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Do Green HRM Practices Improve Environmental Performance? The Mediating Role of Green OCB: Evidence from the Banking Sector of Pakistan

Sajid Iqbal Khan
PhD Scholar, Department of Business Administration, Gomal University, Dera Ismail Khan, KP, Pakistan
Email: sajidiqbalkhan55@gmail.com

Dr Farhat Ullah Khan
Assistant Professor, Department of Business Administration, Gomal University, Dera Ismail Khan, KP, Pakistan
Email: farhatullahpk@gu.edu.pk

Dr Khalid Rehman (Corresponding author)
Assistant Professor, Department of Business Administration, Gomal University, Dera Ismail Khan, KP, Pakistan
Email: khalidrehman@gu.edu.pk

Abstract
This study examined the mediating role of green organizational citizenship behavior in relationship of green human resource management practices and environmental performance in banking sector of Pakistan. Drawing upon Ability Motivation Opportunity (AMO) Theory and Social Exchange Theory (SET), 357 banking professionals completed a survey questionnaire to undertake this cross-sectional study. The results from Hayes' Process Macro 4 revealed that GHRM practices were the strong predictor of GOCB and environmental performance environmental performance. Further, this study also proved mediating role of green organizational citizenship behavior in relationship of green human resource management practices and environmental performance in banking sector of Pakistan. We have also discussed the results of this study in the light of previous studies followed by implications and directions for further research.
***Key Words**: Green Human Resource Practices, Environmental Performance Green organizational citizenship behavior, Banking Sector*

Introduction

During the recent years, environmental degradation has become a crucial challenge globally and specifically in developing countries like Pakistan, compelling the organizations to adopt sustainability as their strategic tool to deal with this issue (Najam, Waqas, Naseer, Rehman, & Khan, 2025). The problem has become pressing due to regulatory compulsions, rapid industrialization, and growing ecological pressures (Tahir, Safwan, Usman, & Adnan, 2020). Despite no direct effect of banking sector on the environment, it has advanced the sustainable development through its financing decisions and internal operation thereby compelling the banking sector to adopt environmentally responsible practices, particularly through their

human resource systems, to enhance organizational environmental performance (Obiora, Bamisile, Opoku-Mensah, & Kofi Frimpong, 2020).

Firms have integrated their human resource system with green human resource practices (GHRP) to effectively deal with the growing issue of environmental degradation. GHRP refers to the integration of environmental objectives the traditional human resource practices. Green HRM practices have the potential to cultivate pro-environmental behavior among the workforce and improving organizational outcomes (Najam et al., 2025). Studies demonstrate that green HRM practices can also cultivate non-discretionary behavior among the employees which lead them to support sustainability initiatives beyond their formal job requirements. This non-discretionary behavior of employees towards environment is termed as green organizational citizenship behavior (GOCB). It demonstrates employees concern for the environment and resources conservation (Siddik, Rahman, & Yong, 2023).

Extant literature demonstrates that GOCB largely predicts the effectiveness of GHRP. GOCB contributes to the preservation of environment and resources (Asadullah, Rehman, Shah, Mughal, & Batool, 2024). It also enables workforce in supporting organizational green initiatives launched by the organization (Ahmed et al., 2024). Further, empirical evidences also substantiate that green HRM practices foster environmental stewardship among the employees. Further, it also turn play a pivotal role in environmental sustainability (Najam et al., 2025. Thus, these findings suggest that the green HRM practices translate individual outcomes such as GOCB and organizational level outcomes such as EP. However, these outcomes is not linear in nature. Instead; the effect of GHRMP on EP is channelized through the behavioral pathways such as GOCB.

Environmental performance refers to the initiative of a firm to reduce carbon footprints due to its operations and to enhance ecological efficiency (Zameer, Wang, Vasbieva, & Abbas, 2021). Empirical evidences suggest that environmental performance can be enhanced through effective GHRMP directly as well as through the environmental stewardship of workforce (Bhatti, Saleem, Murtaza, & Haq, 2022). Hence, the behavioral outcomes such as GOCB along with organizational outcomes such as environmental performance are directly as well as indirectly influence by GHRMP.

