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DRIVING PRO-ENVIRONMENTAL BEHAVIOR AT WORK: TESTING A GHRM–GREEN AMBIDEXTERITY MODEL

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Abstract

This study investigates how Green Human Resource Management (GHRM) practices influence employee green behavior in Pakistan's banking sector, with a focus on the mediating role of green ambidexterity. Using the Resource-Based View as a theoretical foundation, the research examines whether practices such as green recruitment, training, and reward systems encourage employees to engage in environmentally responsible actions. Data were collected through a structured questionnaire from 380 banking employees and analyzed using SPSS and PLS-SEM. The findings reveal that GHRM practices have a significant positive effect on employee green behavior, and that green ambidexterity—balancing innovation and improvement in environmental practices—partially mediates this relationship. The results highlight the importance of integrating sustainability into HR policies and provide practical guidance for HR managers and policymakers aiming to promote environmental responsibility in the banking sector.

INTRODUCTION

Environmental sustainability has emerged as a major global priority in response to escalating challenges such as climate change, carbon emissions, and the rapid depletion of natural resources (Zhao, Liu, & Sun, 2020). While sectors like manufacturing and energy receive primary focus for their direct environmental impacts, the banking sector's environmental footprint is no less important. Banks contribute significantly to resource consumption, paper waste, and energy use through their routine operations. Consequently, many banks worldwide are adopting Green Human Resource Management (GHRM) practices to align their internal operations with sustainability objectives (Obeidat et al., 2018). GHRM includes a range of

environmentally focused HR practices such as green recruitment, training, performance evaluation, and reward systems aimed at instilling environmental awareness and behaviors among employees, thereby promoting a sustainable organizational culture (Ren, Yang, & Liu, 2018; Renwick, Redman, & Maguire, 2013; Wehrmeyer, 2017; Fawehinmi et al., 2020).

The growing emphasis on GHRM is driven by the dual goals of minimizing environmental harm and achieving broader organizational benefits, including enhanced corporate reputation, improved employee morale, and elevated operational efficiency (Ali et al., 2022). However, despite such potential advantages, the Pakistani banking sector has comparatively underexplored how GHRM influences employees' green behavior, which encompasses voluntary actions and attitudes supporting sustainability within the workplace (Malik et al., 2021). Understanding this relationship is critical for banks in Pakistan, where green HRM implementation remains nascent and employee engagement in sustainability is an emerging focus.

Fostering employee green behavior effectively requires balancing two key forms of organizational actions: exploratory and exploitative green behaviors. Exploratory green behavior refers to innovative, novel efforts aimed at creating new environmental practices and solutions, while exploitative behavior seeks to refine and optimize existing green processes to enhance efficiency and reduce environmental impact (Li et al., 2017). This balance, referred to as green ambidexterity, is essential to cultivating a robust culture of sustainability that encourages both creativity and operational excellence (Yusliza et al., 2020; Yong et al., 2019). Despite increasing interest in GHRM and employee green behavior, the mediating role of green ambidexterity in connecting HR practices to employee behavior remains insufficiently examined.

The banking sector offers an appropriate and timely context to investigate these dynamics given its pivotal role in financial innovation and sustainability performance. Banks have both the capacity and responsibility to reduce environmental footprints while fostering eco-innovations that support sustainable development (Edgar et al., 2020; Wang et al., 2021). Particularly in Pakistan, where environmental pressures are acute, examining how GHRM can promote employee green behavior via green ambidexterity can yield insights instrumental for both theory and practice.

Despite regulatory and institutional efforts, including guidelines issued by the State Bank of Pakistan to encourage green banking, comprehensive empirical research assessing the pathways through which GHRM practices impact environmental outcomes in Pakistan's banks is sparse. Given the reported rise in energy consumption, paper wastage, and carbon emissions within the sector, there is an urgent academic and managerial need to understand how HRM strategies can be harnessed to foster employee behaviors conducive to sustainability (Munawar, Yousaf, Ahmed, & Rehman, 2022).

Utilizing a quantitative research design grounded in the Natural Resource-Based View (NRBV) theory, this study investigates the influence of GHRM on employee green behavior in the Pakistani banking sector, with a focus on the mediating role of green ambidexterity. The NRBV framework underscores the importance of leveraging organizational resources and capabilities to build competitive advantage through sustainability, underpinning the theoretical justification for exploring ambidextrous green innovation as a linkage mechanism (Hart, 1995; Renwick, et al., 2013).

This research contributes to the extant literature by bridging critical gaps: the underexplored influence of GHRM on employee green behavior in the banking sector, and the mediating role of green ambidexterity in this relationship, particularly within the context of a developing country. Practically, it offers actionable insights for Pakistani banks to design HRM interventions that effectively nurture both innovative and efficient green practices among employees, thereby enhancing overall environmental performance and sustainability.

Ultimately, the findings of this study are intended to benefit not only academic scholars by advancing the understanding of sustainable HRM

mechanisms but also banking practitioners tasked with integrating environmental priorities into corporate strategies. By highlighting the interplay between HRM, organizational ambidexterity, and employee behavior, this study aims to support the transformation of Pakistan's banking industry towards more sustainable and responsible business practices.

