

Article

Green HRM and Servant Leadership: Driving Competitive Advantage and Environmental Performance in Higher Education

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Abstract: The fast-changing landscape of organizations is driving a move toward environmental performance. Higher education now prioritizes sustainability. This study examines the moderating role of environmentally specific servant leadership (ESSL) from the resource-based view (RBV) and conservation of resources (COR) theories to understand how green human resource management (GHRM) practices affect environmental performance and competitive advantage in Saudi Arabian higher education institutions (HEIs). This study introduces an innovative variable's structure that has never been implemented in Saudi Arabian higher education. A random sampling method was used to survey 408 faculty and non-faculty members from 58 Saudi higher education institutions. Two direct and one interaction PLS-SEM models tested the framework and associated hypotheses using AMOS and SPSS. Significant and positive relationships are demonstrated among GHRM, environmental performance, and competitive advantage. Furthermore, ESSL had a significant positive effect on the relationship between GHRM and environmental performance, whereas there was a significant negative relationship between GHRM and competitive advantage. Both theoretical and practical implications, as well as various suggestions for future research, are provided.

Keywords: green HR; environmentally specific servant leadership; competitive advantage; environmental performance; higher education



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1. Introduction

Due to the intense global competition in all sectors and fields, it was inevitable that this competitiveness would extend to all levels of education, including higher education [1]. Higher education institutions (HEIs) aspired to enter the competition, particularly after the formation of international university rankings, for the sake of excellence and innovation, as opposed to just survival [2]. Therefore, the goal has become excellence and superiority over competitors for long-term periods, which is known as competitive advantage [3]. Consequently, the standards of quality, excellence, innovation, cost, and organizational flexibility play a significant role in the success, growth, and development of these HEIs [4].

Currently, communities are relying on HEIs to contribute to the preservation and sustainability of the environment by offering creative human resources with high potentials that are renewable, developing, and adaptable to change over time [5]. In the context of higher education, employee behavior is vital for the control of environmental degradation that supports green environmental performance [6]. Although HEIs generate less pollution than the corporate sector, they have a significant duty to promote environmental awareness and research, as well as educate current and future generations about the significance of pro-environmental conduct [7]. In addition, the importance of environmental sustainability on university campuses has increased because their activities and operations have direct and indirect environmental impacts in terms of material consumption, waste generation, excessive circulation of people and vehicles on campus, and electricity consumption [8–10]. Universities are increasingly recognizing the need to take environmental responsibility and

implement environmental management practices into their policies, curriculum, research, infrastructure, and other areas of campus life [11]. Despite this, their progress toward sustainability remains sluggish [12]. According to Yong et al. [13], research on green human resources management's (GHRM's) impact on organizational behavior is still in its development and should be extended to other contexts, such as higher education.

Human resources are regarded as one of the most essential resources and competences of competitive HEIs [14]. Human resources management (HRM) professionals must rethink their mission and broaden the scope of their practices by incorporating green management practices to improve the way they conduct fundamental HRM practices as organizations shift their strategies and priorities toward more environmentally conscious agendas [15]. GHRM strategies enhance employee green behavior to alleviate environmental challenges at the workplace [16]. Because greening an organization has an impact on many different aspects of that organization, including its supply chain, production, waste management, culture, values, strategies, and employee behaviors, green human resource management practices are essential to consider as a predictor of environmental performance [17]. Therefore, for HEIs to be environmentally compliant, both the faculty and professionals must contribute to the development and implementation of green supporting policies and procedures, particularly in a country such as Saudi Arabia that is transitioning to a green economy as part of its 2030 vision [18].

An important factor in whether or not green projects succeed is the quality of their leadership [19]. An increasing number of studies acknowledge the importance of leadership to organizational and individual green performance [19–21]. With its emphasis on caring for and serving others, servant leadership theory has been highlighted as an effective predictor of sustainability activities [22]. Robertson and Barling [23] propose bringing the concept of servant leadership into the environmental sphere, specifically by studying how a form of leadership known as “environmentally specific servant leadership” (ESSL) influences the achievement of predetermined environmental goals. Based on Tuan's [24] observations, ESSL is inspired by a desire to inspire and assist staff in achieving the organization's pro-environmental objectives. While some studies have shown that ESS leadership may be used as a predictor of pro-environmental conduct on the part of employees, a full knowledge of the mechanisms through which ESS leadership impacts such behavior is still lacking [21,24].