Regardless of the predictive ability of GHRMP for GOCB and EP, there is substantial research deficit regarding the role of GOCB as behavioral path in general (Bhatti et al., 2022) and especially in Banking sector of Pakistan despite its strategic importance in shaping sustainable economic activity and promoting environmentally responsible practices across industries Pakistan (Nasim et al., 2024). Hence, there is dire need to address this research deficit by examining the mediating role of GOCB in relationship of GHRM practices and EP in banking sector of Pakistan.

Theory and Hypotheses Development

Drawing upon AMO Theory (Bos-Nehles, Townsend, Cafferkey, & Trullen, 2023) and Social Exchange Theory (Cropanzano & Mitchell, 2005), this study explains how GHRM practices motivate employees to demonstrate GOCB which in turn help the organization to acquire sustainable performance. Further, it also explains how GOCB as an exchange mechanism fosters sustainable outcomes due to GHRM practices. While AMO explains the direct relationships of GHRM practices and GOCB with EP, SET explains the pathways through which GOCB functions as mediator between GHRM practices and EP relationship in banking sector of Pakistan.

GHRM Practices and Environmental Performance

GHRM practices have acquired substantial importance during the recent years. Organizations have started integrating environmental sustainability in their HR functions such as recruitment and selection, training and development, performance evaluation and compensation management, and employees' relations (Jamil, Zaman, Kayikci, & Khan, 2023). AMO theory suggests that performance employees at workplace is a function of their ability, motivation, and opportunity to perform. The environmental stewardship of employees is

enhanced by the implementation of GHRM practices such as green training (Bos-Nehles, Townsend, Cafferkey, & Trullen, 2023). Consequently, the workers' motivation to perform is strengthened through green performance evaluation and compensation management system which in turn creates opportunities by encouraging employee involvement in environmental initiatives (Amjad, et al., 2021).

Literature demonstrates that environmentally aligned HR systems foster sustainability-oriented behaviors which in turn results in enhanced EP (Muisyo, Qin, Ho, Julius, & Barisoava Andriamandresy, 2022). GHRM practices cultivate a sense of environmental stewardship among the employees which is a non-discretionary behavior. It also promotes a culture of sustainability-oriented behaviors resulting in improved environmental performance through environmentally responsible operations (Das & Dash, 2024). Based on these arguments and the assumptions of AMO theory, it is therefore hypothesized;

H1: Green HRM practices positively affect Environmental Performance.

GHRM Practices and GOCB

Earlier, organizations tend to acquire workforce that could demonstrate beyond the defined role performance at workplace (Asadullah, Rehman, Shah, Mughal, & Batool, 2024). However, during the recent years, organizations have started on focusing environmentally responsible operations that could add very little carbon emission to the environment (Raihan, et al., 2023). Thus, they have started integrating green HRM practices in their HR operations to acquire environmentally responsible workforce that could demonstrate voluntary and discretionary actions that support environmental sustainability (Asadullah, Azam, Mehnaz, & Hussain, 2020). This pro-environmental voluntary but not explicitly required by formal job descriptions' behavior of employees is termed as Green Organizational Citizenship Behavior (GOCB) (Jamil, Zaman, Kayikci, & Khan, 2023). SET suggests that employees' perceptions of organizational environmental sustainability is reciprocated through the demonstration of extra-role green behaviors in the form of support green initiatives, conservation of energy, reduction in waste, and encouraging colleagues to adopt environmentally friendly practices.

Literature demonstrates that GHRM practices demonstrate priorities of the organization related to environmental stewardship that in turn promote sense of obligation and identification among employees (Das & Dash, 2024). Consequently, the employees are motivated to demonstrate GOCB to acquire environmental compliance. Literature substantiates that implantation of GHRM practices fosters employees' voluntary environmental engagement i.e. Green OCB (Muisyo, Qin, Ho, Julius, & Barisoava Andriamandresy, 2022). Based on these findings, it is therefore hypothesized that;

H2: Green HRM practices positively affect Green Organizational Citizenship Behavior.