2. Literature Review

This section critically reviews and consolidates prior theoretical and empirical literature relevant to the main constructs of this study. The independent variables include Green Human Resource Management Practices (GHRMP), specifically green recruitment, green training and development, and green evaluation and reward systems. The dependent variable is employee green behavior, while green ambidexterity is positioned as a crucial mediating variable. The section provides scholarly foundations for each concept, followed by an integrated discussion on the relationships among these variables to support hypothesis formulation.

2.1 Green Human Resource Management (GHRM)

Green Human Resource Management (GHRM) epitomizes a strategic evolution within human resource management, broadening the traditional HR focus to embrace environmental sustainability goals as an integral organizational objective. Moving beyond merely fostering environmental awareness, GHRM incorporates a holistic view that encompasses social and economic sustainability alongside ecological concerns (Ahmad, 2015; Sarode et al., 2016). This evolving paradigm leverages HR functions to reduce operational costs, enhance productivity, decrease carbon emissions, and elevate employees' environmental consciousness through targeted green programs and policies (Nijhawan, 2014; Vijai, 2021). The incorporation of sustainability into HRM has become imperative as organizations strive toward comprehensive responsible management (Goldstein et al., 2019). Aligning with this trend, GHRM integrates processes such as green recruitment, training, performance appraisal, and rewarding practices explicitly designed to embed environmental considerations into workforce management (Purnama & Nawangsari, 2022). Green HRM practices are not mere add-ons but represent foundational organizational policies with the potential to reshape employee behaviors and organizational culture toward sustainability.

Furthermore, green HRM practices operationalize environmental objectives within the human resource domain by embedding green criteria across recruitment, training and development, and evaluation and reward processes. Green recruitment focuses on attracting and selecting candidates who demonstrate environmental awareness and commitment, ensuring a workforce attuned to the organization's sustainable goals. Concurrently, green training and development initiatives equip employees with necessary competencies to perform eco-friendly tasks and nurture green values in organizational practices. The evaluation and reward system reinforces accountability and motivation by recognizing and incentivizing environmentally responsible employee behaviors (Renwick et al., 2013; Fawehinmi et al., 2020; Purnama & Nawangsari, 2022). This targeted approach to HRM is critical for fostering a sustainable corporate ethos, facilitating employee involvement in environmental management, and enabling organizations to achieve strategic sustainability objectives effectively.

2.2 Employee Green Behavior

Employee green behavior constitutes voluntary, discretionary workplace actions that contribute positively toward an organization's environmental sustainability goals. Such behaviors include energy conservation, waste reduction, recycling participation, pollution prevention, and other eco-friendly activities embedded within job performance expectations (Ones & Dilchert, 2013; Tian & Zhang, 2020). Unlike mandated compliance, green behaviors reflect employees' personal commitment and motivation to act in environmentally conscious ways, often influencing broader organizational outcomes. Employees engaging in green behavior represent vital agents

of environmental change within organizations. Their attitudes and actions serve as behavioral manifestations of a sustained green culture, critical for translating organizational sustainability policies into effective environmental practices (Malik et al., 2021).

2.3 Green Ambidexterity

Green ambidexterity denotes the organizational capacity to simultaneously engage in exploratory and exploitative green innovations to sustain environmental and competitive advantage. Exploratory green activities involve the pursuit and implementation of novel eco-innovations, introducing creative solutions to environmental challenges. Exploitative green activities focus on improving, refining, and optimizing existing green processes and practices to enhance eco-efficiency and operational effectiveness (Cancela et al., 2023; Sukarta et al., 2023). This balanced duality enables organizations to remain adaptive and innovative, responding dynamically to evolving environmental requirements while maximizing resource utilization and operational sustainability (Mom et al., 2019). Mastering green ambidexterity thus constitutes a dynamic capability essential for long-term sustainable competitive advantage.

2.4 Green HRM Practices and Employee Green Behavior

GHRM practices fundamentally serve to develop employees' environmental competencies, motivation, and engagement aligned with the sustainability goals of organizations. The specificity of green HRM interventions surpasses that of generic HRM, emphasizing the strategic cultivation of a workforce conducive to environmental responsibility (Renwick et al., 2013; O'Donohue & Torugsa, 2021). Through green recruitment, training, and evaluation, organizations can foster employees' environmental awareness and commitment, subsequently enhancing green workplace behaviors (Amrutha & Geetha, 2020; Cabral & Dhar, 2019). Empirical evidence consistently reveals a positive association between GHRM and employee green behavior across sectors, underscoring GHRM's critical role in fostering eco-friendly employee initiatives (Dumont et al., 2017; Roscoe et al., 2019). Despite this, focused investigations within banking, particularly in developing economies such as Pakistan, are limited. Therefore, the study hypothesizes:

H_1a: Green recruitment has a positive effect on employee green behavior.

H_1b: Green training and development have a positive effect on employee green behavior.

H_1c: Green evaluation and reward systems have a positive effect on employee green behavior.

