

# THE ROLE OF GREEN HRM PRACTICES IN SHAPING EMPLOYEE GREEN BEHAVIORS: INSIGHTS FROM A MODERATED MEDIATION MODEL INVOLVING GREEN SELF-EFFICACY AND GREEN TRANSFORMATIONAL LEADERSHIP

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## **Abstract**

*This study aims to explain how Green Human Resource Management (GHRM) practices predict Employee Green Behaviors (EGB), with a particular focus on Green Self-efficacy (GSE) as a mediating factor, and Green Transformational Leadership (GTL) as a moderator. A moderated mediation framework has been proposed based on the Social Cognitive Theory and the Theory of Planned Behavior. The data were gathered through a quantitative survey, yielding 205 valid responses from banking personnel in Pakistan. Findings affirm that GHRM has direct and indirect impacts on EGB via GSE, and that the greater the level of GTL, the stronger the indirect GHRM-EGB relationship. The results indicate the critical importance of GSE in the relationship between GHRM and EGB and reveal the possibility of increasing this effect with the help of GTL to contribute to the understanding of the role of psychological and leadership practices in achieving sustainable organizational performance. The pragmatic value to leaders and HR professionals is presented, and the study recommends that there should be a harmonious combination of GHRM practices and GTL to facilitate sustainability agendas.*

**Keywords:** *Green HRM practices; Employee Green Behaviors; Green Self-Efficacy; Green Transformational Leadership; Banking; Sustainability*

## **1. Introduction and Background of Study.**

In recent years, mounting environmental pressures have brought sustainability to the forefront of organizational concern, leading many firms to incorporate it more deliberately into their strategic planning (Zhang et al., 2022). One of the major responses to this imperative is the introduction of Green Human Resource Management (GHRM), which can be described as the intentional nature of encompassing environmentally friendly policies in the normal HR procedures (recruitment, training, performance appraisal, and employee relations) to create the environmental steward culture (Renwick, Hand, & Oh, 2013). The GHRM concept is much broader than a mere wish of winning more for the environment by activating the employees as the custodians of the natural environment (Renwick et al., 2013).

In line with the overall corporate objectives, GHRM requires the employees to undertake activities that aid in supporting conservation and in meeting the green targets (Arulrajah et al. 2015). It is operationalized by a system of practices founded in green hiring, eco-oriented development, which refers to performance gauges about environmental outcomes, and reward systems of sustainable conduct. Such measures will be aimed at maintaining sustainability as a core value and bringing employees on board in environmental programs (Renwick et al., 2013).

The effectiveness of GHRM is fundamentally premised on the concept of green transformational leadership (GTL). GTL is a more focused type of transformational leadership, in which the leader makes the employees compromise their own interests in favor of organizational and environmental profits. Leaders exhibiting GTL style possess a clear vision of sustainability, sustainability behavior, and elicit creative thinking concerning the green issues. This leadership style fosters the climate that supports ecological care and helps the employees to be devoted to environmental caretaking (Aguinis & Glavas, 2012). GTL enhances

the performance of voluntary pro-environment activities by the firm by moderating the association between the GHRM practices and the GSE (Awan et al., 2023).

Another psychological antecedent of EGB is the employees' GSE. With the contribution of the theory of self-efficacy proposed by Bandura (1977), GSE is the personal conviction of the capacity to take measures connected with sustainability. Empirical data suggest that high GSE employees have a higher likelihood of engaging in pro-environmental behavior since they believe that their actions contribute to the organizational sustainability objectives in a sense that matters (Bandura, 1977; Aslam et al, 2017; Alnoor et al., 2020). In this respect, GSE is the driver of motivation as well as endurance in defeating the obstacles to green behavior.

The interrelationship among GHRM practices, GSE, and EGB constitutes an emerging area of scholarly inquiry, yet the existing literature does not offer a sufficiently comprehensive account of how these elements interact. Although prior studies have noted a positive link between GHRM and EGB, they have largely overlooked the contribution of GSE. A closer examination of GHRM practices suggests that their capacity to shape employees' green behaviors becomes more meaningful when GSE is recognized as a mediating factor. As the employees feel that they are dedicated to the sustainability drive of an organization, their self-efficacy beliefs are upheld, and in turn, their aptitude to engage in green activities has been enhanced (Chen et al., 2015).

Moreover, the control effect of GTL introduces extra complexity imposed on the organizational and personal structure of practices and behavior. The employees become more confident in their abilities to take green actions thanks to intellectual stimulation, individual support, and clear expression of environmental issues by green transformational leaders (Robertson & Barling, 2013; Graves et al., 2013). This type of leadership renders credibility to the impact of the GHRM and, at the same time, moderates the GHRM-GSE relationship with the psychological resources upon which the workers depend to make their decision of whether to embrace sustainability or not. As a result, companies that have high GTL will tend to leverage effective GHRM practices to ensure that there is tremendous change in the behavior of the employees (Begum et al., 2022).