GOCB and Environmental Performance

Extant literature suggests that green HRM practices promote environmental stewardship among the employees. This environmental stewardship is termed as GOCB (Ahmed, et al., 2024). Empirical evidences demonstrate that GOCB serves as a critical behavioral mechanism that can connect organizational policies to environmental outcomes (Ahmed, Umrani, Yousaf, Siddiqui, & Pahi, 2021) which can be explained through the lens of AMO and SET. These theories suggest that GOCB of employees help employees engage in environmentally responsible behaviors. This in turn fosters environmental performance of the organization and curtails carbon footprints, reduce resource wastage, and supporting the successful implementation of environmental initiatives. When the environmental stewardship is accumulated over time, it promotes organizational environmental performance.

Literature demonstrates that when employees engage in GOCB, they demonstrate environmentally responsible behaviors exhibited through the judicious use of organizational resources (Muisyo, Qin, Ho, Julius, & Barisoava Andriamandresy, 2022). In the context financial sector such as banking, this need for

GOCB becomes more crucial as it involves operations that can influence the environment (Asadullah, Azam, Mehnaz, & Hussain, 2020). Employees in banking sector can motivate the customers to seek loans for green investments thereby translating organizational intentions into measurable environmental performance outcomes (Najam, Waqas, Naseer, Rehman, & Khan, 2025). Based on these arguments and assumptions of SET and AMO theory, it is hypothesized;

H3*: Green OCB positively affect Environmental Performance.*

GOCB as a Mediator

Empirical evidences suggest that GHRMP largely affect EP directly as well as through behavioral mechanisms (San Román-Niaves, Morandini, Antonini, & Pietrantoni, 2025). Drawing upon SET and AMO theory, our study suggests that GOCB is an important mechanism that can mediate this link demonstrating that GHRP provides the structural and motivational foundation for environmental sustainability, while GOCB operationalize these practices in everyday organizational activities (Bos-Nehles, Townsend, Cafferkey, & Trullen, 2023).

Substantial literature demonstrates that direct influence of GHRMP on EP is weaker especially in the banking (Das & Dash, 2024). Thus, it requires the mediating role of employee-level green behaviors such as GOCB (Mandal & Pal, 2025). Further, studies also demonstrate that green OCB also fosters environmental performance when coupled with GHRM practices (Najam, Waqas, Naseer, Rehman, & Khan, 2025). Hence, the role of employees' behavior is central in this relationship in translating organizational outcomes. It clearly suggests that GHRM practices firm translate employee outcomes such as GOCB and later both collectively translate organizational outcomes such as EP. Based on the assumptions of SET and AMO theory, it is hypothesized;

H4: GOCB mediates the relationship of GHRM practices and environmental performance.

Conceptual Framework

Based on SET and AMO theory, this study connects GHRMP and EP directly as well as through the behavioral pathway of Green OCB. We propose that GHRM practices first influence GOCB which in turn influences environmental performance. The conceptual model explaining these relationships has been presented below.

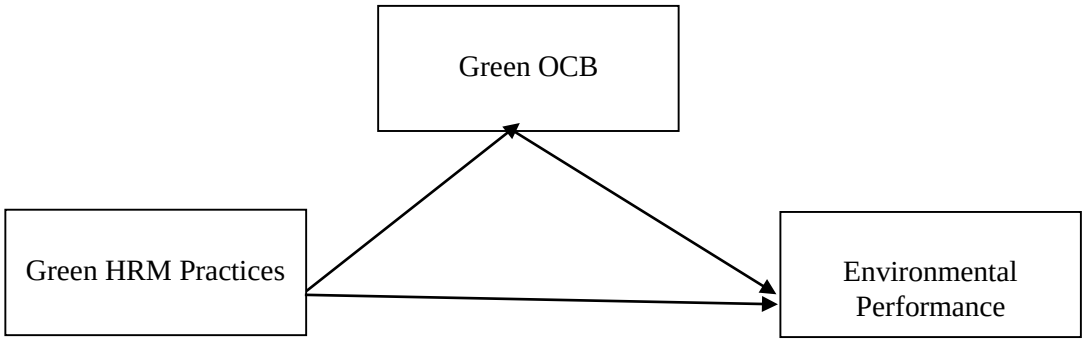

Figure 1: Conceptual framework

Methodology

A cross-sectional design was employed to undertake this causal explanatory study using a quantitative technique. Data from the participants were collected using a survey questionnaire.