2.5 Green HRM Practices and Green Ambidexterity

The achievement of green ambidexterity—balancing exploratory and exploitative green innovations—requires deliberate organizational capabilities fostered by HR practices. Exploration involves the adoption of breakthrough eco-innovations, while exploitation focuses on the refinement of existing sustainable practices to boost eco-efficiency (Gupta et al., 2006; Ghani et al., 2018). Recognized as a vital framework for managing environmental and organizational change, ambidexterity has gained increasing attention in sustainability research (O'Reilly & Tushman, 2013). Although the banking sector plays a pivotal role in sustainable development, scant research evaluates how GHRM facilitates green ambidexterity in this context. Drawing on foundational ambidexterity theories (Tushman & O'Reilly, 2011; March, 1991), the study posits that green recruitment, training, and reward systems positively influence both green exploratory and exploitative behaviors. Hypotheses proposed include:

H_2a: Green recruitment positively affects green exploitative behavior.

H_2b: Green recruitment positively affects green exploratory behavior.

H_2c: Green training and development positively affect green exploitative behavior.

H_2d: Green training and development positively affect green exploratory behavior.

H_2e: Green evaluation and reward systems positively affect green exploitative behavior.

H_2f: Green evaluation and reward systems positively affect green exploratory behavior.

2.6 Green Ambidexterity and Employee Green Behavior

Employee green behavior is influenced strongly by organizational capabilities that motivate both voluntary and mandated environmental actions. Green ambidexterity nurtures this by encouraging employees to engage in innovative environmental initiatives and refine current sustainable practices (Chen et al., 2006; Chen & Chang, 2013; López-Mosquera et al., 2015). This dual focus supports organizational goals of pollution prevention, energy conservation, and improved environmental quality, positioning employee behavior as a conduit for sustainability and economic benefits. Accordingly,

H_3a: Green exploitative behavior positively influences employee green behavior.

H_3a: Green exploratory behavior positively influences employee green behavior.

2.7 Mediating Role of Green Ambidexterity

The mediating function of green ambidexterity bridges the impact of GHRM on employee green behavior by cultivating green capabilities and motivating eco-friendly practices. Through targeted recruitment, training, and reward interventions, organizations foster green ambidexterity, which in turn galvanizes employees to enact pro-environmental behaviors and nurture an environmentally conscious culture (Ansari et al., 2021; Gill et al., 2021; Zhang et al., 2021). Green ambidexterity's balance between innovation and refinement ensures sustainability is addressed both creatively and operationally, reinforcing long-term environmental performance (Chen et al., 2014; Dumont et al., 2017). Given the limited empirical research on this mediating role, the study hypothesizes:

H_4a: Green exploitative behavior mediates the relationship between green recruitment and employee green behavior.

H_4b: Green exploratory behavior mediates the relationship between green recruitment and employee green behavior.

H_4c: Green exploitative behavior mediates the relationship between green training and development and employee green behavior.

H_4d: Green exploratory behavior mediates the relationship between green training and development and employee green behavior.

H_4e: Green exploitative behavior mediates the relationship between green evaluation and reward systems and employee green behavior.

H_4f: Green exploratory behavior mediates the relationship between green evaluation and reward systems and employee green behavior.

2.6 Theoretical Framework

The theoretical framework elucidates the underlying rationale linking Green Human Resource Management practices with employee green behavior through green ambidexterity, framing the empirical inquiry of this research and guiding hypothesis development. In this context, RBV theory proposes that firms achieve sustainable competitive advantages by leveraging unique, valuable, inimitable internal resources and capabilities, of which human capital is paramount (Tyson & York, 2006). HR systems that nurture specialized knowledge, skills, and innovative capabilities contribute strategically to organizational performance (Wright et al., 2001). Green HRM represents such a strategic resource, embedding environmental values and skills that foster innovation and sustainability (Renwick et al., 2013). Hence, the research model hypothesizes that Green HRM practices serve as strategic mechanisms to develop green ambidexterity—a dual capability for green exploration and exploitation—which mediates the relationship between HR practices and employee green behavior. RBV theory supports this framework by highlighting the critical role of firm-specific human capital capabilities in adapting sustainability and ensuring competitive advantage. Based on this theoretical background, following conceptual framework is proposed.

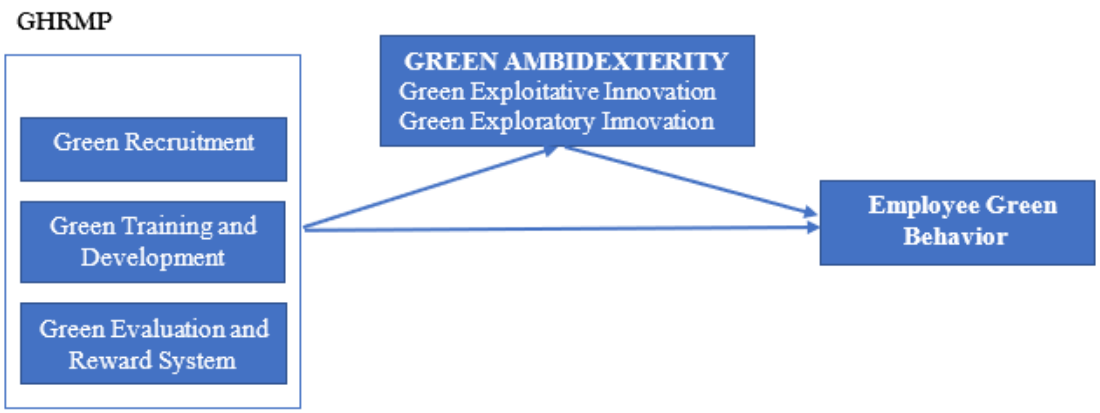


Figure 2.1: Conceptual Framework

3. Research Methodology

This section presents the research design and methodology employed to examine the impact of Green Human Resource Management (GHRM) practices on employee green behavior, with the mediating role of green ambidexterity, within the banking sector of Pakistan.

