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Enhancing Green Behavior in Banking: Unveiling the Mediating Impact of Green Innovation and the Moderating Role of Self-Efficacy in Green HRM Practices

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Keywords:
Green recruitment and selection (GRS), Green Training and Development (GTD), Green behavior (GB), Green Innovation (GI), Self- efficacy, (SE).

ABSTRACT

The purpose of this research is to examine the impact of Enhancing Green Behavior (GB) in Banking: The Mediating Impact of Green Innovation (GI) and the Moderating Role of Self-Efficacy (SE) in Green HRM Practices. This study investigated the model of mediation with Green Innovation for an explanation of the relationship between GRS, GTD, and the outcome variable of Green Behavior and the moderating effect of self-efficacy by conducting a sample on 320 employees in the banking industry of Pakistan. The data was analyzed using SMART PLS. The result of this study suggests that GHRM practices positively influence the Green Behavior of employees with the mediation of Green Innovation and moderation with Self-Efficacy. The results provide useful insights for banking policymakers on how GHRM may positively contribute to employee green Behavior. The cross-sectional nature of the study limits the generalizability of the results. This paper is unique for several reasons. First, it contributes to the general literature of GHRM. Second, it contributes to the limited body of knowledge on GHRM in the context of the Banking sector. Third, the diverse contribution of this study is the introduction of GI as an outcome of GRS, and GTD as a mediating variable in the relationship between GHRM and employee green behaviors. Last introduced self–efficacy as a moderator between green HRM Practices and Green Behavior.

INTRODUCTION

In light of the current transformation of organizational focus toward green agendas and sustainability strategies, human resource managers (HRM) are increasingly required to revise their roles and expand the boundaries of their functions to integrate green management practices into core HRM activities. Such integration promises improvements in the overall effectiveness of HRM (Angel del Brio et al., 2008).

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Prior studies confirm that HRM significantly influences employees' motivation, awareness, and behavior concerning sustainability (Pham et al., 2019). Renwick et al. (2013) highlighted that HRM practices can enable organizations to formulate and implement environmentally friendly policies.

Environmental sustainability has become essential in contemporary society and within organizational operations. The mounting evidence of natural disasters, climate change, and resource depletion has raised deep concerns (Markey et al., 2019). These environmental crises stemming from deforestation, fossil fuel combustion, and carbon monoxide emissions are predominantly driven by intensive human and organizational activities. In response, governments, particularly in developing countries, have aligned themselves with global initiatives such as the United Nations' Agenda 2030, enacting legislation that mandates environmentally responsible corporate behavior.

Applied research has increasingly sought to explore the nexus between HRM practices and pro-environmental behaviors among employees. For instance, while (Harvey, Williams, and Probert 2013) attempted to investigate this link, their case study was limited to a small sample of airline pilots, thereby constraining the generalizability and depth of their findings. Similarly, (Paillé et al. 2014) examined general HRM practices but did not specifically address the unique dimensions of green HRM (GHRM).

The emergence and implementation of sustainable technologies, products, and services is broadly termed green innovation (GI). Organizations that adhere to the principles of GHRM and adopt a long-term, innovation-driven vision are more likely to identify and leverage opportunities to reduce environmental footprints and enhance environmental performance (Ahmad, 2015).

Self-efficacy plays a dual role both positive and negative in influencing behavior, contingent upon the specific job or context. In the context of greening, self-efficacy refers to an individual employee's belief in their capacity to undertake environmentally friendly tasks and derive meaningful value from green activities. Understanding employee motivations and needs related to greening efforts is essential to fostering such self-efficacy. This development can occur through behavioral modeling, persuasive communication, and emotional engagement. Modeling, in particular, serves as a powerful tool for increasing confidence in one's green capabilities. It can inspire enthusiasm and act as a catalyst for engagement with sustainability goals.

Rooted in Bandura's Social Cognitive Theory (1986, 1997), self-efficacy is conceptualized as the belief in one's ability to plan and execute the necessary steps to achieve specific objectives. Within this theoretical framework, self-efficacy functions not as a direct channel but as a moderator that influences the relationship between environmental stimuli such as GHRM practices and green behavior outcomes. Bandura emphasized that individuals with high self-efficacy tend to interpret challenges as learning opportunities rather than threats, thereby enhancing their proactive engagement with organizational initiatives.

The banking sector, particularly in Pakistan, presents a compelling context for the study of green behavior. In this sector, green practices such as paperless transactions and sustainability initiatives often rely on voluntary individual efforts. Thus, employee attitudes and beliefs, including self-efficacy, are crucial for the successful application of HRM principles to environmental goals. Empirical studies further support this moderating role. For example, (Ghani-ur-Rehman et al. 2025) demonstrated in Pakistan's cement industry that green self-efficacy significantly moderates the relationship between green transformational leadership and green creativity. Higher levels of green self-efficacy enhance employees' positive responses to leadership and foster creativity. Similarly, research in the hospitality industry has shown that self-efficacy strengthens the link between transformational leadership and creative behavior.

These findings underscore that self-efficacy influences both individual motivation and the extent to which external organizational practices such as GHRM can cultivate green behavior and innovation. Despite its importance, the systematic application of GHRM practices in the Pakistani banking sector remains limited and fragmented. Although the sector plays a vital role in advancing national sustainability goals, efforts toward environmental responsibility often remains peripheral.

To address this gap, regulatory bodies such as the State Bank of Pakistan (SBP) have introduced policy directives, including Environmental and Social Risk Management (ESRM) standards. Banks are also increasingly required to reflect environmental sustainability in both internal and external reporting, as stakeholders and corporate social responsibility (CSR) frameworks exert mounting pressure. However, many banks particularly in urban centers like Rawalpindi and Islamabad continue to treat green initiatives as secondary concerns rather than strategic imperatives. This tendency is rooted in institutional inertia, limited understanding, and weak integration of sustainability principles into HR operations.

Given this context, it is imperative to examine the effects of green hiring, training, and development (core GHRM practices) on employee green behavior, and how these relationships are moderated by self-efficacy and mediated by green innovation. This study addresses a critical gap by investigating how internal HRM mechanisms respond to external regulatory and CSR-driven sustainability demands within the banking sector in Pakistan.

