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Green HRM Practices and Knowledge Sharing Improve Environmental Performance by Raising Employee Commitment to the Environment

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Abstract: In this research, the moderating effect of green knowledge sharing was used to investigate the association between green human resources management (green HRM) practices (competence, motivation, and involvement) and environmental performance via employee environmental commitment. Using previously validated metrics, an online survey of 155 academic staff members from 25 Pakistani universities ranked in the UI-Green Metric 2021 for having green campuses was carried out. The findings demonstrated a significant relationship between green HRM practices, employee environmental commitment, and the university's environmental performance. The correlation between all three green HRM practices and environmental performance was mediated by the employee's environmental commitment. The findings indicate that in order to improve environmental performance and reach environmental sustainability goals, it is essential to foster green knowledge sharing among employees and increase employee environmental commitment through green HRM practices.

Keywords: green HRM practices; competence building; motivation enhancing; employee involvement; employee environmental commitment; environmental performance



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1. Introduction

Sustainability has become a global problem, and organizations are becoming more concerned about the impact of environmental challenges on their competitiveness and long-term performance [1]. Green HRM is described as those aspects of sustainable HR management that deal with environmental sustainability demands [2]. Green HRM practices entail bringing the spirit of environmental stewardship into the workplace [3]. Building green competencies among workers, motivating employee involvement, and offering green odds for employees are essential components of Green HRM practices. Employees proud of their environmental work might go above and beyond their usual tasks, demonstrating employee environmental commitment (EEC). It is defined as an internal, obligation-based motivation and emotional attachment, identification, and participation in environmental behaviors [4]. These environmentally dedicated employees are frequently loyal, resulting in more remarkable green performance [5]. As a result, if employees are dedicated, green organizational objectives can be met. As a central goal of the paper, this research will examine the link between green HRM and EEC. This connection is crucial in developing a chain of relationships that influence environmental performance (EP).

The term environmental performance describes how well an organization treats the environment. Depending on the industry, this might entail a variety of outcomes such as reduced hazardous effluent, reduced emissions, reduced greenhouse gas emissions, reduced solid waste, and fewer environmental crises, among others [6]. Refs. [7–11] have shown that these efforts may augment a firm's overall performance by decreasing expenses. Environment-friendly operations can also save money by lowering waste and energy consumption, which may appeal to clients concerned about the environment [11,12], return on equity and return on assets [13]. However, compared to relatively clean and proactive industries, the impact of EP on financial outcomes was greater in relatively dirty and non-proactive industries [14]. Financial profits can be boosted by increasing income and lowering costs [15–18] by applying innovative green commitments. Revenue may be improved by refining product quality, increasing market access, and enlightening corporate brand image, while cost savings can be achieved by reducing resource waste and environmental incidents [15]. Customer satisfaction and loyalty may be improved due to EP, leading to financial advantages [19]. EP, according to research, contributes to cost competitiveness and competitive advantage via differentiation [20]. Additionally, it can be enhanced by setting standards according to ISO-14001 certification in place, an environmental management system which is a tool that calls for close coordination [21]. This relationship is not well-covered in literature. This study aims to resolve that literature gap and evaluate green HRM practices' impact on EP.

Both scholars and organizational executives are interested in the influence of environmental commitment on corporate performance. The organizations aim to make more money and profit. As a result, they often weigh the advantages and disadvantages of investing in environmental initiatives [22]. Green HRM practices refer to businesses that implement HRM guidelines to encourage resource conservation and environmental advocacy in an effort to boost staff morale and satisfaction [23]; furthermore, employees in today's world are more environmentally committed and happy with a business that is proactive in promoting green initiatives [5]. The literature on how EEC affects EP is limited. This research study will fill that gap and provide valuable knowledge for organizations, primarily academic institutions. Academic staff is essential in establishing green campus sustainability, which comes as a result of their knowledge, technical prowess, and close association with students and management in the academic institution. As potential but often underappreciated partners in sustainability, academic staff must be supported and encouraged to engage in pro-environmental conduct to achieve long-term improvements in campus EP [24]. As a result, the current research concentrates on academic staff commitment and green HRM practices in higher education institutions to improve sustainability.

Employees' environmental commitment is enhanced by green HRM practices to accomplish the aim of EP, according to this study's results. There is currently a vacuum in the literature about improving this relationship. AMO theory serves as the foundation for this presumption. It states that job performance is determined for organizational goals by an employee's ability, motivation, and opportunity [25]. Previous studies suggested a connection between how businesses implemented their environmental initiatives and included their workforces, as well as how green HRM practices impacted workers' motivation to take part in environmental initiatives [26]. Furthermore, these authors suggested that future research should empirically test the theoretical frameworks involving green HRM practices and environmental management [27]. Based on this view, green knowledge sharing (GKS) may be discussed in connection to green HRM practices, EEC, and EP in this research, and its impact will be established. Employees share their green expertise with other workers, creating better collaborative knowledge [28]. Implicit knowledge stored in the human brain and explicit information recorded in formal official papers are included in this category, although the implicit knowledge might be challenging to exhibit as actual data [29]. Information and knowledge dissemination are deemed critical for organizations to retain a long-term competitive advantage [30]. GKS is how knowledgeable workforces exchange green knowledge with other organizational members [31]. Organizations must

recognize, generate, accumulate, consolidate stock, circulate, and practice green knowledge. The literature has a significant gap about how GKS influences the relationship between green HRM practices and EEC, which leads to EP. This research is also the prime goal, providing great insights into environmental knowledge. According to the AMO theory [25], in order to achieve higher environmental performance, this study investigated how green HRM practices promote employee environmental commitment and the moderating role of green knowledge sharing on this relationship. The statistical model examining these relationships is shown in Figure 1.