The concept of GSE is generally considered one of the building blocks of the success of GHRM programs. In circumstances where the employees believe that they possess the necessary skills and can produce a certain degree of significant contribution to the environmental agenda, they will be more inclined to choose sustainable practices. However, GSE is not the only solution; sustainability relies on a range of organizational and personal predispositions, such as the corporate culture, the leadership behavior, and personal motivation (Miah et al., 2024; Nisar et al., 2024).

Empirical research has indicated that the contribution of GTL to the enhancement of GSE is important. The leaders who have embraced GTL style will be expected to lead by example on environmental management and will be passionate about environmental results, which will help to mobilize staff to develop their own level of green confidence (Graves et al., 2013; Ahmad et al., 2021). GTL can be used to make employees more convinced that they can take action to make the environment better so that the effects of GHRM interventions can be more significant (Niazi et al., 2023).

The situational background under which the GHRM practices are practiced in locations creates an impression that they significantly affect their efficiency. Themes and economic situations within the culture and the interactions of the sector influence the perception and reaction of the worker towards green human resource management programs. As an illustration, the attitude to environmental sustainability in the developing economies, such as those in Pakistan, may be very different compared to those that are dominant in the more industrialized

countries. Further detailed knowledge of these contextual variables is thus quite significant to the establishment of strong sustainability strategies (Gul, Karaatmaca, & Raza, 2025). This paper is hence trying to add to the body of literature by examining such relationships in the banking sector of Pakistan.

The current literature on GHRM exhibits a serious gap in the field that focuses on GHRM practices, GTL, and the mediating variable of GSE. Although most studies are at an individual level, more research must be conducted that investigates the role these variables play in the creation of a more common green mindset among the workers (Amjad et al., 2021). In addition, most empirical research has been carried out in the Western context, and, therefore, this paper is an attempt to address this knowledge gap in the applicability of these mechanisms within the non-Western context of emerging economies such as Pakistan (Li et al., 2023; Shakir & Khan, 2023). With a specific focus on the banking sector of Pakistan, the proposed study will fill these areas of gaps to instigate into practical knowledge the significance of GHRM practices to encourage sustainable behavior among employees working in fast-changing environments.

### 2.1. Literature Review

There has been an increased significance in the delivery of sustainable practices by stakeholders in an era where environmental awareness has reached an all-time high, with the view of supporting efficient performance regarding the environmental impact. An extremely significant change in this regard is that GHRM is the implementation of environmental sustainability in the core human resources (HR) operations of recruitment, training, performance review, and employee relations (Renwick et al., 2013). GHRM not only seeks to improve the organizational environment but also attempts to engage the employees in the effort of creating sustainable measures through HR practices (Arulrajah et al. 2015). Empirical literature has demonstrated that these practices have a good impact on the adoption of EGB, as they help in the development of the attitude towards sustainability and involvement in eco-friendly processes.

The following multifaceted behavior approach views are perceived by GHRM, and it believes that the goals of an organization can be matched with the environmental goals, and these will enhance the environmental behaviors of employees. The pro-environmental behaviors foster culture-forming values, such as green training, green performance appraisals, and green rewards systems, which are integrated into the HR practices (Renwick et al, 2013). However, even though there is an increasing amount of literature, a gap persists about the effect that GTL has on the effectiveness of GHRM practices when it comes to the promotion of the EGB. GTL is a leadership style that motivates and persuades employees in pursuit of the interests of the organization and the environment at large, instead of their individual interests (Aguinis & Glavas, 2012). GTL may be used to establish the performance of GHRM through a shared vision of sustainability and proactive participation of employees in the objectives of the organization on the environment (Robertson & Barling, 2013).

The current research aims to present the dynamics of the relationship between GHRM and EGB, mediated by the psychological mechanism of GSE, and moderated by GTL. GSE, which relies on the social cognitive theory of Bandura (1977, 2014), is the degree of confidence in the successful performance of the tasks connected with sustainable behavior. High GSE employees are predisposed to pro-environmental behavior, as they believe that their contribution can have a tangible impact on organizational work towards environmental sustainability (Chen et al, 2015; Miah et al., 2024). GSE concept, therefore, imposes the intangible relation between intangible green behavior and tangible workplace practices and encourages the employees to act responsibly towards the environment. This leaves GSE with its inherent position of the intervener between the GHRM practices and EGB.

## 2.2. Hypotheses Development

### 2.2.1. GHRM Practices and Employee Green Behaviors

This is a preliminary hypothesis that points to the direct relationship between GHRM practices and EGB. Empirical research shows that the effects of GHRM interventions on environmental attitudes of employees towards environmental issues, especially green recruitment, training, and performance appraisals, contribute to the sustainable behavior of employees. The more an organization is perceived to be ecologically motivated, the higher the chances are that the employees will be further ready to perform environmentally responsible behavior (Dumont et al, 2017; Yue et al, 2023). GHRM programs promote a climate in an organization that is both conducive and supportive of policy-collaborative and voluntary pro-environmental conduct (Blok et al., 2015).