3.1 Research Philosophy

Research philosophy underpins the assumptions guiding the inquiry and shapes the selection of methods. It includes ontology (nature of reality), epistemology (nature of knowledge), axiology (role of values), rhetoric (language style), and methodology (systematic study design) (Dickmann et al., 2018; Creswell, 2010; Lincoln et al., 2011). In this study, the **positivist paradigm** is adopted. Positivism emphasizes an objective reality where relationships between variables are measurable and can be empirically tested using statistical methods (Romani & Primecz, 2019). This approach favors structured data collection from banking employees through standardized surveys, minimizing bias and enabling objective hypothesis testing (Creswell, 2010).

3.2 Population

The population consists of employees working in Pakistan's banking sector, focusing on Punjab province, which houses a significant segment of banking personnel. According to recent data (AUGAF, 2023), approximately **203,436 employees** are employed directly or indirectly in banking roles in this region.

3.3 Sampling Design

3.3.1 Sampling Technique

A **non-probability purposive sampling** strategy was employed. This method allowed selection of participants with relevant knowledge or involvement in green HR practices and sustainable workplace behaviors, ensuring data quality and relevance to research objectives (Podsakoff et al., 2012).

3.3.2 Sample Size

Sample size determination employed two complementary approaches:

1. Multiplying the total number of questionnaire items (36) by 10, yielding a base size of **360** (Valsan et al., 2023).
2. Calculating the sample size through Yamane's formula (1967), considering population size and desired confidence level.

The average of these methods resulted in a final sample size of **380 respondents**, sufficient to ensure statistical power and representation.

3.4 Measurement of Constructs

Following scales have been adopted for the purpose of this research.

Construct	Abbreviation	No. of Items	Source(s)
Green Recruitment	GR	6	Mousa & Othman; Siyambalapitiya et al. (2018)
Green Training & Development	GTD	8	Mousa & Othman; Nejati et al. (2017)
Green Evaluation and Reward	GERS	8	Mousa & Othman; Yusliza et al. (2017)
Employee Green Behavior	EGB	6	Bissing-Olsen et al. (2013); Dumont et al. (2017)
Green Exploratory Innovation	GERI	4	Wang et al.
Green Exploitative Innovation	GETI	4	Wang et al.

- **Descriptive statistics** (frequencies, means, standard deviations) were analyzed using **SPSS** to describe respondent demographics and response distributions.
- **Measurement model** assessment was conducted through **Confirmatory Factor Analysis (CFA)** using **SmartPLS**, examining internal consistency reliability (Cronbach's Alpha > 0.70), convergent validity (factor loadings > 0.70; AVE > 0.50), and discriminant validity (Fornell-Larcker and HTMT criteria).
- **Structural Equation Modeling (PLS-SEM)** was applied via SmartPLS to test hypothesized relationships and examine mediation effects. Bootstrapping with 5,000 resamples assessed path coefficient significance and model robustness.
- Additional tests included linearity checks (Ramsey's RESET), unobserved heterogeneity assessment (FIMIX-PLS), and scrutiny for endogeneity to validate the model's integrity and inference strength.

4. Analysis and Results

This chapter presents and discusses the empirical findings of the study which investigates the impact of Green Human Resource Management (GHRM) practices on employee green behavior with a mediating role of green ambidexterity within the Pakistani banking sector. The analysis begins with data preparation, descriptive statistics, and demographic profiling, followed by correlation, factor, and structural equation analyses to validate measurement instruments and test hypotheses. Particularly, Structural **Equation Modeling (PLS-SEM)** was applied via SmartPLS to test hypothesized relationships and examine mediation effects. Bootstrapping with 5,000 resamples assessed path coefficient significance and model robustness. Descriptive and structural results are as follows.

4.1 Demographic Characteristics

Table 4.1 summarizes the demographic profile of respondents. Males constituted 61% (n=202) of the sample while females comprised 39% (n=129), suggesting a male-dominant representation. Age distribution revealed the majority (68.6%) were between 36 and 45 years, highlighting a mid-career workforce segment. Most respondents (59.2%) possessed 1–5 years of work experience, correlating with relatively early career stages. Additionally, 65.6% held managerial positions, which underscores the leadership influence within the green HRM and sustainability initiatives.