The assets of Islamic banks (IBs) grew by PKR 290 billion during the surveyed performance period, reaching PKR 5,529 billion by the end of June 2023. Similarly, the assets of Islamic banking branches (IBBs) improved to PKR 2,589 billion, marking an increase of PKR 296 billion. By the end of June 2023, the combined assets of Islamic banking institutions (IBIs) were distributed as 68.1% in IBs and 31.9% in IBBs.

The operational distinctions between Islamic and conventional banks have been widely examined in previous research. However, areas such as human resources and the application of green banking principles in Islamic banks have received relatively less attention (Julia & Kassim, 2019). The primary aim of green HRM (GHRM) research in this context is to gain insight into how employees perceive sustainability through a Shariah-compliant lens. While GHRM is a familiar concept in conventional banking, it remains a novel and evolving construct within Islamic banking. To distinguish this research from existing studies, the present work focuses specifically on GHRM practices in Islamic banks.

The adoption of GHRM in Islamic banking is not only aligned with Shariah principles but is also essential for promoting work ethics, resource conservation, social responsibility, and economic justice. Islamic banking adheres to strict normative frameworks that bind both employers and employees, thus necessitating heightened emphasis on ethical labor practices and environmental responsibility (Khan et al., 2010). For example, Shariah law mandates timely payment of wages and obligates employees to demonstrate loyalty and commitment to their organizations.

Nevertheless, challenges persist in implementing environmentally conscious management practices within HRM. HR managers face difficulties due to limited staff capabilities, a lack of awareness, and organizational structures that are not conducive to green policies. These barriers underscore the importance for foresight practitioners and futurists to develop practical frameworks for integrating environmental priorities into 21st-century workforce management. An emerging theoretical and practical framework can help foster a sustainable organizational culture, enhance employee commitment, and raise environmental awareness.

The current literature reveals a significant gap in this domain. For instance, (Raza et al., 2022) limited their study to the hospitality industry in Karachi, thus excluding other sectors such as education, banking, and retail. The present study addresses this gap by examining the role of GHRM in the banking sector of Pakistan's twin cities, Islamabad and Rawalpindi. According to (Rashid et al., 2023), their theoretical model considers green employee empowerment (GEE) as a mediator and recommends positioning self-efficacy as a moderator in future research. Similarly, (Liu et al., 2023) emphasized the importance of exploring GHRM practices in developing countries, particularly within Islamic banks, specialized financial institutions, and microfinance banks.

In this research, we explore GHRM practices across both Islamic and conventional banks in the twin cities of Islamabad and Rawalpindi an urban context representing a developing nation. In contrast to (Jehan et al.,2020), whose study was confined to Baltistan, our geographical scope offers a broader representation of Pakistan's banking sector. (Rubel et al., 2021) argued that GHRM typologies should be extended through theoretical lenses such as the Ability-Motivation-Opportunity (AMO) theory. In line with their recommendation, this study adopts AMO theory to examine the dynamics of GHRM implementation.

The global shift toward environmental management systems (EMS) and sustainability frameworks has prompted organizations to adopt green initiatives aimed at reducing environmental impact. Key strategies include minimizing energy consumption, reducing office supplies, and practicing conscientious recycling (Mazzi et al., 2016). Employee attitudes, behaviors, and environmental competencies are essential to the success of these initiatives. Hence, a focus on cultivating green behaviors and skills among staff is central to achieving enhanced environmental performance.

The primary objectives of this research are as follows:

1. To examine whether green recruitment and selection positively affect green behavior.
2. To assess whether green training and development positively influence green behavior.
3. To investigate whether green recruitment and selection contribute to green innovation.
4. To determine whether green training and development relate positively to green innovation.
5. To explore whether green innovation mediates the relationship between green recruitment and green behavior.
6. To explore whether green innovation mediates the relationship between green training and green behavior.

7. To assess whether self-efficacy moderates the relationship between green recruitment and selection to green behavior.
8. To determine whether self-efficacy moderates the relationship between green training and development to green behavior.

As (Aboramadan et al., 2022) noted, the lack of empirical evidence linking non-eco-friendly workplace behaviors with green organizational support and GHRM practices points to a crucial area for development. Moreover, the absence of studies examining the mechanisms between green housekeeping and GHRM underscores the need for increased attention to promoting environmentally friendly behavior in the banking sector. This further highlights the importance of employee education and the institutionalization of environmentally conscious policies.

By aligning itself with global models such as the Global Reporting Initiative (GRI) and the United Nations Sustainable Development Goals (SDGs) particularly SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action) this research contributes to international sustainability discourse. These frameworks encourage businesses to adopt sustainable practices, including environmentally responsible HRM. The GRI standards, in particular, provide structured guidance for firms to disclose their environmental and social impacts. Hence, this study situates green HR practices within these global frameworks, enhancing both academic and practical relevance.

Furthermore, this study contributes to the emerging body of knowledge on GHRM by demonstrating how Islamic banking principles extend beyond mere Shariah compliance to inform ethical and environmental workplace practices. (Ali et al., 2022) highlighted that the integration of green human, organizational, and interpersonal capital in Islamic banks significantly enhances environmental performance, eco-friendly behaviors, and employee loyalty. Islamic banking situates environmental stewardship within the broader Maqasid al-Shariah framework, emphasizing religious duty and social welfare unlike traditional banks, where green practices are often viewed as cost-cutting measures or regulatory obligations.

Finally, this research underscores that self-efficacy is a key moderating variable that strengthens the impact of GHRM on pro-environmental behavior. It also confirms that green innovation plays a mediating role in the relationship between GHRM and green behavior an intersection scarcely explored in the existing literature on HRM in Islamic banking. Thus, this study offers a theory-driven, empirically grounded understanding of how ethical foundations in Islamic finance shape the psychological and behavioral pathways through which sustainable HRM practices operate.

Hypotheses Development

Green Behavior and Green Recruitment and Selection

Green Human Resource Management (GHRM) refers to the systematic integration of environmentally focused policies and practices into human resource functions with the goal of fostering pro-environmental behavior among employees. In the context of this study, GHRM encompasses practices such as green recruitment and selection (GRS) and green training and development (GTD), both of which are designed to embed sustainability values across the employee lifecycle (Renwick et al., 2013).