This hypothesis is premised on the Theory of Planned Behavior (TPB) that implies the connotation of the assumptions and intentions to behave being dependent on the attitudes, the subjective norms, and the perceived behavioral control (Ajzen, 1991). These practices in the context of GHRM result in the development of the attitudes of the employees towards sustainability and create attitudes in favor of pro-environmental practices. The greater the degree to which employees feel that their organization is supportive of sustainability via GHRM, the greater the chances of their engagement in EGB (Saeed et al, 2019). This led to the creation of the first hypothesis of our study, which is:

**H1:** Green behaviors of employees will be positively influenced by an upsurge in GHRM practices.

### 2.2.2. Green HRM Practices and Green Self-Efficacy

The second hypothesis is focused on extant research on the relationship between GHRM practices and GSE. An example is when GHRM practices (especially green training and performance reviews) are associated with the fact that employees feel confident about their own potential in adopting environmentally responsible practices, then their GSE is higher. The example of green training also assists the personnel in achieving the required range of knowledge related to sustainable operations, and in assisting to illustrate the perceived ability to make an impact on meaningful organization-level environmental objectives (Saeed et al., 2019). The GHRM practices, as developed in the establishment of GSE, give a psychological base to the beneficial activities of the environment at work.

The support of this relationship can be proven with the help of Social Cognitive Theory (Bandura, 1989, 2014), which shows that it could be an outcome of self-efficacy caused by mastery experience, vicarious learning, verbal persuasion, and physiological conditions. The green training and green appraisal can be found within the GHRM practices framework, and in this case, employees acquire the mastery experiences when they become confident through experiential learning and beneficial feedback (Norton et al., 2015). The following stage is the heightened GSE, which results in higher levels of employee engagement in green behavior, resulting in the proposal of a positive relationship between GHRM practices and GSE.

**H2:** The implementation of GHRM practices will enhance employees' GSE, leading to greater engagement and commitment to green initiatives in the banking sector.

### 2.2.3. Green Self-Efficacy and Employee Green Behavior

The GSE has a direct relationship with EGB in the third hypothesis. The more the level of GSE an employee has, the more confidence he or she has regarding his or her ability to make the world a better place and the more willing he or she is to develop an interest in environmentally responsible behaviors (Chen et al., 2015). The self-efficacy theory proposed by Bandura (1977) is another theory that supports this in a way that the more a person has self-efficacy, the more they tend to engage in activities that support their beliefs. The effect of GSE on perceived competence is positive and directly influences the intentions of the execution of

the environmental actions (Miah et al., 2024). Employees with high GSE not only demonstrate a high level of motivation but also demonstrate perseverance in breaking down such hurdles as resistance to change or resource scarcity. Based on this, GSE is hypothesized to positively influence EGB and mediate cognitively through which organizational support provided by GHRM is transformed into practical EGB.

**H3:** GSE among the employees will have a positive impact on EGB.

#### **2.2.4. Green Self-Efficacy as a Mediator**

The fourth hypothesis is that GSE has a mediating role in explaining the relationship between GHRM and EGB. GHRM programs promote GSE, which consequently facilitates EGB. This mediation effect puts GSE on the center stage as a psychological mechanism behind the role of GHRM in predicting EGB. Indicatively, green training and recruitment are useful in enhancing self-confidence in employees in terms of sustainable behavior that translates to act, which augments EGB (Dumont et al., 2017; Miah et al., 2024). This mediative can be used with the model of social cognitive learning proposed by Bandura (1997), where the role of self-efficacy in behavior determination is complemented. The employees who perceive organizational green initiatives positively have higher chances to develop GSE and thus indirectly exhibit pro-environmental behaviors. An improvement of GSE can assist organizations in internalizing the GHRM practices as well as in building significant green behaviors.

**H4:** GSE positively mediates the positive relationship between GHRM practices and EGB.

#### **2.2.5. Green Transformational Leadership as a Moderator**

The fifth hypothesis examines the role of GTL as a moderator in the relationship between the practice of GHRM and GSE. GTL is likely to also strengthen the positive impacts of GHRM on GSE by inspiring and motivating the employees to practice sustainability and act as an example of how to practice green behaviors. The GTL-based leaders foster greater control of enhanced confidence among the employees by taking responsibility for the environment through intellectual stimulation, individualized consideration, and vision of the environment (Robertson & Barling, 2013). To justify this suggestion, empirical data that demonstrates the beneficial impact of transformational leaders who are dedicated to sustainability on GSE of employees (Graves et al, 2013) will be provided to defend the idea. As a result, GTL is supposed to reinforce the connection between GHRM practices and GSE to show the positive influence of GHRM practices on the sustainable behavior of the employees.

**H5:** GTL moderates the positive relationship between GHRM practices and GSE, such that the relationship between GHRM practices and GSE becomes stronger in the presence of GTL.

### **2.3. Theoretical Foundations**

The study is informed by two central theoretical conceptions, and these are Social Cognitive Theory (SCT) and Theory of Planned Behavior (TPB). These frameworks are a prism or a lens through which discussion of the impact of GHRM on EGB takes place (mediating role of GSE and the moderating role of GTL).