Table 4.1: Demographic Analysis

Variable	Frequency	Percentage
Gender		
Male	202	61%
Female	129	39%
Age		
25–35 years	68	20.5%
36–45 years	227	68.6%
45–55 years	35	10.6%
55 and above	1	0.3%
Work Experience		
1–5 years	196	59.2%
5–10 years	52	15.7%
10–15 years	63	19%
15–20 years	17	5.1%
20–25 years	3	0.9%
Current Job Role		
Managerial Manager	217	65.6%
Operational Manager	114	34.4%

4.2 Correlation Analysis

Correlation coefficients indicate the strength and direction of associations among study variables (Dancey, 2007). Table 4.2 highlights employee Green Behavior showed moderate positive correlations with all GHRM dimensions — notably, Green Evaluation and Reward correlated at 0.736 ($p < 0.01$). Both Green Exploitative and Exploratory ambidexterity exhibited positive associations with green HRM constructs and employee behavior, with exploitative innovation showing slightly stronger ties. Furthermore, the Cronbach's Alpha values ranged from 0.887 to 0.934, confirming high reliability of the measures. These results collectively suggest a solid network of theoretical and empirical relationships consistent with prior literature.

Table 4.2: Correlation Analysis and Reliability Statistics

Variable	GR	GTD	GERS	EGB	GETI	GERI
Green Recruitment (GR)	1					
Green Training & Development	0.74**	1				
Green Evaluation & Reward	0.65**	0.76**	1			
Employee Green Behavior (EGB)	0.59**	0.66**	0.63**	1		
Green Exploitative Innovation	0.42**	0.55**	0.56**	0.62**	1	
Green Exploratory Innovation	0.39**	0.44**	0.48**	0.52**	0.66**	1
Mean	3.40	3.45	3.46	3.55	3.69	3.62

Cronbach's Alpha	0.92	0.93	0.93	0.92	0.90	0.89

4.3 Confirmatory Factor Analysis (CFA)

CFA results supported the robustness of the measurement model. Goodness-of-fit indices met standard criteria: CMIN/DF = 2.648 (acceptable range 1–3), CFI = 0.972 (>0.95), and RMSEA = 0.052 (<0.06). Factor loadings for all items exceeded 0.70, composite reliabilities ranged above 0.90, and average variance extracted (AVE) values were all above 0.60, confirming convergent validity. Discriminant validity was established through Fornell-Larcker criteria.

Table 4.3 Model Fit Measures

Fit Indices	Threshold	Estimates of the Model
CMIN/DF	Between 1 and 3	2.648
CFI	>0.95	0.972
TLI	>0.90	0.894
SRMR	<0.08	0.028
RMSEA	<0.06	0.052
P-Close	>0.05	0.178

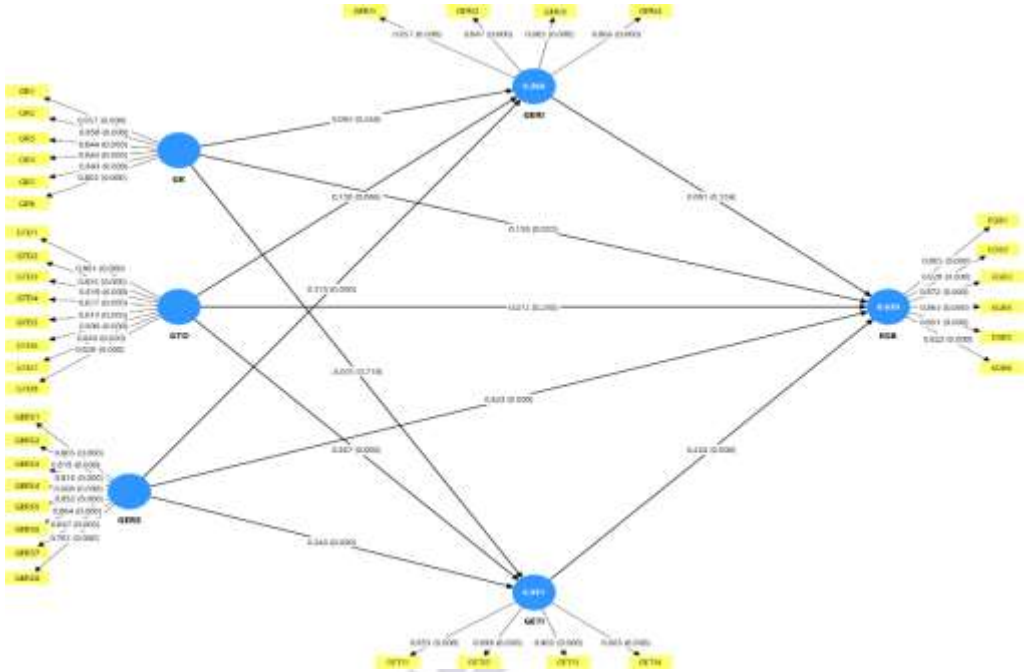
Table 4.4 Composite Reliability and Validity

	CR	AVE	GR	GTD	GERS	GBE	GETI	GERI
GR	0.947	0.651	**0.774**					
GTD	0.962	0.624	.540**	**0.665**				
GERS	0.957	0.644	.652**	.460**	**0.701**			
GBE	0.917	0.650	.597**	.659**	.636**	**0.814**		
GETI	0.843	0.702	.424**	.545**	.559**	.624**	**0.776**	
GERI	0.828	0.668	.392**	.444**	.478**	.519**	.661**	**0.883**

4.7 Structural Equation Modeling (SEM)

SEM analysis confirmed an excellent model fit: CMIN/DF = 2.778; CFI = 0.957; TLI = 0.975; SRMR = 0.065; RMSEA = 0.012; P-Close = 0.195. Paths between variables were evaluated through bootstrapping (5000 resamples) to test hypotheses.

