. For fast-food chains in emerging economies, where operational efficiency often overshadows sustainability, this research underscores the strategic importance of integrating green HR practices into core business processes. Ultimately, cultivating GHC not only drives employee engagement in environmental initiatives but also strengthens organizational competitiveness, resilience, and long-term sustainability performance.

5. Conclusions

As presented in the results, the current findings align with and extend the existing body of knowledge on the indirect effects of GHRM on employee outcomes in organizational settings. The study demonstrates that while GHRM does not directly influence GEB, it exerts a significant indirect effect through GHC. This mediating role of GHC provides a more comprehensive explanation of how employees in the fast-food sector translate organizational green practices into actual pro-environmental behaviors. In industries such as fast food, where efficiency and standardization dominate work routines, the development of green competencies, knowledge, and skills becomes essential for sustainability-oriented behaviors to emerge.

The context of Iligan City is particularly relevant, as local fast-food outlets face operational challenges related to waste, energy consumption, and sustainability compliance. The findings underscore the need for human resource systems that not only integrate

environmental values but also cultivate employee capabilities to enact them. This contribution addresses an identified gap in the literature: the limited focus on service-oriented, high-turnover industries in emerging economies. By situating the analysis within the Philippine fast-food context, the study offers fresh insights into the applicability of GHRM practices beyond manufacturing and hospitality, extending their scope to quick-service organizations that directly interact with communities and consumers.

The results highlight that sustainable behavioral outcomes among employees require deliberate investments in human capital. In this regard, GHRM—operationalized through recruitment, training, performance management, rewards, and empowerment—serves as a strategic foundation for fostering GHC. In turn, GHC acts as a long-term organizational asset that drives social, economic, and environmental value creation.

5.1. Theoretical Implications

The findings of this research contribute to theory by validating the mediating role of GHC in the GHRM–GEB relationship, supporting both the AMO theory and RBV [12,18,36]. From the AMO perspective, GHRM practices enhance the “ability” component of employees by equipping them with environmental knowledge and skills, thereby enabling them to engage in green behaviors [13,21]. Without this capability-building, the direct impact of GHRM on behavior remains limited, as confirmed by the non-significant direct pathway in this study and consistent with work highlighting indirect/mediated mechanisms from GHRM to GEB [51,93,103].

The results also affirm the RBV by positioning GHC as a strategic resource that is valuable, rare, and difficult to imitate [16,24]. By developing green knowledge, skills, and competencies, organizations strengthen internal capabilities to pursue sustainability-oriented goals and achieve a competitive edge, aligning with evidence that GHC enhances innovation and environmental performance [8,122]. Furthermore, this study responds to calls for empirical evidence in non-Western, service-oriented contexts, where operational dynamics differ from hotels, manufacturing, or corporate offices, extending GHRM and GEB insights to the Philippine fast-food industry [11,38,112]. By highlighting GHC as the critical mechanism, the findings advance scholarly debates from a direct cause–effect model of GHRM toward a more nuanced, mediated framework [37,46,139–141]. This provides new pathways for future research, especially in industries with high employee turnover, standardized tasks, and immediate customer interactions—conditions common in service settings where GHRM’s implementation and effects merit closer examination.

5.2. Practical Implications

The practical contributions of this study are particularly relevant for fast-food managers and decision-makers in Iligan City and similar urban settings. First, the findings suggest that GHRM policies alone cannot ensure sustainable behaviors. Managers must focus on building GHC through structured green training and development programs, competency-based recruitment processes that prioritize environmental orientation, and empowerment initiatives that allow employees to propose and implement eco-friendly practices within operational constraints.

Second, organizations should integrate performance appraisal systems linked to green indicators (such as waste reduction, energy conservation, and compliance with eco-procedures) and align reward mechanisms to reinforce such behaviors. Even small, symbolic incentives can motivate frontline employees to consistently engage in sustainability-oriented tasks. In addition, employee involvement in decision-making on eco-initiatives fosters a sense of ownership, encouraging reciprocity in the form of commitment and proactive green actions.

Third, partnerships with local government agencies, training institutions, and community organizations can amplify GHC development by embedding sustainability within broader workforce programs. Such collaborations could include eco-certifications for employees, city-wide waste reduction initiatives, and community engagement projects that position employees as advocates of both the firm and the environment.

Overall, the study highlights that investing in GHC through GHRM is not only an environmental strategy but also a long-term business advantage, leading to improved competitiveness, employee engagement, and social reputation. Collectively, these implications suggest that organizations that invest in developing their employees' green capital can achieve not only environmental benefits but also enhanced competitiveness, customer loyalty, and long-term sustainability outcomes.

6. Limitations and Future Research

While the findings of this study provide significant theoretical and practical contributions, several limitations should be acknowledged. First, the study focused exclusively on the fast-food sector in Iligan City, Philippines. Although this setting offers valuable insights into sustainability practices in a service-oriented industry, the results may not be fully generalizable to other industries or geographic regions. Future studies could extend the scope to include other service industries such as retail, hospitality, or tourism, as well as cross-regional comparisons to determine whether cultural or institutional factors influence the GHRM–GHC–GEB relationship.

Second, the data were collected using a cross-sectional design, which captures perceptions and behaviors at a single point in time. This approach limits the ability to make causal inferences about the relationships among GHRM, GHC, and GEB. Longitudinal studies are recommended to trace the development of GHC over time and its sustained influence on employee behaviors and organizational outcomes.

Third, the study relied on self-reported data, which may be subject to social desirability bias, particularly when employees report on their own green behaviors. Future research may incorporate multi-source data, such as managerial evaluations, objective performance records, or observational methods, to strengthen the validity of the findings.

Finally, this research examined GHC as a single mediating mechanism. While the results highlight its critical role, other psychological and contextual factors—such as green motivation, organizational culture, or leadership commitment—may also mediate or moderate the GHRM–GEB link. Future studies could integrate these additional variables into more comprehensive models, exploring interaction effects or multilevel influences (e.g., store-level green policies interacting with individual competencies).

By addressing these limitations, future research can provide a more holistic understanding of how GHRM practices shape sustainable employee behaviors across different contexts. Such work would not only strengthen theoretical frameworks but also offer practical guidance for organizations seeking to embed sustainability into their human resource systems.

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Abbreviations

The following abbreviations are used in this manuscript:

GHRM	Green human resource management
GRS	Green recruitment and selection
GTD	Green training and development
GPMA	Green performance management and appraisal
GRC	Green rewards and compensation
GE	Green empowerment
GHC	Green human capital
GEB	Green employee behavior
PLS-SEM	Partial least squares structural equation modeling

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