#### **2.3.1. Social Cognitive Theory (SCT)**

According to Albert Bandura (1989), SCT concentrates on relationships between numerous personal, environmental, and behavioral factors that determine the behavior of human beings. The fundamental assumption about how individuals behave in our bodies is that individuals are passive receivers of the input of the environment and are not interactive, and it is mediated by the perceived self-efficacy. GSE, which is one of the fundamental units of SCT, defines what one believes in, as far as performing their environmental responsibilities is concerned. SCT proposes that in cases where employees consider green practices in an organization as green supportive, the employee's sense of self-efficacy will be elevated and, consequently, it will act as a driving force towards pro-environmental behaviors (Chen et al.).

The particular interest of this study in SCT is that it can be used to explain the mediating effect of GSE in the linkage between GHRM and EGB. In the short term, organizations can contribute to relieving environmental issues by raising the GSE of the employees; therefore, such employees would be encouraged to be pro-environmental actors. SCT too highlights the significance of feedback and social persuasion, like the support offered by GTL, in the stimulation of employee behavior, including self-efficacy and green leadership.

### 2.3.2. Theory of Planned Behavior (TPB)

Proposed by Ajzen (1991), this theory argues that behavior is a consequence of intentions, which are established depending on attitudes, subjective norms, and perceived behavioral control. Within the framework of GHRM, employees' attitude towards sustainability, organization commitment towards sustainability (subjective norms), and people's view of their capability of implementing the GHRM practices (perceived behavioral control) lead to EGB. There are GHRM interventions that include green training and appraisal, which bring about attitude and norm changes, and GSE that brings perceived control (Ajzen, 1991).

TPB is relevant in the sense that it outlines and indicates how the GHRM practices would be transformed into the intentions and practices of the employees. TPB predicts that the effectiveness of GHRM in the promotion of EGB is not contingent upon the attitude of the employees alone, but perceived behavioral control, which causes GSE to be one of the most important cognitive mediators, which is used in the synthesis of EGB.

### 2.4. Conceptual Framework

The suggested framework is designed in a manner that would allow synthesis of the SCT and TPB to examine the inter-relationships between GHRM practices, EGB, the mediating role of GSE, and the moderating effect of GTL. It hypothesizes that the GHRM practices positively influence GSE and EGB, and the amplifying effect of GTL as a moderator in the relationship between GHRM and GSE has additional positive effects on EGB. The model gives credit to the strength of SCT in identifying how GSE influences EGB, as well as how TPB understands the role of GHRM in influencing the attitude, subjective norms, and ability of the employees to act in an environmentally responsible manner.

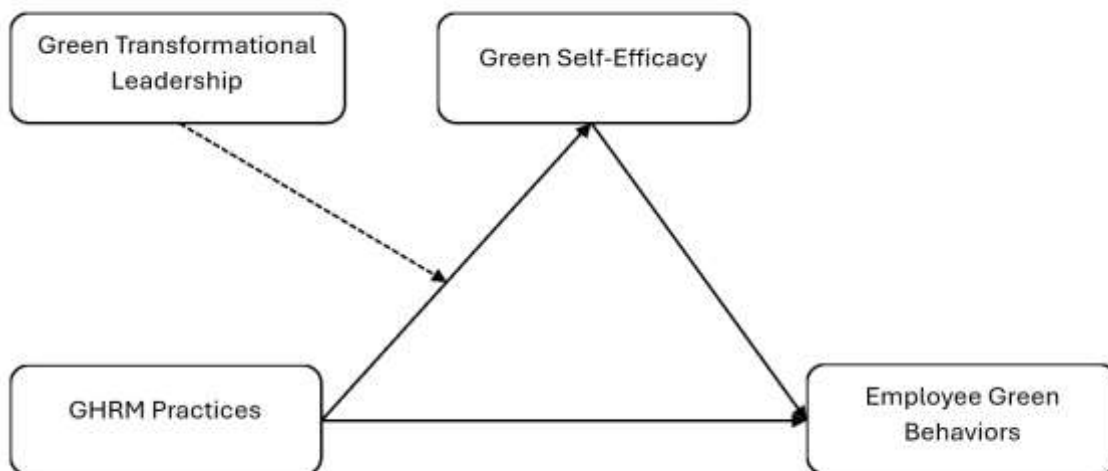


Figure 1: Conceptual model of the study (Source: Authors' own work)

## 3. Materials and Methods

### 3.1. Research Design

The decision to adopt a quantitative design is made in the current study to test the proposed relations as well as to discover the correlational effects. "In accordance with the deductive methodology, the hypotheses based on the theoretical framework are empirically

tested, thus. The employees of the bank were given a cross-sectional survey to analyze the interplay between the GHRM practices, GSE, EGB, and GTL. The domain of organizational behavior has still been dominated by quantitative studies due to their capacity to produce objective and reliable data that can be generalized to larger populations (Bryman, 2012). The current study is explanatory in nature as it enabled the comprehension of the mechanisms of GHRM and EGB relationship, where GSE is the mediator, and GTL is the moderator. Regression analysis is conducted to estimate the direct and indirect impact of GHRM on EGB and the moderating effect of GTL.