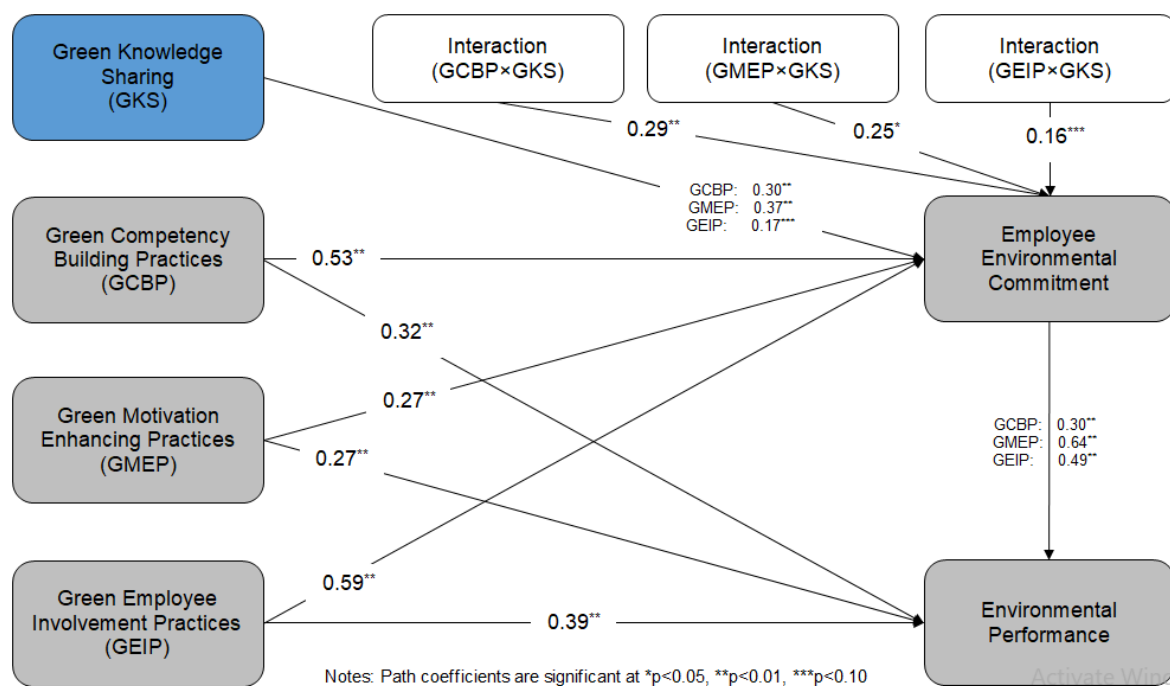


Figure 1. Research model.

2. Hypotheses

2.1. Green HRM Practices Associate with Environmental Performance

Theory of AMO may help to clarify the environment-friendly practices of HRM and its associated effects on the environment [32,33]. In order to increase employees' environmental knowledge and skills, green competence building practices (GCBP) include green training and development programs as well as green recruiting and selection in order to boost employees' environmental knowledge and abilities [34]. As a result, they can identify environmental issues and take the required steps to reduce negative environmental effects at work [35]. To guarantee that future workers are eager to work toward the organization's environmental goals, some HR managers assess environmental awareness in interview processes as part of job description [26], and leadership positions [36]. Once in positions of power, executives will support environmental measures to improve the EP [37]. They can address whether workers have met their environmental goals during performance assessments and waste reduction and performance improvement suggestions they may have [26]. Therefore:

H1a. *Green competence-building practices are positively linked to environmental performance.*

Environmental performance represents the efficacy and efficiency of an organization's environmental activity [38], by providing essential knowledge regarding environmental impacts, regulatory compliance, and organizational processes [39–41]. Green motivation-enhancing practices (GMEP), such as performance assessments and awards, encourage employees to match their actions with the organization's environmental aims [42]. When

comparing organizations with fixed salaries to organizations with senior managers whose remuneration was contingent on meeting environmental goals, the researchers discovered that organizations with senior managers whose remuneration was contingent on meeting environmental goals had higher EP [43]. Providing frequent feedback aids in improving an employee's EP, environmental knowledge, skills, and aptitude [44]. Thus, the employees may take the initiative to use this knowledge to improve the organization's EP. Hence:

H1b. *Green motivation-enhancing practices are positively linked to environmental performance.*