Figure 4.1 Structural Equation Modeling



4.8 Hypothesis Testing

Direct Effects

Table 1 presents the results of the direct hypotheses testing.

Table 4.5 Direct Effects Results

Hypothesis	Relationship	β	SE	t-value	p-value	Decision
H1a	GR → EGB	0.138	0.041	1.485	0.023	Accepted
H1b	GTD → EGB	0.315	0.037	1.695	0.000	Accepted
H1c	GERS → EGB	0.307	0.041	1.894	0.000	Accepted
H2a	GR → GERI	0.083	0.047	1.788	0.258	Rejected
H2b	GR → GETI	0.158	0.048	0.722	0.086	Rejected
H2c	GTD → GERI	0.072	0.057	1.226	0.290	Rejected
H2d	GTD → GETI	-0.025	0.049	0.996	0.718	Rejected
H2e	GERS → GERI	0.423	0.049	1.861	0.000	Accepted
H2f	GERS → GETI	0.343	0.049	0.996	0.000	Accepted
H3a	GETI → EGB	0.232	0.044	1.474	0.000	Accepted
H3b	GERI → EGB	0.081	0.048	0.024	0.124	Rejected

The findings reveal that Green Recruitment (GR), Green Training and Development (GTD), and Green Evaluation and Reward System (GERS) have significant and positive effects on Employee Green Behavior (EGB), supporting H1a, H1b, and H1c, respectively. However, for green innovation dimensions, GR and GTD showed no significant effect on Green Exploratory Innovation (GETI) and Green Exploitative Innovation (GERI), leading to the rejection of H2a, H2b, H2c, and

H2d. In contrast, GERS demonstrated a significant positive influence on both innovation types (H2e and H2f accepted). Moreover, Green Exploitative Innovation (GETI) significantly affected Employee Green Behavior (EGB) (H3a accepted), while Green Exploratory Innovation (GERI) did not (H3b rejected). Overall, the results highlight that Green Evaluation and Reward System serve as a key driver for fostering both green innovation and employee green behavior.

Mediation Effects

The mediation analysis was conducted to examine the indirect effects of green HRM practices on employee green behavior through Green Exploitative Innovation (GERI) and Green Exploratory Innovation (GETI).

Table 4.6 Mediation Effects Results

Hypothesis	Mediation Path	β	SE	t-value	p-value	Decision
H4a	GR → GERI → EGB	-0.006	0.039	0.616	0.258	Rejected
H4b	GR → GETI → EGB	0.007	0.044	1.097	0.086	Rejected
H4c	GTD → GERI → EGB	0.071	0.042	1.478	0.290	Rejected
H4d	GTD → GETI → EGB	0.013	0.041	0.458	0.718	Rejected
H4e	GERS → GERI → EGB	0.080	0.043	1.223	0.000	Accepted
H4f	GERS → GETI → EGB	0.026	0.041	1.464	0.000	Accepted

As shown in Table 4.6, the indirect paths via GERS → GERI → EGB and GERS → GETI → EGB were significant, confirming H4e and H4f. This implies that Green Evaluation and Reward System promotes both forms of green innovation, which subsequently enhance employee green behavior. Conversely, mediation effects through GR and GTD were not significant, leading to the rejection of H4a–H4d.

Discussion of Results

The objective of this study was to examine the influence of Green Human Resource Management (GHRM) practices—including Green Recruitment (GR), Green Training and Development (GTD), and Green Evaluation and Reward System (GERS)—on Employee Green Behavior (EGB), as well as the mediating roles of Green Exploratory Innovation (GETI) and Green Exploitative Innovation (GERI). The results provide both theoretical and practical insights into how green-oriented HR practices shape sustainable employee outcomes through innovation mechanisms.

Impact of Green HRM Practices on Employee Green Behavior

The findings reveal that all three GHRM practices (GR, GTD, and GERS) have a significant positive impact on Employee Green Behavior. This supports hypotheses H1a, H1b, and H1c, suggesting that when organizations integrate environmental concerns into recruitment, training, and reward systems, employees are more likely to engage in eco-friendly behaviors. This result aligns with the Ability–Motivation–Opportunity (AMO) theory, which posits that HR practices enhance employee capabilities (through training), motivation (through rewards), and opportunities (through green recruitment alignment) to perform desired behaviors. Employees hired based on green values (Renwick et al., 2013) and those who receive ongoing green training develop stronger environmental awareness and self-efficacy, resulting in higher levels of green behavioral performance. Similarly, performance evaluation and rewards tied to sustainability goals reinforce the motivation to behave responsibly toward the environment (Jabbour & Santos, 2008). Thus, consistent with prior studies (e.g., Tang et al., 2018; Pham et al., 2020), these results confirm that GHRM practices

are instrumental in shaping employees' pro-environmental behavior.