### **3.2. Research Paradigm**

The study adopts a positive paradigm whose foundation is premised on the fact that reality does not depend on human perception and is measurable. It is a classical paradigm of quantitative inquiry in which the objective aims at explaining opinions of the cause-and-effect relationships between the variables of interest (Creswell & Creswell, 2018). The choice of the positivist paradigm was because of the application of empirical methods within the strict system of testing of theories, and the establishment of the relationships between the variables. In the current research, the positivist epistemology will allow normalizing the perception of the interactions that occur between GHRM practices, GSE, EGB, and GTL, and, consequently, present the empirical foundation of the analysis.

### **3.3. Research Strategy**

The research strategy is deductive in the sense that the hypotheses are premised on the known theories and concepts and are further developed through empirical studies. This is an appropriate methodology for hypothesis-based research because it is very precise in attempting to test some relations between variables. The study interest of the research is to examine the relationship between GHRM practices, GSE, EGB, and GTL as moderating effects as stated in the above research theoretical framework. Through empirical testing of these connections, thus, the study will be relevant to provide a valuable addition to the research literature that already exists in relation to the Green HRM and sustainable working practices.

### **3.4. Study Setting**

The specified research has been conducted within the banking industry in Pakistan, which experienced the explosion of interest in vital elements of sustainability, such as green banking, paperless banking processes, and environmentally conscious banking lending initiatives etc. The banking environment exemplifies an ideal real-world laboratory of the antecedents and consequences of the GHRM practices because of the nature of its impressive size of workforce size and the importance of organizational practices to the employees' behavior. Furthermore, the banking sector in Pakistan provides a unique situation in which the impacts of the GHRM practices can be analyzed within the economy that is grappling with the problems of growth in the developmental sectors of the economy.

### **3.5. Population, Sample Size, and Sampling Technique**

The target population was the employees working in the commercial bank in Pakistan. The purposive sampling approach, a non-probability sampling technique, was used in this study, in which the employees were chosen based on the purpose and inclusion criteria of the study. Whereas generalization of the findings may be a possible constraint of this method, it can be justified based on the constraints in terms of time, resources, and access to the sampling frame (Etikan et al., 2016). The employees who are in various branches and departments of the bank received the 300 copies of the questionnaires; however, 205 employees completed the questionnaires, implying that the response rate was 68 per cent. It is assumed that such a rate is adequate to conduct a quantitative investigation within organizations (Baruch & Holtom, 2008).

The sample size of 205 is large enough to ensure sufficient statistical power in the intended regression and mediation/moderation analysis (Hair et al., 2014). The respondents were also selected based on the criteria of the nature of employment of these individuals, such that the employees who were selected for this study were a permanent part of the bank and were aware of the sustainability measures of their banks to ensure that the goals of the current research were properly outlined and achieved.

### **3.6. Data Collection Method**

The data was collected within a structured questionnaire in an electronic and paper format as a way of ensuring that the greatest number of people were represented within the data. This method facilitated standardization of the response and, in this regard, would serve to ensure that all the participants answered the same questions. The data collection tool was anchored on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) to obtain the perception of the respondents on the GHRM practices, GSE, EGB, and GTL. A pre-testing of the instrument on a few employees (30), preceding actual testing, was carried out to achieve validity and reliability of the scales by making changes to the wording and clarity before actual testing was initiated.

### **3.7. Measures**

The questionnaire contained four major constructs, which included GHRM Practices, GSE, EGB, and GTL. All these constructs were measured using known and validated scales. The GHRM items were adopted from the studies of Fawehinmi et al. (2020) and Dumont et al. (2017) and were specific to the green recruitment, training, performance assessment, and reward systems. The scale used to measure the confidence in the performance of the environmentally responsible behaviors of the employees was adjusted based on Chen et al. (2014). Scale of EGB was operationalized based on the studies of Fawehinmi et al. (2020) and Blok et al. (2015), including the behaviors in the regard of energy conservation, behaviors in the regard to lessening waste, and behaviors in the regard of recycling. The measure of the capability of the leaders to motivate and inspire their employees to achieve their environmental goals was used to determine GTL, as provided in Chen et al (2013). Reliability analyses conducted in respective studies revealed that the internal consistency was high for all scales, with Cronbach's Alpha values exceeding 0.70 (Nunnally & Bernstein, 1994).

### **3.8. Ethical Considerations**

Moral rigor remained one of the most essential aspects in conducting the research. To facilitate the data collection, the purpose of the data collection was adequately informed to all the participants of the study, and informed consent to the research was obtained. The participation was voluntary, and all responses were assured of being confidential and anonymous (Hasan et al., 2021). A request for any information with personal identification was not made in line with the recommendations of the APA, and all data were stored securely and were not available to a third party (Saunders et al., 2019). To reduce the bias of the researcher, a neutral and standardized mechanism was used to collect the data. Though self-report measures are also prone to the problem of social desirability bias, the use of anonymity and our explicit instructions to respond honestly helped to alleviate the effects of this problem (Dachler & Enderle, 1989).