Green recruitment and selection involve embedding environmental sustainability criteria into hiring procedures, including the evaluation of applicants based on their ecological awareness and ethical alignment. In Pakistan's banking sector, such practices have demonstrated significant potential. For instance, (Malik et al.,2021) found a positive correlation between GRS and green behavior, suggesting that when organizations prioritize ecological values in recruitment, they are more likely to develop a culture of sustainable performance.

The theoretical foundation for this linkage lies in the Ability–Motivation–Opportunity (AMO) framework (Appelbaum et al., 2000). AMO theory posits that employees exhibit high performance including green behavior when they are equipped with the appropriate skills (ability), driven by organizational alignment (motivation), and provided with enabling conditions (opportunity). By selecting candidates with proven environmental competences, GRS enhances employee ability and fosters motivation aligned with sustainability goals. Li et al. (2025) found that employees previously engaged in eco-conscious behaviors were more likely to continue such behavior in their new roles. Similarly, (Khan et al.,2025) highlighted that GRS promotes early-stage green attitudes that evolve into habitual pro-environmental practices.

H1: *Green recruitment and selection significantly influence green behavior.*

Green Behavior and Green Training and Development

Green behavior is defined as the voluntary and observable actions taken by employees to reduce environmental impact, such as minimizing waste, conserving energy, or contributing to organizational sustainability initiatives (Norton et al., 2015). In this study, it is measured through self-reported pro-environmental activities influenced by organizational support and individual motivation.

Green training and development (GTD) aim to enhance employees' environmental knowledge, skill sets, and ecological sensitivity. These programs often include modules on energy

efficiency, sustainable office practices, and climate literacy. Dumont, Shen, and Deng (2017) showed that GTD significantly improves employees' capacity and willingness to engage in environmentally responsible actions. (Shoaib et al.,2021), in their mediation analysis, confirmed the link between green training and increased organizational commitment, which in turn fosters green behavior.

Under AMO theory, GTD contributes to ability through environmental skill-building, motivation through alignment with ecological goals, and opportunity by institutionalizing green practices into daily workflows. Moreover, when employees are given structured platforms and tools to apply their training such as through eco-initiatives, committees, or sustainability audits the likelihood of green behavior increases.

H2: *Green training and development significantly influence green behavior*.

Green Recruitment and Selection and Green Innovation

Green innovation (GI) refers to the implementation of novel or significantly improved products, processes, or practices aimed at achieving environmental sustainability (Chen, 2006). GI is operationalized in this study as an outcome of GHRM, specifically influenced by green-oriented recruitment practices.

Empirical studies validate this connection. Shah and Soomro (2023) found that GRS positively influenced GI in the Pakistani automotive sector. Employees recruited with a background in sustainability demonstrated greater involvement in developing eco-friendly solutions. In SMEs, GRS and GTD jointly contributed to enhanced organizational innovation capacity, including waste reduction and resource-efficient workflows.

GRS helps build an organizational green competence pool by selecting individuals with sustainability awareness, ethical orientation, and creative aptitude (Musiyo, 2021). Moreover, green job branding and environmentally themed recruitment messaging attract candidates already predisposed toward innovation. AMO theory supports this relationship, as GRS strengthens ability and motivation both crucial to innovation.

H3: *Green recruitment and selection significantly influence green innovation*.

Green Training and Development and Green Innovation

GTD serves as a cornerstone for nurturing GI. It provides technical know-how, cultivates environmental sensitivity, and instills a sustainability mindset. Faizan, Tanveer, and Haq (2023), using SmartPLS-SEM on 350 Pakistani SME managers, showed a direct, positive relationship between GTD and GI. Similarly, Shahzad et al. (2025) found that GTD boosts

innovation through its integration with broader GHRM systems, including performance appraisals and rewards.

Conferences, green workshops, and sustainability simulations enhance employees' capability to generate and implement innovative solutions. GTD also enhances **intrinsic motivation** by framing ecological responsibility as a shared organizational value. Employees trained under such programs become more confident in developing innovative responses to environmental challenges.

H4: *Green training and development significantly influence green innovation*.

Green Innovation as a Mediator between GRS and Green Behavior

Green innovation plays a mediating role between GRS and green behavior. Employees selected for their ecological orientation are more likely to channel their skills and values into innovative environmental initiatives. These innovations, in turn, manifest as sustainable behavior at the individual level.

(Ahmed et al.,2021) demonstrated that in the Pakistani banking industry, GI acts as a conduit through which GRS impacts organizational competitiveness. As (Liu et al.,2023) noted, this dynamic is especially relevant in developing economies, where eco-innovation is an essential determinant of long-term performance. According to AMO theory, GRS fosters the ability and motivation to innovate, while organizational support provides the opportunity to translate innovation into action.

H5: *Green innovation positively mediates the relationship between green recruitment and selection and green behavior*.

Green Innovation as a Mediator between GTD and Green Behavior

GTD not only builds the knowledge base for sustainability but also encourages application through innovation. Singh and El-Kassar (2019) argued that training in environmental analysis, recycling, and energy efficiency equips employees to contribute to organizational environmental innovation.

(Raza et al.,2022) extended this insight by linking GTD to eco-performance in service sectors, including banking. When aligned with AMO components, GTD boosts skill acquisition (ability), intrinsic drive (motivation), and institutional support (opportunity), thus indirectly fostering green behavior via innovation.

H6: *Green innovation positively mediates the relationship between green training and development and green behavior*.

Self-Efficacy as a Moderator between GRS and Green Behavior

Self-efficacy defined by Bandura (1997) as the belief in one's capability to perform a specific task functions as a critical moderator in the link between GRS and green behavior. High self-efficacy individuals are more likely to act on their environmental values post-hiring, thereby actualizing the intentions embedded in green recruitment strategies.

(Miah et al.,2024) found that green self-efficacy significantly influenced the strength of the relationship between GHRM practices and green behavior in Bangladeshi universities. Those with greater self-belief were more likely to overcome environmental challenges, act autonomously, and show persistence.

Self-efficacy influences candidates' perception of their potential success in green roles. It determines their response to eco-job descriptions, assessment procedures, and onboarding programs. The more confident they are, the more likely they are to engage with and sustain green behavior.