Fostering an employee's voice in environmental management and suggesting solutions to an organization's environmental concerns relate to green employee involvement practices (GEIP) [45]. Employee participation in environmental management decisions has increased self-control and problem-solving skills [46,47]. A pro-environmental culture can be created in a corporation through open communication, the sharing of ideas, and the expression of many points of view on environmental concerns [48]. Organizations with a clear relationship between chief executive officer remuneration levels and fulfilling environmental objectives had better levels of EP than those without, according to a survey of 207 organizations [49]. Employee awareness about environmental concerns is believed to be heightened by training workers about the environmental impact of organizational operations [37,50,51] that produce needless pollution, waste [52] and hazardous effluents [26]. Thus:

H1c. *Green employee involvement practices are positively linked to environmental performance.*

2.2. Green HRM Practices Associated with Employee Environmental Commitment

Environmental training, for instance, equips employees with environmental knowledge and helps them to acquire and integrate green attitudes and skills, resulting in long-term EEC [53], such as GCBP (for example, green training) [54]. The three elements of green recruiting and selection are employee green awareness, green employer branding, and green applicant selection criteria [26,55]. Similarly, recruiters prefer to select candidates with an environmental background and a favorable attitude toward the environment since they are more likely to participate in eco-initiatives [56]. A successful HRM strategy must consider employee attitude because it can have a significant and positive impact on workplace outcomes, such as EEC [57,58]. Organizations that engage in competency development elicit an emotional response from workers, resulting in affective commitment [59]. Hence:

H2a. *Green competence-building practices are positively linked to employee environmental commitment.*

Ref. [60] stated that pay is seen as a component in increasing green-specific organizational outcomes such as employee environmental engagement, similar to green reward and green corporate culture [61], as well as green policies and practices, to attract more workers who are environmentally conscious [43] and encourage them to offer green recommendations [26,62]. Additionally, a combination of financial and non-financial incentives is more effective in raising employee involvement in environmental initiatives [26]. Ref. [63] discussed how the more positive attitudes from an individual has toward the organization, the more accepting of the organization's goals they are. Thus, the more willing they are to put effort into the organization. A reward management system can be used as a tool that may be used to attract, retain, and encourage high-potential personnel [55], resulting in higher levels of performance. Motivation concerns the incomplete link between fundamental self-evaluations and performance [64]. Companies must exert every effort to ensure that rewards, including intrinsic and extrinsic motivators; and performance management systems, are utilized to maintain, attract, and grow employees' efforts, satisfaction, and commitment. Therefore:

H2b. *Green motivation-enhancing practices are positively linked to employee environmental commitment.*

Employees may collaborate, exchange expertise, and provide new solutions to inspiring challenges when operating as a team [65]. Employee involvement is a broad term, but it is best defined as a series of actions to increase employee commitment to a company [66]. The programs or tactics start by influencing employee attitudes; they involve the employee, which results in identification and EEC, a vital part of employee involvement, and reflects its language. This approach revolves around the concept of commitment. According to [67], developing an environmental management system can help environmentally engaged workers enhance their green ideas. This occurs because individuals working in environmentally conscious organizations must modify their norms, beliefs, and mindsets to fit their green culture and aims [54]. Furthermore, their active and consistent participation in the organization's environmental operations reinforces their awareness of corporate environmental objectives and policies, resulting in attachment, responsibility, and employee commitment to environmental concerns [61]. The increased employee perception of GEIP may inspire EEC [42,68]. Therefore:

H2c. *Green employee involvement practices are positively linked to employee environmental commitment.*

2.3. Employee Environmental Commitment and Environmental Performance

The attention of top management and employee commitment to environmental issues such as EP, enable the organization to develop a proactive environmental plan [69–71] and act as change stewards [65]. Organizations gain from considering environmental concerns at the strategic level [72,73] because it allows them to identify new organizational opportunities by leveraging EP as a source of strategic advantage [37]. It leads to cost savings, increased market share, a better image, and technical leadership, all of which contribute to competitive benefits and views as intangible assets [74]. When they understand the potential benefits of environmental efforts across departments and organizational borders [75], they will be more willing to participate in steps that would eventually improve the environmental sustainability [76]. From light green to dark green, employees' organizational commitment to environmental protection can range [77]. Environmental practices that are carried out in accordance with environmental regulations are referred to as light green [73]. To fill current needs without jeopardizing those of future generations, one should adopt a proactive, dark green mindset. While dark green businesses use a more advanced system to achieve their objective of improved EP, light green businesses are more likely to use a less advanced environmental system.

The environment-friendly employees are frequently loyal, resulting in a greater performance for the environment [78,79]. EEC is based on their willingness to discuss and care about their organization's environmental problems [80]. As a result, if employees are committed, green organizational objectives can be met efficiently. Higher employee commitment improves organizational performance [81,82] and productivity concerning the environment. Therefore:

H3. *Employee environmental commitment is positively linked to environmental performance.*

2.4. Mediation of Employee Environmental Commitment

Among the immediate effects of HRM systems is employee commitment [83]. It can serve as a mediator in the relationships between organizational outcomes such as EP [68,84,85], the decision-making process and HRM practices [86]. EEC can also be evaluated, rewarded, and employees can be encouraged to take on environmental duties [86] and environmental sustainability. Green HRM practices and EEC, the link between green HRM practices and EP, has been studied in the past [1,87,88]. The literature indicates that EEC may mediate the connection between EP and green HRM practices. EP stands for an organization's capacity to satisfy and exceed social expectations in relation to the environmental issues [89,90]. It gives employees guidance for their subsequent activities, such as environmental citizenship behaviors [4,91] and voluntary pro-environmental be-

haviors [92], which help the organization to achieve its broad goals [93]. Ref. [89] provided empirical evidence for this argument by demonstrating a favorable relationship between EEC and EP. Hence:

H4a. *Employee environmental commitment mediates the connection between green competence-building practices and environmental performance.*

H4b. *Employee environmental commitment mediates the connection between green motivation-enhancing practices and environmental performance.*

H4c. *Employee environmental commitment mediates the connection between green employee involvement practices and environmental performance.*

2.5. Moderating Effect of Green Knowledge Sharing

The degree to which a knowledgeable employee acquires and disseminates green knowledge to other individuals within their organization while also learning from them [94] is referred to as green knowledge sharing [31,95]. It refers to the expert provider sharing their knowledge with the knowledge demander to assist others in environmental learning and developing new skills [96]. In the learning process, it is a type of transfer behavior [95,97], and it is more than just exchanging information [98]. Because it is also about assisting team members in locating and using [99] the information where they want through the team knowledge exchange process. As a result, the so-called synergistic effect occurs [96]. It communicates task information and comments on professional expertise about the environment. This is useful for generating new environmental ideas, resolving current issues, and obtaining the desired outcomes [100,101]. Therefore, knowledge will not be fully utilized and will become worthless if it is not conveyed or shared [102].

Green knowledge sharing is seen as not only a crucial component of motivating workers to engage in creative behaviors and activities to improve environmental commitment [103–105], but also as a fundamental instrument for stimulating critical thinking. As a result, transforming ideas into innovation capacity [106–108]. Internal knowledge sharing benefits the in-house strategy and will aid in developing the organization's creative approach [109,110] to drive green HRM practices. Ref. [111] demonstrated how GKS among employees might increase personal and professional knowledge and abilities, generate innovative ideas, and boost others' creativity by developing EEC, which can lead to improved EP. Others can create successful action capacity behavioral actions due to knowledge sharing [96]. Similarly, EEC may be boosted through GKS, which can improve EP [112]. As a result, GKS is attracting growing interest from academics and the corporate sector. The relationship between green HRM practices (GCBP, GMEP, and GEIP) and EEC is moderated by GKS. It will be investigated in this research. Hence:

H5a. *(i) Green knowledge sharing improves the connection between employee environmental commitment and green competence-building practices, which (ii) boosts environmental performance.*

H5b. *(i) Green knowledge sharing improves the connection between employee environmental commitment and green motivation-enhancing practices, which (ii) boosts environmental performance.*

H5c. *(i) Green knowledge sharing improves the connection between employee environmental commitment and green employee involvement practices, which (ii) boosts environmental performance.*

3. Methods

3.1. Data Collection and Samples

Over 300 institutions from across the globe have signed up for the Higher Education Sustainability Initiative (HESI), which promotes sustainable development goals [113] via collaborations with many United Nations agencies. Nonetheless, numerous organizations, such as UI-Green Metric, issue sustainability reports evaluating international universities based on their green campus [114] and sustainability efforts [115]. Since its inception, the

ranking system's assessment methods have been revised yearly, encouraging universities to implement sustainable practices in their campus administration. This paper used a population of Pakistani universities from the most recent UI-Green Metric rankings [116].

A non-probability sampling approach (more particularly, convenience sampling) was employed. It makes sure that faculty positions at the universities—such as professor, associate professor, assistant professor, and lecturer—were filled [117]. UI-Green Metric ranked universities were chosen because they have concerns about green applications. Those concerns must involve the environment [87], have well-organized HR systems [118] and be governed by government regulations [119], according to this study. This cross-sectional study adopted an online, self-administered questionnaire approach [120], including WhatsApp application and email for survey contact. A minimum sample size of 103 was required for the SmartPLS path model to identify an R^2 value of 0.10 at the advised statistical power of 80% and a 5% significance level. The only relationships that are theoretically modeled are the structural ones between the observed variables (or equally weighted constructs), with or without control variables. When one or more variables are needed to mediate the relationship between two other variables, this type of model is frequently used (mediation models). Moderated mediations can be modeled concurrently [121]. Hence, the sample was drawn from twenty-five Pakistani green universities with UI-Green Metric ranking academicians. Between December 2021 and January 2022, the data were gathered from 155 respondents (Table 1).

Table 1. Participant's profile.

Characteristics	Academicians (n = 155)	
	Frequency	Percentage
Gender		
Male	104	67.1
Female	51	32.9
Age		
30 years or Less	18	11.6
31 to 40 years	90	58.1
41 to 50 years	37	23.9
Greater than 50 years	10	6.5
Educational Qualification		
Masters	43	27.7
PhD	112	72.3
Designation		
Professor	8	5.2
Associate Professor	24	15.5
Assistant Professor	70	45.2
Lecturer	53	34.2
University Sector		
Public	125	80.6
Private	30	19.4
Employee Experience within current university		
1 to 5 years	56	36.1
6 to 10 years	44	28.4
11 to 15 years	23	14.8
More than 15 years	32	20.6

3.2. Measurements

We used existing reliable measures to collect data in this study on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Green Human Resource Management Practices. 17 items were adapted from [55] and used by [91], such as, "I am attracted by the environmental sustainability initiatives of my university". Green competency-building practices (GCBP) consisted of six items, green motivation-enhancing practices (GMPE) consisted of six items, and green employee

involvement practices (GEIP) comprised five items. In this study, all three indicators of green HRM practices showed high reliability (GCBP: CR = 0.90, α = 0.87; GMEP: CR = 0.89, α = 0.85; GEIP: CR = 0.94, α = 0.92).