### **3.9. Data Analysis Techniques**

Statistical Package for the Social Sciences (SPSS), version 26, and PROCESS Macro, version 3.5, were used to analyze the data (Hayes, 2018). The meaningful information about the variables of interest was analyzed with the help of descriptive statistics, means, and standard deviations. Correlation analysis was used to establish the strength, direction, and significance of relationships between the variables. The multiple regression method was employed to examine the positive influence of GHRM practices on the dependent variable of

EGB, and the indirect effect of the variable of GSE. Model 4, which is applied in PROCESS Macro, explored the issue of the indirect effect of GHRM, mediated by GSE, on EGB. The moderation analysis was performed with the help of Model 1 of the PROCESS Macro to identify the moderating effect of GTL between GHRM and GSE.

### 3.10. Validity and Reliability

Construct validity was ensured because of the usage of the well-known and proven scales, which are pre-tested not only in clarity but also in validity. Confirmatory factor analysis was employed to check the item adequacy in conjunction with the hypothesis about the sufficient representation of the items by their constructs (Hair et al. 2014). The scales were tested in terms of reliability by considering the Cronbach alpha, and all the results were above 0.70, which is considered a satisfactory level of internal consistency (Nunnally & Bernstein, 1994). Moreover, all composite reliability estimates were also greater than 0.7". Also, convergent validity and discriminant validity were established based on inter-construct correlations, and discriminant validity was established based on a factor analysis procedure and the distinctiveness of the constructs.

### 4. Data Analysis and Results

This part contains the findings of the data analysis with the help of the Statistical Package of Social Sciences (SPSS) version 26; the analysis of the hypothesized connection between the independent variable of GHRM practices and dependent variable of EGB, mediating variable of GSE, and the moderating variable of GTL in the research was tested with the help of the PROCES Macro version 3.5 (Hayes, 2018). Descriptive statistics, correlation analysis, regression analysis, and mediation/moderation effects were analyzed to understand the direct, indirect, and moderating effects.

#### 4.1. Descriptive Statistics

The descriptive statistics were done to summarize the data set. Table 1 presents the average score of the most important variables (GHRM, EGB, GTL, and GSE). Response pervasiveness has depicted a positive perception of Green HRM practices and GTL, where the respondents have also admitted moderate engagement towards EGB.

**Table 1 Descriptive Statistics**

Variable	N	Mean	SD	Skewness	Kurtosis
GHRM	205	3.24	1.02	-0.335	-0.641
EGB	205	3.64	0.98	-0.825	0.064
GTL	205	3.54	0.96	-0.844	0.001
GSE	205	3.72	1.04	-1.125	0.641

#### 4.2. Correlation Analysis

The Pearson correlation analysis was conducted and represented in Table 2, which indicated that all variables are interrelated and statistically significant. GHRM has been identified to have a positive correlation with EGB, GSE, and GTL ( $r = 0.57, p < 01, r = 0.61, p < 01, r = 0.61, p < 01$ , respectively). EGB has an extraordinarily strong correlation with GSE ( $r = 0.78, p < .01$ ), which may suggest that GSE and EGB are strongly correlated. These high correlations do give justification to the fact that the variables do have strong relationship in the regression analyses.

**Table 2**  
Correlation Matrix of Study Variables

Variable	1	2	3	4
1. GHRM	—			
2. EGB	.57**	—		
3. GTL	.61**	.70**	—	
4. GSE	.61**	.78**	.75**	—

**Note.** All correlations are significant at  $p < .01$ .

#### 4.3. Reliability and Validity

The use of Cronbach's alpha determines the reliability of the measuring scales, which, as a statistic, is used to measure internal consistency in measuring instruments. All the scales in the current research had alpha coefficients exceeding the 0.70 mark (Nunnally & Bernstein, 1994), which was employed to identify acceptable reliability. Table 3 indicates the value of the alpha.

**Table 3**  
Reliability Analysis

Construct	Cronbach's Alpha	Number of Items
Employee Green Behaviours (EGB)	0.884	7
Green Transformational Leadership (GTL)	0.928	6
Green Self-Efficacy (GSE)	0.938	5
Green HRM Practices (GHRM)	0.944	8

**Note.** All constructs demonstrated good internal consistency, with Cronbach's alpha values above 0.70, indicating excellent reliability.

Construct validity was ensured using scales that were used previously. Factor analysis was done to make sure that the items were loaded onto the items of choice in the constructs. The outcome of the factor analysis indicated that the items were sufficient in measuring the constructs and hence determined the convergent validity (Hair et al., 2014). The discriminant validity was confirmed by ensuring that the correlations between the constructs were not more than 0.85 (Campbell & Fiske, 1959). It is shown that the constructs were different.

#### 4.4. Common Method Bias

There was a potential possibility of common method bias (CMB) due to the data collection method using a self-report measure. To begin with, a single-factor test conducted by Harman was performed (Podsakoff et al., 2003), and the outcome of it is that the first unrotated factor explained only 34% of the total variance, which is very insufficient as compared to the recommended value of 50% (Dan-Dan & Zhong-Lin, 2020). This would imply that there was no dominant factor in the covariance structure, and one would not have suspected that CMB was going to be a big issue.