H7: *Self-efficacy positively moderates the relationship between green recruitment and selection and green behavior*.

Self-Efficacy as a Moderator between GTD and Green Behavior

Self-efficacy also moderates the effectiveness of GTD in producing green behavior. (Yusliza et al.,2020) and (Ma et al.,2017) emphasize that employees with high self-efficacy are more likely to engage in, benefit from, and apply environmental training.

Such employees perceive learning opportunities as achievable, are more persistent in the face of setbacks, and are better able to translate abstract concepts into actionable behavior. (Ahuja et al.,2023) observed that self-efficacy mediates and amplifies the impact of green training by enhancing psychological readiness and behavioral commitment.

Employees low in self-efficacy may view environmental training as irrelevant or unattainable. Conversely, high self-efficacy fosters behavioral transfer from training to practice particularly when environmental challenges require initiative and adaptability.

H8: *Self-efficacy positively moderates the relationship between green training and development and green behavior*.

Theoretical Foundation: AMO Theory and Self-Efficacy Integration

This study is grounded in the AMO model (Appelbaum et al., 2000), which frames human performance as a function of ability (skills and competencies), motivation (individual and organizational alignment), and opportunity (structural and contextual support). In GHRM,

ability is built through GRS and GTD, motivation is driven by values and rewards, and opportunity is created through organizational culture and policy.

To extend the model, we incorporate green innovation as a mediator representing how HR practices translate into organizational outcomes and self-efficacy as a moderator capturing psychological variance in individual response. This extension aligns with findings from (San Rom-Niaves et al., 2025), who demonstrated that AMO-based GHRM practices, when coupled with innovation and empowerment mechanisms, significantly enhance sustainable outcomes.

By embedding green innovation and self-efficacy into AMO, this study contributes to the development of a more comprehensive model of sustainable HRM particularly relevant in the underexplored context of Islamic and conventional banking in developing countries like Pakistan.

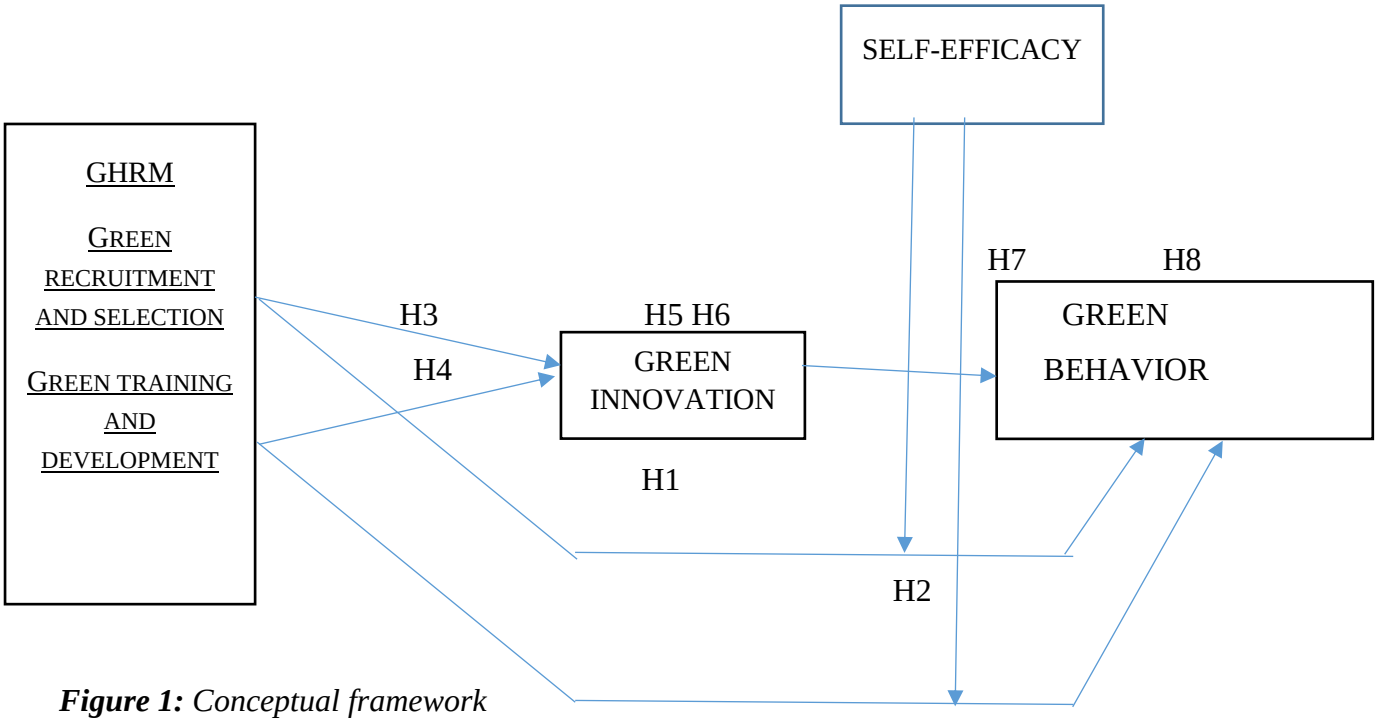

Figure 1: *Conceptual framework*

METHODOLOGY

Data Collection

Data regarding the attitudes, beliefs, behaviors, or characteristics of Top Management and Managers will be the target population are gathered th8rough surveys. The respondents were taken from public and private Islamic and conventional banks from Islamabad and Rawalpindi. This cross-sectional was utilized stratified sampling, in which 320 questionnaires were distributed through Google Forms. Every question on the survey will be accepted. Likert scale

will be used to measure all the scale items ranging from "strongly disagree (1)" to "strongly agree (5)". We have used statistical software like Smart PLS to perform quantitative analysis. The survey of 350 respondents shows a varied demographic profile. A majority are male (60%), while females make up 40%. Although the differences may not always approach statistical significance, numerous studies show that women frequently exhibit higher levels of intrinsic motivation and green behavior than males in professional settings (Wang et al., 2025). Research on gender dynamics in banking in Pakistan shows that, despite their smaller numbers, female employees may react differently to organizational cues and formal structures. Most participants are aged 29-39 (40%), with a significant portion in the 20-28 age range (37.1%), and a smaller group over 40 years old (22.9%). In terms of education, the largest group holds a Bachelor's Degree (42.9%), followed by those with a Master's Degree (37.7%). Fewer respondents have M.Phil/ MS (17.1%) or Ph.D. degrees (2.3%). Experience levels are relatively evenly distributed: 20% have less than 1 year, 25.7% have 1 to 2 years, 34.3% have 3 to 5 years, and 20% have 6 years or more. Overall, the data reflects a well-educated and experienced cohort.