Participants

The participants of the study included 400 banking sector professional of Khyber Pakhtunkhwa province working at three different levels of top, middle, and operative level. The participants were recruited using a convenience sampling technique as the total number of banking professional in Khyber Pakhtunkhwa province was unknown. The selection criteria included banking professionals working in banks that offer green financial solutions to the customers. Further, the participants must have a minimum of 14 years of formal school in banking sector.

Instrument

A combined questionnaire measuring GHRM practices, GOCB and environmental performance was used to collect the responses of the respondents. The responses were quantified on a five-point rating scale ranging from 5 (strongly agreed) to 1 (strongly disagreed).

GHRM Practices were measured using a combined 19 items' scale developed by Saeed et al. (2018).

GOCB was measured using a combined 7 items' scale developed by Pham et al. (2019).

Environmental Performance was measured environmental performance was measured using 8 items' scale developed by Chams & Blandon (2019).

Results and Data Analysis

Response Rate and Respondents Profile

We personally administered 400 questionnaires to the banking professionals working in commercial banks in Khyber Pakhtunkhwa province. However, 357 complete questionnaires were received back giving a response rate of 89%.

Table 1: Response Rate and Respondents Profile

Description		Frequency	Percent
Age	18-30	138	38.7
	31-40	179	50.1
	41-50	25	7.0
	51 and above	15	4.2
	Total	357	100
Gender	Male	286	80.1
	Female	71	19.9
	Total	357	100
Education	Bachelor	30	8.4
	Master	149	41.7
	MPhil/MS	173	48.5
	PhD	5	1.4
	Total	357	100
Position	Top Level	108	30.3

	Middle level	131	36.7
	Operative Level	118	33.1
	Total	357	100

Table 1 above shows that major part of the sample comprised of male respondents (81%) while only 19% of it comprised of female participants. The analysis of the age groups demonstrated that major part of the sample comprised of young respondents ranging from 18-40 years (89%) while a smaller part of it comprised of matured respondents whose ages ranged from 41-More than 50 years. Similarly, results revealed that majority of the respondents possessed 16-18 years of education (Masters=42%, MS/M.Phil=48%). Finally, it was found that all the levels of bankers represented the sample of the study.

Factor Loading and Reliabilities

Table 2: Factor Loading and Reliabilities

Constructs	Items	Loading	Cronbach's Alpha	CR	AVE
Green HRM Practices	GHRM1	.837		0.97	0.66
(19×items)	GHRM2	.815			
	GHRM3	.899			
	GHRM4	.740			
	GHRM5	.768			
	GHRM6	.877			
	GHRM7	.794			
	GHRM8	.724			
	GHRM9	.821			
	GHRM10	.861			
	GHRM11	.789			
	GHRM12	.832			
	GHRM13	.891			
	GHRM14	.776			
	GHRM15	.848			
	GHRM16	.781			
	GHRM17	.873			
	GHRM18	.757			
	GHRM19	.757			
Environmental Performance	EP1	.741		0.92	0.61
(8×items)	EP2	.878			
	EP3	.716			

	EP4	.775			
	EP5	.783			
	EP6	.757			
	EP7	.712			
	EP8	.852			
Green OCB	GOCB1	.758		0.93	0.66
(7×items)	GOCB2	.514			
	GOCB3	.556			
	GOCB4	.720			
	GOCB5	.803			
	GOCB6	.523			
	GOCB7	.659			

It is evident at table 2 that all the measurement items of the loaded well on their respective constructs demonstrating good factorability. The factor loadings of GHRM practices ranged from 0.724 to 0.899. The loadings of GOCB ranged from 0.712 to 0.878 while the loadings of EP ranged from 0.720 to 0.958. These values of all the constructs exceeded from the minimum threshold of .60 suggested by Hair et al. 2019).
Table also shows that reliability of all the constructs were supported by Cronbach's alpha and composite reliability (CR) values ranging from 0.87 to 0.97. These values exceeded the recommended threshold of 0.70. Further, values of Average Variance Extracted (AVEs) tanged from 0.61 to 0.66 exceeding the required threshold of 0.50 also confirmed convergent validity.