Furthermore, the Common Latent Factor (CLF) approach was performed to provide more evidence of the lack of CMB in AMOS. The measurement model had a common latent factor, and all the observed items were allowed to load on the CLF and their theorized constructs. The standardized factor loadings that were obtained in the model with the use of CLF were then evaluated to the baseline model of the baseline model. All the differences

between loadings were below the suggested cutoff score of 0.20; this result implies that the inclusion of a CLF did not alter the measurement structure in a very significant way (Podsakoff et al., 2024). This, along with the other evidence, is also evidence that common method bias did not significantly affect the dataset.

#### 4.5. Regression Analysis

The multiple regression was conducted to test the proposed direct effects. The findings indicate that EGB is clearly predicted by the GHRM practices since it explained 32.4% contribution of the EGB ( $F(1, 203) = 120.57, p < .001$ ). According to Table 4, the standardized coefficients of GHRM relative to EGB have a significant value ( $B = 0.1426, p = 0.0079$ ). Accordingly, Hypothesis 1(H1) is accepted.

**Table 4**  
 Regression Analysis for the Effect of GHRM on EGB

Predictor	B	SE	T	P	LLCI	ULCI
GHRM	0.1426	0.0532	2.68	.0079	0.0377	0.2475

**Note.** LLCI = Lower-level Confidence Interval, ULCI = Upper-level Confidence Interval.

#### 4.6. Mediation Analysis

The analysis of mediation was done using the PROCESS Macro, version 3.5 (Model 4), to ascertain the mediating role of GSE in the relationship between GHRM practices and EGB. Table 5 shows that there is a strong indirect influence of GHRM on EGB via GSE ( $B = 0.4054, 95\% \text{ CI } [0.2985, 0.5102]$ ). These findings demonstrate partial mediation since GSE explained a significant amount of the effects of GHRM practices on EGB.

**Table 5**  
 Mediation Analysis of GHRM on EGB through GSE

Path	Effect (B)	Boot SE	LLCI	ULCI
GHRM → GSE → EGB	0.4054	0.0532	0.2985	0.5102

**Note.** Bootstrapped 95% CI does not include zero, indicating a significant indirect effect (Hayes, 2018).

#### 4.7. Moderation Analysis

The moderation analysis was conducted with the help of PROCESS Macro (Model 1) to determine the potential moderating role of Green Transformational Leadership (GTL). The interaction term means that GTL moderates the GHRM-EGB relation significantly ( $B = 0.0969, p = .019$ ). The higher the GTL, the more positive the relationship between the GHRM practices and EGB is, as we have shown in Table 6.

**Table 6**

Moderation Analysis of GTL on the Relationship between GHRM and EGB

Predictor	B	SE	T	p	95% CI
GHRM	0.5690	0.1717	3.31	.001	[0.2305, 0.9075]
GTL	0.8242	0.1293	6.37	.000	[0.5692, 1.0793]
GHRM × GTL (Interaction)	0.0969	0.0442	2.19	.019	[0.1840, 0.0098]

**Note.** GHRM × GTL indicates the interaction term between GHRM and GTL.  $p < .05$ .

#### 4.8. Summary of Hypothesis Testing

To test the hypotheses proposed, the researchers used a battery of tests such as regression analysis, mediation, and moderation analysis. The empirical data indicate that both Hypotheses 1 and 2 are supported strongly as GHRM practices positively impact the following: EGB and GSE. Hypothesis 3 is proved as well; GSE has a positive impact on EGB. Hypothesis 4 proves to be true, and GSE exists as an intervening variable between the GHRM and EGB relationship. Lastly, Hypothesis 5 received the necessary support, and it discovered the moderating effect of GTL on the association between the variables of GHRM practices and GSE in the favorable direction.

### 5. Discussion, Implications, and Conclusion.

#### 5.1. Discussion of Findings

The existing question attempted to provide a reason behind the connections between the GHRM practices and GSE and EGB. Meanwhile, the existence of the moderating effect of GTL was also evaluated. The results confirm the validity of the GHRM efforts on EGB and GSE and demonstrate the amplifying effects of the GTL to support the study area of GHRM and organizational leadership, which is rather new.

The first objective of this study was to determine the direct nexus between GHRM practices and EGB. The findings vindicate Hypothesis 1, which was a potent indication that GHRM initiatives have a favorable behavioral impact. This agrees with the findings of other studies, which find a positive correlation between GHRM and EGB (Dumont et al., 2017; Yue et al., 2023). Through encouraging green recruitment, training, and appraisal plans, organizations develop a sustainable culture, and such a culture encourages employees to be sustainable. This kind of evidence explains the necessity to incorporate the concept of sustainability into the HR functions, to promote EGB within the workplace (Renwick et al., 2013).

The second objective involved the mediating role of GSE between GHRM practices and EGB. Our data proved this hypothesis, such that GSE mediates this relationship. This result is consistent with the existing literature in declaring self-efficacy as one of the most significant determinants of employee behaviors (Chen et al. 2015). Employees who received good organizational support for sustainability have their belief in taking green actions, and this is reflected in an increased display of EGB in the organizations. This action of change can be aligned with the Social Cognitive Theory (Bandura, 1997), which indicates that self-efficacy is involved in the change of behavior, such that it can assist in enhancing the beliefs of people in their competence.