Measurement

In the study Smart PLS was used to construct a partial least squares structural equation modeling (PLS-SEM) modus operandi that was used to analyze the information. The main reason underlying this methodological choice is the nature of the sample/data and its rising importance in management and the area adjoining it (Hair et al., 2020). The PLS-SEM found application in different disciplines and predictive studies because of its capability to anticipate the impact of the dependent variables (Hair et al., 2016) and the likelihood to achieve less inconsistent findings compared to the regression analysis (Ramli et al., 2018). In comparison with the use of CB-SEM, PLS-SEM is more suitable in cases when the sample is small, data is not normally distributed, and the model consists of a high number of constructs or indicators, which is also reflected in the exploratory nature of this study (Hair et al., 2020). SEM as a second-generation multidimensional data analysis technique examines the linear and additive causal associations based on the theory (Wong, 2013). It represents the analysis of internal and external models to study the links between exogenous and endogenous variables. Smart PLS can work as great implementers of PLS-SEM, which deals with the education analysis of variance. In this regard, PLS-SEM was made use of in the proposed study to make a thorough analysis in the field of management science and also understand the mediating effects of variables (Ramli et al., 2018). The method uses the reliability and validity of the measurement

model after which an estimation of the structural model is made to examine the fundamental relationships in the advanced model, using the data.

Table 1: Demographics

Variables	Category	N	Percentage
Gender	Male	210	60%
	Female	140	40%
Age in Years	20-28	130	37.10%
	29-39	140	40%
	Above 40	80	22.90%
Educational Level	Bachelor's Degree	150	42.90%
	Master's Degree	132	37.70%
	M.Phil/ MS	60	17.10%
	PhD	8	2.30%
Total Experience	Less than 1 year	70	20%
	Between 1 and 2 years	90	25.70%
	Between 3 and 5 years	120	34.30%
	6 years or more	70	20%

RESULTS

Assessment of measurement model

This study assessed construct reliability using Cronbach's alpha and composite reliability metrics. Table 2 displays that Cronbach's Alpha coefficients for each construct, all exceeding the acceptable threshold of 0.70. Similarly, composite reliability values which surpass the recommended threshold of 0.70 (Hair et al., 2016). Consequently, the reliability of the proposed model is deemed satisfactory. For evaluating convergent validity, the average variance extracted (AVE) must exceed 0.50 (Cunningham et al., 2001). Table 2 indicates that AVE values, all exceeding the minimum requirement of 0.50 (Fornell & Larcker, 1981a).

Table 2: Assessment of measurement model

Latent variable	Items	Loadings	CA	AVE	CR
Green behavior	GB1	0.709	0.892	0.651	0.918
	GB2	0.799			
	GB3	0.864			
	GB4	0.843			
	GB5	0.822			
	GB6	0.797			
Green innovation	GI1	0.812	0.844	0.682	0.895
	GI2	0.860			
	GI3	0.862			
	GI4	0.766			
Green recruitment and selection	GRS1	0.798	0.870	0.720	0.911
	GRS2	0.828			

	GRS3	0.882			
	GRS4	0.882			
green training and development	GTD1	0.728	0.861	0.643	0.900
	GTD2	0.810			
	GTD3	0.824			
	GTD4	0.846			
	GTD5	0.795			
Self-efficacy	SE1	0.851	0.812	0.726	0.888
	SE2	0.892			
	SE3	0.812			
	SE x GTD	1.000			
	SE x GRS	1.000			

Note(s): AVE = Average Variance Extracted, CR= Composite Reliability, CA = Cronbach's Alpha.

The factor loadings of the latent variables in the study are high and this confirms their validity. The six items that load between 0.709 to 0.864 represent Green Behavior and all the items made indexes since their impacts as construct are significant. The Green Innovation contains four entries of both loadings of 0.766 and 0.862 that shows a good depiction of the construct. The measure of Green Recruitment and Selection consists of 4 items and the loadings varies between 0.798 and 0.882 indicating good construct validity. Green training and development has five items whose measurement is reliable since the loadings are between 0.728 to 0.846. Self-Efficacy is measured using three items and two interaction terms in the construct, with a loading of 0.812 to 0.892 and a perfect loading of 1.000 of the interaction term witnessed, which means that the construct has strong association with other constructs. These loadings testify the validity of the measurement model that will provide accurate representation of the latent variables

Psychometric testing of the latent variables showed great reliability and validity of all the constructs. Green Behavior is also internally consistent with a Cronbach alpha (CA) of 0.892, average variance extracted (AVE) of 0.651, and composite reliability (CR) of 0.918, which also prove that it is well-measured. Green Innovation reports an AVE of 0.682, a CA of 0.844, and a CR of 0.895, and it reflects the capability of capturing of variance as well as the reliability of measures. Both GRS and GTD have their significant influence on Green Behavior (GB) meditated fully by Green Innovation (GI). But then the GI indirect impact is very strong in the case of GTD as contrasted to GRS as per research done in Pakistan. Likewise, the analysis of the public health industry in Pakistan discovered that green training, especially through the GI, enhances ecological sustainability and the performance of employees (Bilal & Khan, 2025). Green Recruitment and Selection demonstrate high reliability and validity since its CA is 0.870,

its AVE is 0.720, and its CR is 0.911. The CA of 0.861, the AVE of 0.643, and the CR of 0.900 support Green Training and Development as a successful trait of gauging the construct. Self-Efficacy has a CA of 0.812, an AVE of 0.726, and a CR of 0.888, interaction terms of which exhibit perfect loading, hence, its high validity and substantial relations with other constructs. All in all, these values prove that all constructs are reliably and validly measured.