Green Knowledge Sharing. Ref. [122]’s GKS scale, a five-item measure, was adapted. This adapted scale was modified by [123]. The scale has strong internal consistency in the current research (CR = 0.85, α = 0.81). One of the items is, “In my university, people share expertise from work experience with each other”.

Employee Environmental Commitment. Ref. [4]’s employee environmental commitment (EEC) scale, a seven-item measure, was adapted. For example, “I feel personally attached to the environmental concern of my university”. The scale (CR = 0.95, α = 0.93) indicated good reliability in this study.

Environmental Performance. Fourteen items from [124] were adapted to quantify environmental performance (EP) at the university campus, such as, “Energy conservation practices are promoted on my campus”. In this study, the scale displayed high reliability (CR = 0.96, α = 0.95).

4. Results

4.1. Reliability and Validity Analysis

The descriptive, reliability, factor, and correlation analyses were performed using SPSS. The measures showed good reliability and convergent and discriminant validities in this study (Table 2). The required upper limit of 0.700 was exceeded by every factor loading. Composite reliability (>0.700), Cronbach’s alpha (>0.700), and average variance extracted (AVE) values over 0.500 all exceeded the minimal requirements. The composite reliabilities of each construct were higher than their individual AVEs, showing convergent validity. The square root of all AVEs of all variables being bigger than their correlations with other variables proved the discriminant validity [125]. Harman’s single factor explaining 48% variance (below the cut-off value of 50%) predicted no likelihood for a common method bias.

Table 2. Factor analysis and convergent validity.

Construct/Variable	Items	Factor Loadings				
		Minimum	Maximum	AVE	CR	α
Green Competence-Building Practices	6	0.69	0.88	0.61	0.90	0.87
Green Motivation-Enhancing Practices	6	0.64	0.86	0.58	0.89	0.85
Green Employee Involvement Practices	5	0.83	0.90	0.76	0.94	0.92
Green Knowledge Sharing	5	0.61	0.81	0.57	0.85	0.81
Employee Environmental Commitment	7	0.67	0.92	0.72	0.95	0.93
Environmental Performance	14	0.67	0.85	0.64	0.96	0.95

α = Cronbach’s alpha, AVE = average variance extracted, CR = composite reliability.

4.2. Descriptive and Correlational Analysis

Table 3 displays the correlation coefficients, mean and standard deviations for the study’s variables. Green HRM practices: GCBP (r = 0.68, p < 0.01), GMEP (r = 0.46, p < 0.01), GEIP (r = 0.74, p < 0.01), and GKS (r = 0.30, p < 0.01) showed good positive associations with EEC. Green HRM practices: GCBP (r = 0.66, p < 0.01), GMEP (r = 0.59, p < 0.01), GEIP (r = 0.71, p < 0.01), and GKS (r = 0.19, p < 0.01) also showed good positive associations with EP. The EEC (β = 0.72, p < 0.01) was discovered to be significantly correlated with EP, demonstrating the potential for the study’s proposed mediation [126].

Table 3. Correlations and discriminant validity.

	Mean	SD	1	2	3	4	5	6
1. Green Competence-Building Practices	3.98	0.68	0.78					
2. Green Motivation-Enhancing Practices	3.42	0.88	0.73 **	0.76				
3. Green Employee Involvement Practices	3.95	0.71	0.84 **	0.71 **	0.87			
4. Green Knowledge Sharing	4.26	0.39	0.23 **	0.20 **	0.31 **	0.75		
5. Employee Environmental Commitment	4.25	0.62	0.68 **	0.46 **	0.74 **	0.30 **	0.85	
6. Environmental Performance	3.95	0.71	0.66 **	0.59 **	0.71 **	0.19 **	0.72 **	0.80

** $p < 0.01$, SD = standard deviation, values in the diagonal are $\sqrt{\text{AVE}}$.

4.3. Hypothesis Testing

The hypotheses were tested using Haye's process model 7 in SPSS, generating three models for each green HRM practices. This model is used for moderated mediation, which has some resemblance with this study's model. Hence, this method is adopted to analyze moderation and mediation in the research model. The environmental performance as the dependent variable (Y) was regressed on green HRM practices (GCBP, GMEP, and GEIP) as the independent variable (X) and employee environmental commitment as a mediating variable (M). In Table 4, results are displayed.

Table 4. Total, direct, and indirect effects.