The third objective of this study was to study the moderating role of GTL on the GHRM-GSE relationship. Findings favor this hypothesis, such that augmented GTL positively enhances the positive relationship between GHRM and GSE. The literature confirms this by asserting that better practices in organizations offer results due to the transformational nature

of leadership (Robertson & Barling, 2013). One of the possible interpretations is that when GTL is strongly pronounced, it can result in a high level of intrinsic motivation and green consciousness and, in turn, the necessity to use formalized GHRM interventions to facilitate green behaviors. This finding gives one more confirmation to the hypothesis that the leadership practices can be used to replace or to supplement institutional HR policies (Graves et al. 2013).

## **5.2. Implications of the Study**

### **5.2.1. Theoretical Implications**

The present paper contributes to the theoretical literature associated with GHRM, GSE, and GTL in terms of determining their combined effect on EGB. To begin with, it also contributes to the added value of the Social Cognitive Theory, demonstrating the mediating position of GSE in the GHRM-EGB system that augments self-efficacy as a valuable psychological resource that energizes pro-environmental behavior in the organization (Chen et al, 2015). Secondly, GSE is re-conceptualized as a salient source of perceived behavioral control, to complete the picture of the effects of the practices of GHRM on attitudes, subjective norms, and perceived control of green behaviors in the light of the Theory of Planned Behavior (Ajzen, 1991).

Besides, the present work is relevant to the developing literature on the empirical knowledge of GTL regarding the moderating impact of the GHRM-GSE nexus. The negative moderation that was discovered refutes a simple concept that has been the fundamental notion behind GTL to ensure that GHRM is always more effective. Instead, it assumes that GTL can complement or substitute specified formal HR programs to further research on the complexity of the interaction of leadership and HR practice in facilitating the sustainability of an organization (Graves et al., 2013).

### **5.2.2. Managerial Implications**

As a manager, the research indicates that it is necessary to integrate green HRM practices like green recruitment, training, and performance management practices into regular HR activities to develop an organizational culture that supports EGB. Provision of Employees with the tools, knowledge, and support required to enable them to be active in pro-environmental behaviors so that the organizational activities are respectful towards the environmental goals.

This is what is being screamed out via leadership. Findings indicate that GTL can be used as an adjunct catalyst or substitute for the GHRM practices in the development of EGB. Therefore, companies must invest in leadership development programs, which can assist in developing transformational leaders who are sustainability-oriented (Chen & Wu, 2022). Executives who spearhead green initiatives and provide an inspiring environmental vision reach out to their employees and provide them with a cause to sincerely embrace a collection of environmental sustainability objectives (Robertson & Barling, 2013).

Lastly, it cannot be done without the identification of the key role of GSE. The most effective alternative for improving sustainable performance is to create confidence in employees to be convinced that they can perform green things. GSE can be enhanced through training programs aimed at addressing environmental issues of forest fire prevention, forest and climate change adaptation, with hands-on learning and positive feedback (Saeed et al., 2019).

## **5.3. Study Limitations and Guidelines for Future Research**

Although the study offers several contributions, some of the limitations need to be highlighted. First, the design of this study is cross-sectional, and this restricts causal inference because longitudinal studies are required to establish causal pathways (Bryman, 2012). Second, the findings cannot be generalized to other industries and other situations, given that the banking industry in Pakistan was the focus. The future studies should be conducted in relation

to other sectors of the economy, including the manufacturing, healthcare, and consumer education sectors, where the influence of the identified relationships would be more generally applicable (Zimarras et al. 2015). Third, self-report information is prone to social desirability bias and common method variance and is not always valid (Podsakoff et al., 2003).

Although we have made sure that CMB was not significant to invalidate the results of the study, future research ought to focus on the triangulation of data to aid in minimizing some of these threats to the extent of enhancing reliability. Future research ought to attempt to examine other mediating factors, including organizational culture, leadership climate, and employee engagement, that may play a role in the variance behind GHRM, GSE, and EGB (Cahyadi et al., 2022). Similarly, the identification of various alternative mediators, including environmental commitment or green organizational identity, or moral obligation, can be used to enrich the theoretical approach and fill the gap in comprehending the psychological mechanisms that facilitate EGB (Norton et al., 2015; Saeed et al., 2019).

#### 5.4. Conclusion

In summary, this study has added value in terms of empirical data that shows the effects of the adoption of GHRM practices on EGB with the significant mediating role of GSE. Furthermore, GTL amplifies this link, i.e., the higher the levels of GTL, the higher their reliance on formal HR mechanisms as a motivator for EGB. These lessons reinforce the new area of GHRM and sustainability, as well as developing both theoretical and practical knowledge for organizations aiming to expand their environmental potential. The findings shed light on the major contributions made by GHRM, GTL, and GSE in sustainable practices.

Organizations may promote the involvement of their employees in pro-environmental behaviors by establishing an organizational culture of sustainability by means of GHRM activities and promoting a transformational leadership style, which may encourage the adoption of additional ecological objectives. The efforts to unravel such relationships should continue in the future, considering not only other variables that act as mediating and moderating factors, but also considering increasing research in other sectors and cultural contexts.

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