Discriminant validity

The square roots of AVEs are greater than the off-diagonal correlations of each construct, which proof has discriminant validity. This establishes the fact that all the constructs are not similar to the other hence meeting the Fornell-Larcker criterion of discriminant validity (Fornell & Larcker, 1981a). Further evidence of discriminant validity was also checked with the Heterotrait-Monotrait (HTMT) ratio which is an addition to the SEM literature that came after. The HTMT values were all under the conservative criterion of 0.85 showing strong discriminant validity (Henseler et al., 2015).

Table 3 Fornell & Larcker

	GB	GI	GRS	GTD	SE
GB	0.807				
GI	0.685	0.826			
GRS	0.570	0.639	0.848		
GTD	0.651	0.734	0.701	0.802	
SE	0.671	0.556	0.487	0.556	0.852

Table 4: Heterotrait-Monotrait (HTMT)

	GB	GI	GRS	GTD	SE	SE x GTD	SE x GRS
GB							
GI	0.789						
GRS	0.641	0.741					
GTD	0.739	0.846	0.800				
SE	0.781	0.672	0.578	0.662			
SE x GTD	0.336	0.381	0.431	0.357	0.421		
SE x GRS	0.436	0.396	0.423	0.409	0.527	0.845	

Table 5: Test of hypothesis

Hypothesis	Relationship	Beta	T-value	P-value	Decision
H1	GRS -> GB	0.078	3.910	0.000	Supported
H2	GTD -> GB	0.180	4.610	0.000	Supported
H3	GRS -> GI	0.244	3.788	0.000	Supported
H4	GTD -> GI	0.563	1.559	0.000	Supported
H5	GRS -> GI -> GB	0.078	3.910	0.000	Supported
H6	GTD -> GI -> GB	0.180	4.610	0.000	Supported
H7	SE x GTD -> GB	0.120	2.878	0.004	Supported
H8	SE x GRS -> GB	-0.127	3.070	0.002	Supported

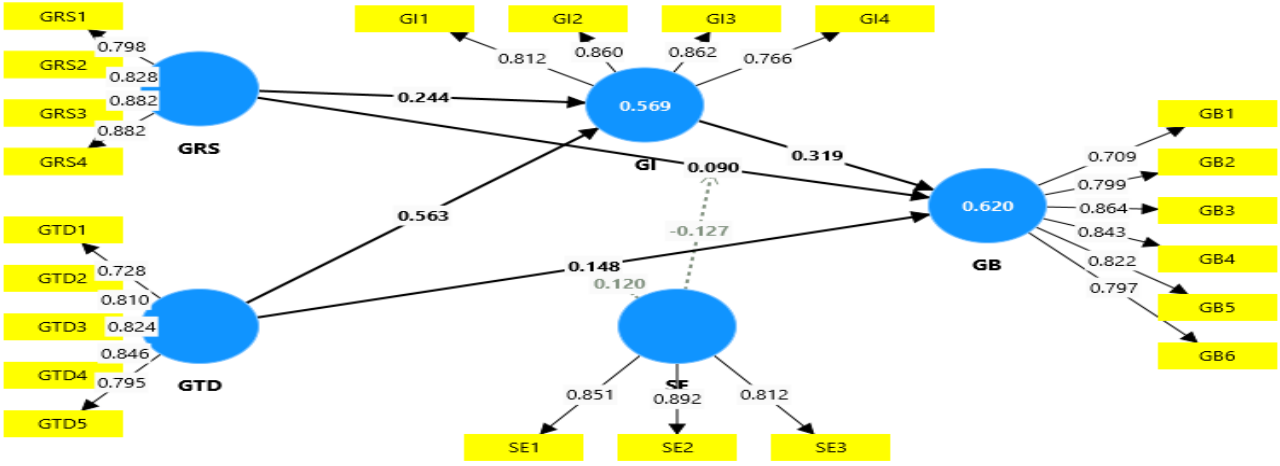

Figure 2: *Hypothesis testing*

All the suggested relationships have strong evidence based on the results of hypothesis testing. With the given value of 0.078 of beta, 3.910 of t-value, and 0.000 of p-value, H1 shows a marked significant positive correlation between Green Recruitment and Selection (GRS) and Green Behavior (GB). This figure is indicative of the hypothesis. Also, H2 indicates a marked positive relationship between Green Training and Development (GTD) and Green Behavior (GB) i.e., a beta of 0.180, a t-value of 4.610, and a p-value of 0.000 result in supporting the hypothesis. As seen in H3, the Green Innovation (GI) depends heavily on Green Recruitment and Selection (GRS) as indicated by the positive value of 0.244 of the beta, t-value of 3.788 and p-value of 0.000, which implies that the null hypothesis holds. Strong positive relationship between Green Training and Development (GTD) and Green Innovation (GI) is revealed with H4 consisting of a beta of 0.563, t-value 1.559 and p-value 0.000, making the hypothesis true. The H5 and H6 confirm the fact that Green Innovation (GI) has a significant mediating effects on the relationship between Green Recruitment and Selection (GRS) and Green Behavior (GB) and the relationship between Green Training and Development (GTD) and Green Behavior (GB), respectively with beta of 0.078 and 0.180, t-values of 3.910 and 4.610 respectively and the p-values of 0.000 in both cases. This is a sign of support of the two hypotheses. H7 supports the hypothesis with the result that there is significant interaction between Self-Efficacy (SE) and Green Training and Development (GTD) and Green Behavior (GB) and the following beta is 0.120 and t-value is 2.878 and p-value is 0.004. A negative beta in moderation analysis will imply that the correlation between the predictor (GRS) and outcome (GB) diminishes with increase in the moderator (SE). This may serve as an indication that the greater the values of Self-Efficacy, the less the value or relevance of the structured points to Green Recruitment and Selection hence the lower influence on Green Behavior (Chesnut, S. R., & Burley, H. 2015). It