Path	Total Effect	LLCI-ULCI	Hypotheses	Outcome
Model 1				
GCBP → EP	0.32 **	0.17–0.47	H _{1a}	Supported
GCBP → EEC	0.53 **	0.42–0.64	H _{2a}	Supported
EEC → EP	0.30 **	0.12–0.49	H ₃	Supported
GKS → EEC	0.30 **	0.12–0.49		
GCBP × GSK → EEC	0.29 **	0.09–0.50	H _{5a(i)}	Supported
Conditional Effects of Focal Predictors (GCBP → EEC)			H _{5a(i)}	Supported
At Low GKS	0.42 **	0.26–0.57		
At Medium GKS	0.53 **	0.42–0.64		
At High GKS	0.65 **	0.54–0.76		
Conditional Indirect Effects (GCBP → EEC → EP)			H _{4a} , H _{5a(ii)}	Supported
At Low GKS	0.24 **	0.07–0.44		
At Medium GKS	0.31 **	0.12–0.49		
At High GKS	0.38 **	0.12–0.58		
Model 2				
GMEP → EP	0.27 **	0.18–0.36	H _{1b}	Supported
GMEP → EEC	0.27 **	0.17–0.37	H _{2b}	Supported
EEC → EP	0.64 **	0.51–0.77	H ₃	Supported
GKS → EEC	0.37 **	0.15–0.59		
GMEP × GSK → EEC	0.25 *	0.04–0.45	H _{5b(i)}	Supported
Conditional Effects of Focal Predictors (GMEP → EEC)			H _{5b(i)}	Supported
At Low GKS	0.18 **	0.04–0.32		
At Medium GKS	0.27 **	0.17–0.37		
At High GKS	0.37 **	0.25–0.49		
Conditional Indirect Effects (GMEP → EEC → EP)			H _{4b} , H _{5b(ii)}	Supported
At Low GKS	0.11 *	0.00–0.22		
At Medium GKS	0.18 **	0.06–0.29		
At High GKS	0.24 *	0.05–0.43		

Table 4. Cont.

Path	Total Effect	LLCI-ULCI	Hypotheses	Outcome
Model 3				
GEIP → EP	0.39 **	0.24–0.55	H _{1c}	Supported
GEIP → EEC	0.59 **	0.48–0.69	H _{2c}	Supported
EEC → EP	0.49 **	0.31–0.66	H ₃	Supported
GKS → EEC	0.17 ***	−0.02–0.34		
GEIP × GSK → EEC	0.16 ***	−0.02–0.34	H _{5c(i)}	Supported
Conditional Effects of Focal Predictors (GEIP → EEC)			H _{5c(i)}	Supported
At Low GKS	0.52 **	0.37–0.67		
At Medium GKS	0.59 **	0.48–0.69		
At High GKS	0.65 **	0.55–0.75		
Conditional Indirect Effects (GEIP → EEC → EP)			H _{4c} , H _{5c(ii)}	Supported
At Low GKS	0.25 **	0.06–0.41		
At Medium GKS	0.29 **	0.11–0.43		
At High GKS	0.32 **	0.10–0.47		

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, EEC = Employee Environmental Commitment, EP = Environmental Performance, GCBP = Green Competence-Building Practices, GMPE = Green Motivation-Enhancing Practices, GEIP = Green Employee Involvement Practices, GSK = Green Knowledge Sharing.

4.3.1. Green HRM Practices Associate with Environmental Performance

Hypothesis 1a predicted that GCBP has a positive relationship with EP. Table 4 (model 1) supported this hypothesis and shows the effect of GCBP ($\beta = 0.32$, $p < 0.01$) on EP. According to hypothesis 1b, GMPE and EP are positively correlated. Table 4 (model 1) shows that the effect of GMPE ($\beta = 0.27$, $p < 0.01$) on EP supported this hypothesis. Hypothesis 1c predicted that GEIP has a positive relationship with EP. Table 4 (model 1) shows that the effect of GEIP ($\beta = 0.39$, $p < 0.01$) on EP supported this hypothesis. These findings suggested that higher green HRM practices would facilitate organizations in attaining higher environmental performance.

4.3.2. Green HRM Practices Associated with Employee Environmental Commitment

Hypothesis 2a predicted that GCBP has a positive relationship with EEC. Table 4 (model 1) shows that GCBP ($\beta = 0.53$, $p < 0.01$) has a significant effect on EEC, supporting this hypothesis. Hypothesis 2b predicted that GMPE has a positive relationship with EEC. Table 4 (model 2) shows that GMPE ($\beta = 0.27$, $p < 0.01$) has a significant effect on EEC, supporting this hypothesis. Hypothesis 2c predicted that GEIP has a positive relationship with EEC. Table 4 (model 3) shows that GEIP ($\beta = 0.59$, $p < 0.01$) has a significant effect on EEC, supporting this hypothesis. It suggested that higher green HRM practices would enhance employees' environmental commitment.

4.3.3. Employee Environmental Commitment and Environmental Performance

Hypothesis 3 predicted that EEC has a positive relationship with EP. EEC significantly impacts EP, as shown in Table 4 (model 1: EEC → EP has $\beta = 0.30$, $p < 0.01$; model 2: EEC → EP has $\beta = 0.64$, $p < 0.01$; model 3: EEC → EP has $\beta = 0.49$, $p < 0.01$), supporting this hypothesis. It suggested that employees with higher environmental commitment would contribute more to the organization's environmental performance.