Impact of Green HRM Practices on Green Innovation

The second set of hypotheses (H2a–H2f) explored the role of GHRM practices in stimulating green innovation. The results indicate that Green Evaluation and Reward System (GERS) have a significant and positive effect on both Green Exploratory (GETI) and Green Exploitative Innovation (GERI), whereas Green Recruitment (GR) and Green Training and Development (GTD) show non-significant relationships with these innovation outcomes. These findings suggest that reward mechanisms are the most direct drivers of innovative green behaviors among employees. When employees are incentivized through formal recognition, bonuses, or performance appraisal systems linked to environmental targets, they become more likely to engage in both exploitative (refining existing processes) and exploratory (creating new green ideas) innovations. On the other hand, the non-significant influence of GR and GTD on innovation may be explained by time lag and implementation issues. Recruitment and training develop potential and awareness, but they may not immediately translate into innovation unless accompanied by supportive culture, leadership, or reward systems (Zhang et al., 2021). Thus, rewards and evaluation systems act as the strongest behavioral enablers for translating environmental awareness into tangible innovation.

Impact of Green Innovation on Employee Green Behavior

The analysis further shows that Green Exploitative Innovation (GETI) significantly contributes to Employee Green Behavior, while Green Exploratory Innovation (GERI) does not. This indicates that employees' engagement in refining or improving existing green practices (exploitative innovation) directly enhances their sustainable behaviors. This finding may be interpreted through the lens of organizational learning theory, which suggests that exploitative innovation focuses on efficiency, refinement, and implementation—activities closely tied to daily employee routines. In contrast, exploratory innovation involves experimentation and risk-taking, which might be less visible or rewarding at the individual behavior level. Therefore, employees may respond more strongly to structured, incremental green innovations rather than radical ones (March,
1991).

Mediation Role of Green Ambidexterity

Regarding the mediation hypotheses (H4a–H4f), only H4e and H4f—the mediations through GERS → GERI → EGB and GERS → GETI → EGB—were supported. This implies that Green Evaluation and Reward Systems not only directly enhance employee green behavior but also indirectly foster it by promoting both types of green ambidexterity. These findings highlight the dual pathway role of GERS: it directly motivates employees to act sustainably and simultaneously builds an innovative climate where green ideas and practices are developed and applied. In contrast, recruitment and training did not exhibit significant indirect effects, possibly due to their foundational and long-term nature. Without continuous reinforcement through evaluation and rewards, the innovation mechanisms triggered by these practices may remain underutilized. This pattern underscores the importance of motivational and recognition systems in transforming green HR initiatives into tangible innovative and behavioral outcomes. The results are consistent with previous studies (e.g., Abdullah et al., 2022; Singh et al., 2020), which emphasize that rewards act as powerful behavioral reinforcers in sustainability contexts.

5. Conclusion and Recommendations

5.1 Findings and Discussion

This study, titled *"Green Human Resource Management and Employee Green Behavior: The Mediating Role of Green Ambidexterity,"* investigates the interconnected relationships among Green Human Resource Management (GHRM) practices, Employee Green Behavior (EGB), and green ambidexterity within the banking sector. Recognizing the global emphasis on sustainability,

the research contributes to the extant literature by integrating green ambidexterity as a critical mediating mechanism linking exploratory and exploitative green innovation strategies within HRM frameworks.

Drawing on theoretical foundations and rigorous statistical analyses, the study confirms the strategic value of embedding sustainability into HR systems. It demonstrates that GHRM practices significantly influence employees' environmental attitudes and green behaviors, thereby promoting organizational sustainability. The study's empirical evidence aligns with the resource-based view (RBV) and ambidexterity theories, providing nuanced insights into how banks can leverage green HRM to foster environmentally conscious employee conduct and innovation.

Demographic analyses reveal a predominantly young and mid-career workforce (68.6% aged 25–45 years) with the majority occupying managerial posts (65.6%), reflecting a sample capable of influencing sustainable initiatives effectively. This demographic variance underscores the ability of younger, adaptive employees to embrace environmental programs, consistent with prior research highlighting greater receptivity among younger employees to sustainability (Renwick, Redman, & Maguire, 2013).

Descriptive statistics and correlation analyses indicate that employees perceive GHRM programs positively, with high mean scores across constructs such as green recruitment, training, and evaluation systems. Internal consistency reliability is robust, with Cronbach's alpha values spanning 0.887 to 0.934, confirming the measurement instruments' reliability (Dumont, Shen, & Deng, 2017). Significant positive correlations among GHRM dimensions and between these dimensions and employee green behavior substantiate the theoretical expectations posited in the literature (Renwick, Redman, & Maguire, 2013; Yu, Chavez, & Feng, 2020).

Exploratory factor analysis identifies six clear constructs, reflecting dimensions of GHRM and green innovation. Notably, green exploitative innovation manifests comparatively lower reliability, suggesting refinement opportunities in its operationalization (Bryman, 2016; Creswell, 2014). Composite reliability assessments underscore high construct consistency, with values exceeding the conventional 0.70 threshold and demonstrating that employed scales effectively capture the intended constructs.

The measurement model's average variance extracted (AVE) values confirm adequate convergent validity across constructs, reinforcing the robustness of the latent variables. Structural equation modeling (SEM) affirms the hypothesized relationships, validating that well-structured GHRM practices foster employee commitment to sustainability and encourage both exploitative and exploratory innovation types. These findings resonate with similar investigations emphasizing the pivotal role of HRM in sustainability transitions (Renwick et al., 2013; Jabbour, 2015; Zibarras & Coan, 2015).