can be discussed that the curvilinear characteristic of the relationship between the variables could be the reason of the negative interaction or weak effect, because, H8, indicates that there is a significant interaction effect of Self-Efficacy (SE) and Green Recruitment and Selection (GRS) and Green Behavior (GB), which is -0.127 with a t-value as 3.070 and p-value of 0.002, which supports the hypothesis. Mostly, the support of all hypotheses shows the significance and meaningful relationships and interactions among the variables. The workers, whose forces of self-efficacy are very high, might already feel the pressure to convert into green, and in that case, the official Formal Green Recruitment & Selection (GRS) processes can remind them of either being dictated to or unnecessary. The self-determination theory, namely the cognitive evaluation theory (Deci & Ryan, 2013), argues that, by attempting to instill green competency through external structures, the designed system tends to undermine intrinsic motivation by lowering the sense of autonomy and shifting the locus of causality to external people and processes. Similarly, motivation crowding theory argues that extrinsic motivations may be pushed out by legal incentives (or constraints) especially when individuals perceive them as unnecessary or controlling rather than knowledge improving or skills improving. The extraordinary self-efficacious individuals would infer symbolic redundancy in GRS under the link between environmental trait centered formal selection and the view; thereby, making such individuals recalcitrant to such measures. Self-efficacy strengthens the connective relationship between green behavior (GB) and green training and development (GTD), and weaken the interrelation between green behavior and green recruitment and selection (GRS). The Social Cognitive Theory (Bandura, 1986, 1997) explains that highly self-efficacious employees rely on their own self-confidence to perform the chores successfully. Proactive and self-confident employees tend to utilize the learning and development opportunities that are structured by means of training in regard to GTD more readily than those employees who are less self-efficacious (Luthans & Youssef, 2007). In that way, the self-efficacy reinforces the correlational relationship between the GTD and GB. On the other hand, highly self-efficacious workers can be inclined more to their own internalized norms and ignore the contextual sources of influence that recruitment promotes later after their hiring in case of GRS. This means that signals of initial hiring have a lesser effect when self-efficacy people desire autonomous performance, thus reducing the impacts of green hiring systems in exerting influence on green behavior (Jabbour & Santos, 2008).

DISCUSSION

The table of the main metrics to be used to assess the model performance is presented as the Variance Inflation Factor (VIF) and effect size (F 2), coefficient of determination (R 2), predictive relevance (Q 2) and Root Mean Square Error (RMSE). VIF values of Green Behavior (GB) = 0.620, According to Petter et al., (2007), VIF value greater than 3.3 is an indicator of high collinearity; therefore, the green behavior shows no high collinearity. Green Innovation (GI) = 2.470, Self-Efficacy (SE) = 1.761, Green Training and Development (GTD) = 2.840, and Green Recruitment and Selection (GRS) = 2.228 are below the Wong (2013) focuses on the fact that the f2 value of 0.02 represents a small effect, the f 2 value of 0.15 represents a medium effect and the f 2 value of 0.35 represents a large effect (Cohen, 1988). Effect sizes (F 2) are 0.109, 0.174, 0.070, and 0.020 in GI, SE, GRS, and GTD respectively implying that the effects are small to medium. When Cohen, (1988) and Chin, (1998) 0.26, 0.13, 0.02, and Hair et al., (2017) 0.75, 0.50, 0.25 are put in place then the level of predictive accuracy is substantial, moderate or weak. The R values derived explain 56.0 percent of the variance in GI and 56.0 percent in the combined GB and GI model. The values of Q 2 = 0.069 on the GB and GI shows decent predictive relevance. The RMSE of 0.561 in GB and GI implies the correctness of the prediction of the model with lower values indicating the goodness of fit. These metrics when combined together validate the strength and validity of the model.

	VIF	**F^2**	**R^2**	**Q^2**	**RMSE**
			GB and GI	GB and GI	0.069
GB			0.620	0.560	
GI	2.470	0.109	0.569	0.561	
SE	1.761	0.174			
GTD	2.840	0.020			
GRS	2.228	0.070			

In this section of analysis, this paper has answered the research hypotheses of the study with assistance of SmartPLS methods like boot strapping. The bootstrapping method is very critical in obtaining coefficient path factor loading (Hair et al., 2020), and therefore, the use of bootstrapping technique in 5,000 subsamples is an important requirement in the acquisition of significant value. It is, therefore, this study has taken the 5,000- subsample standard. Rawalpindi and Islamabad are administrative and commercial hubs in Pakistan. Rawalpindi is a significant business centre, and some of the offices of the key banks and regulatory bodies of the country are found in Islamabad, the federal capital. The density of the banking establishments in these cities will make a good backdrop to survey the green human resource management strategies. The study of Green HRM practices in banking sector has been carried

out in various regions of Pakistan such as Sindh and Khyber Pakhtunkhwa. As one example of such research, there has been an examination of the use of green HRM by the private banks of Sindh, which has pointed to both regional differences and similarities. Granter understanding of the generalizability of the findings could be achieved based on comparative analysis of several provinces (Khawaja et al, 2024). To enhance the external validity of Rawalpindi and Islamabad we utilized stratified random sampling. To be able to plan to account against any inappropriate representation, the survey weights were utilized operated on the analysis process since the cases of each stratum were selected randomly. This will strengthen the representativeness and generalizability of our results by the fact that we would have provided representative sample of the dynamics of all the banking industry of Pakistan as a whole. Even though the demographics in the sample are sufficient, the strategic positioning of top management and managerial personnel in the introduction and practice of green HRM in banks will give further reasons as to why they are targeted. Managers and senior executive positions are the primary decision-makers in the Pakistani banking industry, as they take control of policy-making, resources, and oversee the post-decision implementation of sustainability ventures. They have direct responsibility in terms of satisfying corporate social responsibility (CSR) requirements and more exposure to such regulatory guidelines as green banking rules, by the State Bank of Pakistan. Moreover, the management personnel position themselves as significant diffusers and drivers of green hiring, training and innovation initiatives within companies. Consequently, a focus on this population enhances the relevance of such a study since it collects views of respondents who are keen advocates and agents in the implementation of green activities within their respective organizations. The sample will be strategically strategic, and thus due to the nature of the sample used, it will ensure that the results will reflect real organizational attitude toward the dynamics of green behavior beyond compliance actions such as those that may occur at the operational levels or frontline employees.