Correlation Analysis

Table 3: Correlation Matrix

	Age	Gender	Education	Position	Experience	GHRMP	EP	GOCB
Age	1							
Gender	-.042	1						
Education	.439**	-.068	1					
Position	.183**	.027	.046	1				
Experience	.152**	-.058	.032	-.299**	1			
GHRMP	-.095	.067	-.017	-.024	.011	1		
EP	-.019	.055	-.075	-.050	.001	.840**	1	
GOCB	-.054	-.039	.034	.025	.061	.745**	.722**	1

Table 3 depicts a strong positive correlation between the main variables of the study. It is evident that relationship between GHRMP and EP was significantly positive (r= .840**) as well as between GHRMP and GOCB (0.745**). The results also revealed a significant positive relationship of GOCB with EP (0.722**). Further, we also examined if any demographic variable influenced the main variables. The results showed no significant relationship between the demographic variable and main variables of the study suggesting no confounding effect.

Regression Analysis

Table 4: Regression Outcomes

Predictor Variables	B	SE B	β	t	p	R^2	ΔR^2	F
Model 1						0.705	—	849.41***
Constant	0.651	0.144	—	4.52	< .001			
Green HRM Practices	0.893	0.031	0.84	29.15	< .001			
Model 2						0.726	0.021	468.89***
Constant	0.031	0.184	—	0.17	0.865			
Green HRM Practices	0.722	0.044	0.679	16.29	< .001			
Green OCB	0.264	0.051	0.216	5.17	< .001			

To examine the influence GHRM practices as well as GOCB on environmental performance, we performed hierarchical multiple regression analysis. For this purpose, GHRM practices was entered in Model 1 as the single predictor of EP. The results revealed that 70.5% of the variance was predicted in EP due to GHRM $R^2 = .705$, $F(1, 355) = 849.41$, $p < .001$ showing its strong and statistically significant positive effect on EP ($\beta = .840$, $p < .001$). Later, we added GOCB in model 2 to examine predictive ability of GHRM practices and GOCB for EP. The results revealed an increase of 2.1% of the variance as explained in the EP when GOCB was added to the model ($\Delta R^2 = .021$, $F(1, 354) = 26.75$, $p < .001$) resulting in a total explained variance of 72.6% ($R^2 = .726$). The collective influence of both the predictors was statistically significant ($\beta = .679$, $p < .001$), while GOCB also demonstrated a significant positive effect on EP ($\beta = .216$, $p < .001$).

Mediation Analysis

Table 5: Mediation Analysis

Path	B	SE	t	p	95% CI
GHRM → GOCB (a)	0.648	0.031	21.03	< .001	[0.587, 0.709]
GOCB → EP (b)	0.264	0.051	5.17	< .001	[0.163, 0.364]
GHRM → EP (c')	0.722	0.044	16.29	< .001	[0.635, 0.809]
GHRM → GOCB → EP (a × b)	0.171	0.035	—	—	[0.101, 0.238]

The mediating role of GOCB in the relationship between GHRM practices and EP was examined using Model 4 of PROCESS macro (Hayes, 2022). The results demonstrated that GHRM explained 55.5% of the variance in GOCB ($R^2 = .555$) by GHRM practices showing its significant and positive influence ($B = 0.65$, $SE = 0.03$, $t = 21.03$, $p < .001$). Further, the model was also significant when GHRM and GOCB collectively predicted EP ($F(2, 354) = 468.89$, $p < .001$) as both accounted 72.6% of the variance ($R^2 = .726$). While examining the indirect effect of GHRM on EP through behavioral pathway of GOCB, we found that effect was significant ($B = 0.17$, Boot SE = 0.04) demonstrating a partial mediation. The overall result of mediation analysis demonstrate that GOCB is a unique behavioral pathway through which influence of GHRM practices is

channelized on environmental performance. Further, some of the effect of GHRM practices id direct on EP while some of it is channelized through behavioral pathway of GOCB.

Discussion on Results

Our study examined the mediating role of unique behavioral pathway of GOCB in relationship of GHRM practices and EP in the context of banking sector of Pakistan. Our findings suggest that GHRM practices influences EP directly as well as through behavioral pathway of GOCB.