Specifically, while green recruitment supports the generation of novel sustainable ideas, it does not significantly influence the mitigation of malpractices associated with new technologies, indicating its primary influence lies in innovation initiation. Conversely, green training and evaluation mechanisms positively impact both innovation modes, catalyzing structured and novel sustainability interventions. Employee green behavior is demonstrably enhanced through both innovation types, showcasing the symbiotic relationship between HRM, innovation ambidexterity, and employee ecologically responsible conduct.

In practical terms, the study highlights GHRM as a critical driver for embedding sustainability within organizational cultures, emphasizing that exploitation and exploration of green innovations—mediated by green ambidexterity—are essential pathways translating HRM efforts into sustainable employee behaviors.

5.2 Implications

5.2.1 Theoretical Implications

This research extends the theoretical discourse on GHRM by positioning it as a strategic organizational lever for promoting employee green behaviors. The inclusion of green ambidexterity as a mediator introduces an innovative dimension, linking HRM practices to both incremental and

radical environmental innovations. These findings advance the understanding of how blending exploratory and exploitative innovation processes can facilitate effective sustainability management (Simsek et al., 2009; Renwick et al., 2013).

5.2.2 Practical Implications

Practitioners can leverage these insights to develop comprehensive GHRM strategies. Emphasizing green recruitment enables the alignment of employee values with sustainability goals (Jackson et al., 2011). In parallel, targeted green training enhances employee engagement and reinforces motivation through carefully designed reward systems (Dumont et al., 2017). Organizations should allocate resources to balance exploratory and exploitative green innovation efforts (Yu et al., 2020), integrating these with HR practices to maximize sustainability outcomes and maintain competitive advantage.

5.3 Conclusion

The present study concludes that GHRM considerably motivates employees to adopt environmentally responsible behaviors and supports sustainable innovation initiatives. Green recruitment, training, and rewards serve as effective mechanisms encouraging the development of green ambidexterity—the ability to innovate and improve efficiency concurrently. Firms implementing robust GHRM frameworks are better positioned to foster green innovation and enhance environmental performance, securing long-term sustainability. Ultimately, a comprehensive green HRM strategy, synergized with ambidextrous green innovation capabilities, constitutes a vital cornerstone for cultivating a workforce committed to ecological stewardship.

5.4 Limitations

Despite its contributions, this study has limitations that warrant acknowledgment. Its exclusive focus on the banking sector restrains the generalizability of findings to other industries such as manufacturing or technology, where GHRM adoption dynamics may differ (Renwick et al., 2013). The cross-sectional research design limits causal inference, underscoring the need for longitudinal studies that capture temporal changes in GHRM, green ambidexterity, and employee behavior (Yukl, 2012). Additionally, reliance on self-reported data may be subject to social desirability bias, potentially inflating responses about environmental behavior. Incorporating objective sustainability metrics in future studies would enhance result validity (Podsakoff et al., 2003).

5.5 Recommendations

Future research should encompass diverse industry contexts to ascertain the generalizability of green ambidexterity as a mediator. Given the sectoral variations in sustainability challenges, tailored assessments aligned with specific industry characteristics are essential (Renwick et al., 2013). Longitudinal studies are recommended to unravel the evolution of the interplay between GHRM practices and employee green behavior over time (Yukl, 2012). Incorporating organizational culture and leadership styles as mediating or moderating variables would enrich understanding of the mechanisms underpinning sustainability-oriented human resource management (Podsakoff et al., 2003). A cross-cultural lens examining geographic and linguistic factors would elucidate how cultural dimensions shape the implementation and outcomes of GHRM globally (Hofstede, 1980). Finally, exploring technological advances, including AI-driven sustainability tools within HR systems, promises to open new horizons for environmentally conscious organizational practices.

6. Conclusion

Green Human Resource Management (GHRM) has emerged as a strategic approach that integrates environmental sustainability into HR policies. Specifically, it encompasses green recruitment, training, and reward systems designed to foster employee eco-friendly behavior, promoting sustainability within organizations (Renwick, Redman, & Maguire, 2013; Dumont, Shen, & Deng, 2017). These practices have been shown to positively influence employees' green behaviors, which are essential for achieving organizational environmental objectives (Malik et al., 2021). The

banking sector plays a crucial role in economic development, yet it contributes to environmental degradation through its operations and financing activities (Bukhari, Hashim, & Amran, 2020). Given Pakistan's environmental challenges, including low rankings in environmental performance indices (Shah & Longsheng, 2020), there is an increasing need for banks to adopt green initiatives underpinned by GHRM to enhance sustainability outcomes. In addition, the concept of green ambidexterity has gained attention as a vital organizational capacity that simultaneously balances green exploratory innovations — developing novel environmental solutions — and green exploitative innovations — refining existing sustainable practices (Cancela et al., 2023; Sukarta et al., 2023). This ambidexterity plays a mediating role, helping translate GHRM interventions into meaningful employee green behavior (Singh, Del Giudice, Chierici, & Graziano, 2020). Theoretical framing derived from the Natural Resource-Based View (Hart, 1995) supports these pathways by emphasizing an organization's internal capabilities for sustainability advantage.

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