Future Recommendation

The fact that the study is specific in the region restricts its use in other situations. In further studies, it might be useful that a wider set of locations are covered, and longitudinal methods are applied to monitor the changes over time. Time and budgetary limitation only enabled the study to be carried in the two twin cities of Islamabad and Rawalpindi. Additional researches might be performed in other cities in Pakistan and other countries to investigate the trends and patterns. Other psychological factors and industry divisions may also help enhance the knowledge on the impact of green HRM on different outcomes across organizations (Susanto,

et al., 2022, Liu et al., 2023). To generalize this research, researchers could consider various industries in both the developed and the developing countries in future. Another advantage is that an idea that only one mediator was included in the proposed model can be applied in further studies in that additional mediators and moderators between the independent and dependent variables can also be considered in other studies as an example Green Organizational Culture. Future research should be recommended to involve more elements of green human resource management (GHRM), such as green compensation and green performance appraisals. Although these factors are instrumental in building a more comprehensive understanding of how GHRM practices can provoke sustainable organizational behavior in organizational members, little is known about them. The gender, tenure, and type of the bank (Islamic bank or conventional) were considered as control variables to control possible confounding effect. The controls did not have significant effect on outcome variables showing that green HRM practices and green innovation were fibers behind green behavior in this study.

Practical Implications

In the case of banks (Islamabad and Rawalpindi), the environmental nature of behaviors of employees can be largely enhanced through adopting green HRM practices, i.e., green recruitment and training strategies in life as well as encouraging green innovation amongst the individuals. Also, by improving the self-efficacy of the employees, it is possible to increase the beneficial impact, which will help banks to integrate sustainability with organizational culture and operations (Nisar et al, 2024). Green HRM practices are important in ensuring that banking firms enhance their sustainability programmes. These strategies such as green hiring, training, performance review, and rewarding could have significant effects on environmental policies of employers. The Green Banking Guidelines (2017) and the ESRM Manual (2022) developed by the State Bank of Pakistan (SBP) have the same alignment with the Green Recruitment and Selection (GRS), (GTD) the Green Innovation, and the Green Behavior (GB). The SBP aims to facilitate green financing by using particular protocols as the banks will be obliged to develop an internal framework of identifying, appraising, ameliorating, and observing as well as reporting the environmental risks. In support of the recommendation to the SBP, the study supports the implementation of such recommendations by incorporating environmental competency into the HR, as well as, the recruitment process by demonstrating that GRS, GTD enhances GB through green innovation. The institutional ESG reporting system can be connected to the green results produced at employee-level through your model by integrating the behavioral indicators included in your model within the ESRMs annual Monitoring and

Evaluation forms. This convergence shows that making green HRM practices orderly is essential to the effort to be compliant and strategically viable in the long-term in the Pakistani banking field, not merely dreaming. The banks can come up with and technically apply innovative methods that can decrease their impact on the environment through coming up with a culture of green innovation among their employees, which will strengthen the overall orientation of the green behavior of the organization. Another factor that illustrates the importance of employee empowerment is helping to identify self-efficacy as the moderation category. Banks ought to focus on improving the self-confidence of the staff members in their ability to contribute to the environmental sustainability using specific training programs and other resources available. The empowerment may result in more visible green actions and it may enhance the effectiveness of the green HRM practices. With the help of these methods, the banks can not only respond to the rising needs of the stakeholders and environmental-conscious customers, but also to become more competitive due to following the universal standards of sustainability. The ability of these initiatives to drive the standing of the bank, the happiness of its staff, and its operational strengths may be what can be hailed to the long-term success.

Theoretical Implications

This paper has limited the AMO theory by paying attention to the role of green innovation as a mediator between green HRM practices and green behavior of employees. It substantiates the focus of the theory that lies on the value of ability, motivation, and opportunity in the performance of effective results (Renwick, 2023). Furthermore, it also scales the use of self-efficacy theory to depict how it can moderate the connection between green HRM and employee behavior and hence present new information on how motivation factors can be used to see the impact on environmental practices (Munawar, et al., 2022).

Conclusion

The present study illuminates the important contribution of Green HRM (GHRM) practices to an environment friendliness of behaviors in the banking sector by clarifying the mediators linking this relationship and moderators of this relationship in the form of self- efficacy. Banks can therefore increase the green behavior among the employees through their implementation of sustainability as part of their HRM processes. This is not only by the recruitment and training of employees with a preoccupation of sustainability but also the creation and development of an atmosphere that guides and promotes such green methods. The results of our study emphasize that green innovation like implementing environment friendly technologies and

processes is an important driver in motivating employees to undertake environment friendly practices. Also, the level of self-efficacy or belief of employees in managing to execute green tasks is also a strong factor determining the way an employee will practice green things. Strong self-efficacy will motivate workers to be part of the green movements and adhere to it, whereas less efficient self-efficacy will restrict the contribution of workers. Conducted in both the Islamic and conventional banks of Islamabad and Rawalpindi, the study offers interesting information about how these banks approach green HRM and what kind of problems they are facing and finally recommendations section suggests to increase green recruitment and training activities, green innovation and employee self-efficacy. Future studies should be able to undertake studies in other industries and regions to further gain an insight into how GHRM can affect organizational sustainability. This study contributes to the growing debate on sustainable banking showing the positive effects of green HRM practices especially, green hiring and selection and green training and development on green behavior among the banking personnel using green innovation and self-efficacy as moderators. The findings have a variety of policy implications. To begin with, it should include sustainability requirements in corporate governance principles of the main regulatory body the State Bank of Pakistan (SBP). This would mandate banks to have formal GHRM policies incorporated in their environmental and social governance (ESG) strategies. Moreover, to have a workforce that is geared towards sustainability, HR policymakers within the banking business must develop systematic green recruitment systems which mandatorily incorporate environmental knowledge and attitudes as a prerequisite during the hiring process. Third, the active green training and development programs should be institutionalized in order to equip the existing personnel with the knowledge and motivation to enable them uplift Pakistan towards the greater sustainability and climate agenda. To have HR directors recognize the role of the psychological factors such as self-efficacy, the implementation of the employee development programs promoting the confidence in the solution of the environmental issues including sustainability workshops, green innovation challenges, or mentorship programs is important. These actions can be used in combination with one another to place the banking sector of Pakistan in the role of active participant in national and international sustainable development goals, including the UN Sustainable Development Goals (SDGs).

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