4.3.4. Mediating Role of Employee Environmental Commitment

EEC was supposed to act as a mediator between GCBP and EP, according to hypothesis 4a. Table 4 (model 1) supported this hypothesis and shows the conditional indirect effects of GCBP (low $\beta = 0.24$, $p < 0.01$; medium $\beta = 0.31$, $p < 0.01$; high $\beta = 0.38$, $p < 0.01$) on EP via EEC. Furthermore, EEC was supposed to act as a mediator between GMPE and EP, according to hypothesis 4b. Table 4 (model 2) also supported this hypothesis and shows

the conditional indirect effects of GMPE (low $\beta = 0.11, p < 0.05$; medium $\beta = 0.18, p < 0.01$; high $\beta = 0.24, p < 0.05$) on EP via EEC. EEC was supposed to act as a mediator between GEIP and EP, according to hypothesis 4c. Table 4 (model 3) shows that the conditional indirect effects of GEIP (low $\beta = 0.25, p < 0.01$; medium $\beta = 0.29, p < 0.01$; high $\beta = 0.32, p < 0.01$) on EP via EEC supported this hypothesis. It suggested that higher green HRM practices would encourage employees' environmental commitment, leading to increased organizational environmental performance.

4.3.5. Moderating Effect of Green Knowledge Sharing

The associations between GCBP, GMPE, GEIP, and EEC are positively moderated by GKS, according to hypotheses 5a, 5b, and 5c. GKS significantly contributed to EEC, according to the path analysis's findings ($\beta = 0.354, p < 0.01$). In addition, its moderating effects (GCBP \times GKS) on EEC ($\beta = 0.29, p < 0.01$), (GMPE \times GKS) on EEC ($\beta = 0.25, p < 0.05$) and (GEIP \times GKS) on EEC ($\beta = 0.16, p < 0.001$) were favorable and significant, indicating that the relationship between GCBP, GMPE, GEIP, and EEC strengthens with increasing GKS levels.

5. Discussion

Firms amass precious resources to attain EP and success; the same is true for university green campuses. However, acquiring resources is not enough to improve EP in today's complicated and unpredictable circumstances. The resources must be quickly integrated and reconfigured into GCBP to adapt to a changing environment. Knowledge is an essential strategic resource that is likely to contribute to EP, maximize EEC and drive innovative performance. Knowledge-based dynamic capabilities must be established by organizations. These might include gaining knowledge, integrating it, and combining it [31]. Knowledge-based commitment would better encourage team members because for their knowledge, skills, experience, and contributions at work. Green HRM practices are linked to EEC, GKS, and EP. EEC is also linked to GKS. In order to achieve higher EP even in complex projects, a team culture that supports knowledge-based dynamic GCBP should be fostered.

According to this study, businesses that encourage employee participation in environmental activities and sharing of solutions to environmental problems are more likely to adopt discretionary environmental commitment [80]. When a company educates its staff about environmental issues and seeks out their suggestions for resolving them, they feel more empowered and supported. Ref. [86] investigated employees' intentions for recycling commitment in a top management setting. They found that opportunities for sustainability initiatives and a sense of empowerment encourage ongoing ecological commitment at work.

Green HRM practices provide a forum for employees to share their green expertise in order to make the business greener. It also serves as a valuable indicator of an employee's commitment to environmental issues. Additionally, reading helps workers make a stronger commitment to cooperating with coworkers and sharing information [26]. As a result, the data support the hypothesis that if an organization exhibits its environmental responsibility through green HRM practices, information will spread more sustainably as employees develop their understanding of the environment.

This research shed light on green HRM practices, a relatively new subject of study in HRM. Although much of the existing literature focuses on applying it in the corporate sector, there is a research deficit in the study of green university campuses. This study focuses on human resource practices to show what green changes have been implemented in a university to encourage better environmental behavior. This is a relatively unexplored topic from a relational perspective. Both academics and professionals will find the study's findings interesting.

Employee sharing of green information can be encouraged and facilitated by using green HRM practices as an organizational strategy. It provides a forum for sharing green expertise among employees in order to make the business greener, as well as being a signifi-

cant indicator of an employee's commitment to environmental issues. The literature claims that it also aids workers in fortifying their commitment to information sharing among coworkers [26]. Therefore, the data are consistent with the theory that if an organization demonstrates its environmental responsibility through green HRM practices, it will result in a green diffusion of information by increasing employee awareness of green issues. Furthermore, the findings show that EEC is favorably associated with employee GKS. This concurs with earlier studies, such as that conducted by the authors of [127], who discovered a strong link between employee knowledge sharing and performance. The present study also discovered that GKS significantly moderates green HRM practices and EEC, which is a significant positive finding. This result confirms earlier studies that demonstrated a potent moderating effect of green knowledge sharing. The findings support each of the research hypotheses. The next parts report on the study's theoretical and management implications.

5.1. Theoretical Implications

From this perspective, several academics have argued for the adoption of green HRM policies and practices to promote an organization's environmental goals; nevertheless, the connection between green HRM practices and EP has received little research. The findings revealed a substantial correlation between GCBP and EEC, which is relevant to their relationship. According to this study, green HRM practices encourage workers to share their green expertise to influence their commitment. Such a bond would strengthen EEC with the company.