The results of this study are similar to the studies of Najam et al. (2025), Ahmed et al. (2024), and Bhatti et al. (2022). In support of the first hypothesis, the results of this study revealed that GHRM practices significantly predicted EP (B = 0.72, SE = 0.04, t = 16.29, p < .001) demonstrating 72% of the variance. These findings are consistent with the findings of the study of Raza and Khan (Raza & Khan, 2022) suggesting that GHRM practices have the potential to achieve superior environmental performance. Studies also demonstrate that practices such as recruitment, training, performance management, and rewards develop environmental stewardship among the employees who in turn engage in environmentally responsible initiatives thereby promoting environmental performance.

The results of this study demonstrated GHRM explained 55.5% of the variance in GOCB. These findings aligns with the findings of the study of Najam et al. (2025) which revealed that employees' discretionary behavior for environment is predicted by GHRM practices confirming the second hypothesis of the study. Their study also suggest that HR practices cultivate organizational citizenship behaviors for the environment, ultimately contributing to improved organizational performance.

In support of the third hypothesis, this study revealed that 26.4% of the variance was predicted in GOCB due to GHRM confirming the second hypothesis of the study. These findings are consistent with the findings of the study of Ahmed et al. (2024) and Muisyo et al. (2022). The study of Muisyo et al. (2022) demonstrated that GHRM practices cultivate environment stewardship among the workforce and they engage in environmentally responsible operations voluntarily beyond their defined role. They tend to make judicious use of organizational resources and initiate actions which reduce carbon footprints.

Finally, the results of the mediation analysis revealed a partial mediation of GOCB (B = 0.17, 95% CI [0.10, 0.24]) in relationship of GHRM practices and environmental performance. These findings are consistent with the findings of the studies of Najam et al. (2025) and Ahmed et al. (2024). The findings of the studies underscore the crucial role of GOCB as a unique behavioral bridge between GHRM practices and EP. Banks can integrate GHRM practices such as recruitment, training, performance management, and reward systems to their HR system that can foster voluntary green behaviors that enhance environmental performance beyond formal compliance requirements.

Conclusion

We examined the unique behavioral pathway of GOCB in the interplay of GHRM practices and EP in the context of banking sector of Pakistan employing SET and AMO theory. Our findings support our hypothesized model demonstrating that some of the influence of GHRM practices was direct while some on its influence was channelized through GOCB in predicting environmental performance the banking sector. The study demonstrated that employee-driven environmental initiatives integrated with green values into HR systems help the banks to accomplish sustainable organizational outcomes.

Theoretical Implications

The study has vital theoretical as well as practical implications. From theoretical frontiers, our study adds new knowledge to the existing body of knowledge sustainability and human resource literature by validating GOCB as a key behavioral mechanism through which GHRM practices influence environmental performance. The findings of this study also support SET and AMO theory demonstrating that GHRM operates through

both direct structural mechanisms and indirect behavioral pathways. These findings also explains the role of green human resource practices translate into environmental outcomes. Further, the findings of this study also extends our understanding of the role of organizational as well as behavioral factors in translating environmental outcomes especially in the banking sector of Pakistan as prior research focused on manufacturing or high-pollution industries.

Practical Implications

Our study have certain vital contributions for banking professionals and policymakers in the banking sector. First of all, the predictive ability of GHRM practices in predicting GOCB and EP emphasizes the need for integration of green practices into banks HRM functions. This can also help banks enhance their environmental outcomes while ensuring alignment with regulatory and sustainability standards. Moreover, the unique pathway of GOCB suggests the need for establishing a work environment that encourages employees' voluntary green initiatives. This voluntary behavior can be developed through employee involvement in sustainability initiatives, and communicating a clear environmental vision.

Limitations and Future Research Directions

Although this study adds value to the existing body of knowledge and has practical implications, it has several limitations as well. The foremost limitation of the study is collection of data from banking sector which may restrict the generalizability of the results. Further, use of self-report measure can also affect the results of study as it may involve response bias. Future studies may employ performance measures to have more transparent and generalizable results. Another limitation of this is the use of cross-sectional research design that may restrict causal inferences. Future researchers may employ longitudinal designs to better capture the dynamic effects of GHRM practices over time. Finally, our study only examined GOCB as a behavioral mechanism through which GHRM practices influence environmental performance. However, examining additional behavioral mediators such as green engagement may also broaden our understanding of the micro-level processes underlying environmental performance.

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