This article also demonstrates how employees may take environmental pledges and benefit from GKS's educational benefits when they think green HRM practices are part of the company's green policies and objectives. This paper introduces a new concept called green knowledge sharing and investigates how it relates to green HRM practices, EEC, and EP in order to fill a research gap. Knowledge management and GCBP are significant issues that cannot be overlooked, besides the necessity to generate or shape EP for organizations. People cannot rely on antiquated strategies to create new earnings in today's market. Raising revenue requires some kind of internal innovation, whether it takes the form of new goods or services or involves encouraging service innovation as a part of the company's economic development programs. Sharing green knowledge will be wildly successful and boost business profits as a long-term competitive advantage. A sustained competitive advantage is one that others are unable to duplicate. Shareholders can benefit significantly from companies that have a long-term competitive edge.

The relationship between GMEP and EP implies that communicating specific environmental targets with academic staff provides direction and enforcement for the university's environmental goals and increases their incentive to attempt goal achievement [54]. The employees, when appreciated, are more inclined to reciprocate by participating in EEC [4]. Prior literature only discussed the significance of green HRM practices with AMO framework in the context of the business sector; therefore, this study widens the field of green HRM practices research to include green university campuses. By emphasizing its role as a facilitator of environmental commitment among university academic staff, this study adds to the behavioral literature on campus greening. The findings support important links between EEC and EP [128] in achieving an organization's environmental goals. This study responds to the call for additional research conducted by the authors of [68] on the mediating mechanism through which green HRM practices influence EP. The idea, which contends that employees are better equipped for eco-initiatives when their employers responsibility and take environmental stewardship into account when evaluating employee performance [129], is supported by our findings. GEIP possibilities show employees that their employer recognizes their commitment to environmental projects, encouraging them to go above and beyond their professional responsibilities, which results in better EP [4].

5.2. Practical Implications

Academic staff will have a platform to demonstrate their commitment to the environment through involvement in events such as recycling days, cleaning campaigns, and car-free days, which will encourage them to take part in similar events, which will benefit the university's EP. The green stance is critical for making green HRM practices more unique, comprehensive, and inclusive of environmental management challenges and employee management function in organizational sustainability. Suppose a business wants to achieve sustainability as a goal. If so, HR must be involved by putting green HRM practices into place at the strategic level and implementing related practices to ensure an eco-friendly behavior among workers. Both environmental challenges and human relationships with nature and the environment are intricate and multidimensional. The university's EP will increase if personnel uphold their environmental responsibilities in their regular work duties, take part in environmental initiatives at the university, stay informed about those initiatives, and encourage their coworkers to do the same.

This study suggests that green knowledge sharing can help to solve common workplace issues. It is the process through which people share their knowledge (implicit and explicit) and work together to develop a new understanding [130]. This research is founded on the assumption that universities are both essential and developing rapidly. The speed with which these shifts occurred astounded many academic marketers. Campuses at green higher institutions have particular challenges. It is critical to lead the charge in the market for green knowledge. GKS, on the other hand, directly contributes to organizational innovation [131]. In the modern era, knowledge is the primary source of producing processes, replacing land, labor, money, machinery, and other fixed assets. GKS enables people to share their knowledge successfully, learn from one another, invent, and collaborate to achieve environmental change. It is a method through which a company purposefully and thoroughly gathers, arranges, shares, and evaluates its information based on its resources, abilities, and human resources. As a result, organizations dedicate significant resources to understanding its consequences, and it becomes a valuable topic in the field of environmental challenges. Environmental challenges provide businesses with high-quality data while providing an avenue for more research.

5.3. Limitations and Further Research

This research is cross-sectional. In order to gain a deeper understanding, future studies may employ a longitudinal research approach to look at the evolution of EEC and EP as a result of implementing green HRM practices over time. Second, many universities in Pakistan are working hard to transform their campuses into sustainable green ones. In order to generalize research results, future studies should involve universities from other countries and cultures. Future research that employs a qualitative technique may examine the connection between green HRM practices and sustainability outcomes. Additional influencing elements, such as corporate culture [132], managerial support [129], and employee attitude, should be considered in future studies [42].

Furthermore, other green HRM techniques, such as green work-life balance [44], should be included in future green HRM research. Future studies should include non-academic workers, such as administrative, technical, and operational staff, to offer an overall view of the university. Future leaders, students are eager to learn and take action to protect the environment on campus and in the community. Finally, other moderators, such as organizational citizenship behavior towards the environment [91], green employee empowerment [133], and employee green behavior [134], can also be utilized instead of GKS.

6. Conclusions

Green HRM practices serve numerous organizational goals. This research empirically examined the proposed and examined moderated-mediation model and found that employer involvement, motivation-enhancing, competency-building, and a green knowledge sharing culture assist universities in attaining their sustainable environmental performance goals by enhancing employee environmental commitment. Benefiting from the current findings, universities should integrate green HRM practices with environmental management programs, take specific steps to improve employees' environmental competence and motivation, promote green knowledge sharing, and effectively involve them in environmental management initiatives. In the long run, this would enable universities to fulfill their most coveted environmental sustainability objectives. The findings and their interpretation in light of prior research and the working hypotheses should be discussed by the authors. It is important to discuss the results and their implications in the broadest context possible. This may also highlight possible directions for future research.

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