There has been a proliferation of GHRM research in a variety of fields in recent years, including tourism and hospitality [25], information and technology [26], sport facilities, the manufacturing industry [27], the healthcare industry [28], and the auto sector [29]. Nevertheless, there is a dearth of studies examining GHRM at HEIs [16,30,31], particularly in the Arabian Peninsula, including Saudi Arabia [32,33]. Although there has been extensive research on green HR practices in HEIs worldwide, the present status of GHRM practices in HEIs located in Saudi Arabia remains largely unexplored. Alshuwaikhat et al. [34] conducted a study on the Saudi context and concluded that HEIs in Saudi Arabia are not adequately implementing green practices. That study suggests that there is a pressing need for HEIs in Saudi Arabia to formulate comprehensive strategies and policies to promote sustainability and environmental awareness.

This study aims to investigate the current state of green HR practices in HEIs in Saudi Arabia, with a focus on their adoption, impact on environmental performance, and competitive advantage. It investigates how these practices develop green intellectual capital and contribute to the literature on GHRM. In addition, the study verifies the measures of GHRM, competitive advantage, environmental performance, and ESSL, and adds novel empirical evidence to the link between GHRM and competitive advantage [35–37]. Furthermore, the study investigates the moderating role of ESSL on the relationship between GHRM, competitive advantage, and environmental performance. Additionally, the research provides practical and theoretical implications for solving green challenges within the higher education field.

2. Literature Review and Hypothesis

2.1. Green Human Resources Management (GHRM)

GHRM, which is defined as the environmental element of management, strives to enhance environmental performance and contribute to the environmental sustainability of businesses [15]. It encompasses all behaviors that contribute to the economic, environmental, and social sustainability of a business [17]. In addition, academics have recognized GHRM as a new field of study with the objective of examining organizational environment management through the use of human resource management methods [36,38]. GHRM consists of five primary initiatives: green recruitment and selection, green training and development, green performance management, green compensation and rewards, and green participation [39]. Organizations that adopt these policies may gain credibility in the eyes of current and prospective customers and provide a service to future generations [40].

Higher education institutions (HEIs) play a crucial role in educating and shaping the future generation, thereby rendering the implementation of GHRM highly pertinent [41]. However, there is a lack of understanding of how HEIs differ from other organizations in terms of their approach to GHRM [31,42]. Green practices such as sustainable procurement [43], eco-friendly facilities management [44], green curriculum [45], and employee engagement [46] have been identified as being pertinent to HEIs. For example, HEIs can reduce their environmental impact through eco-friendly facilities management practices and integrate sustainability and environmental issues into their curriculum [47]. HEIs' unique characteristics, such as their societal role and mission to educate and disseminate knowledge, differentiate their approach to GHRM from other organizations [48]. Moreover, HEIs are subject to varying regulations and stakeholder pressures, necessitating a unique approach to GHRM that accounts for their specific characteristics and societal roles [49].

2.2. GHRM and Environmental Performance

Environmental performance is a concept that describes the operations of companies in relation to societal expectations for an eco-friendly environment [50]. It depicts the ecological impact of company production by utilizing resources in accordance with the official environment's standards [51]. Successful environmental performance is tied to the extent to which a company is able to reduce pollution [52], standardize waste acquittal [53], administer recycling [54], revive processes [55], and establish ecological management systems [56], among other things [8,10]. These maintenance efforts require the assistance of human resource management in order to properly apply the methodologies and attain the targets in order to improve environmental performance [15]. According to Starr-Glass [57], environmental management and human resources must work closely together to implement an environmental management system. The empirical relationship between GHRM practice and environmental performance has been demonstrated through studies on sustainable green habitats. Studies carried out by Roscoe et al. [58] and Álvarez Jaramillo et al. [59], for instance, show that GHRM practices are a key technique for firms trying to develop intellectual resources to improve their overall economic sustainability, and enhance their environmental performance. In addition, Renwick et al. [60] noted that GHRM is an essential system that can be utilized for optimal green strategy execution and environmental management practices, which may have a significant impact on the environmental sustainability of an organization [61,62]. Thus, it could be hypothesized that:

Hypothesis 1. *Adopting GHRM will lead to better environmental performance.*

2.3. GHRM and Competitive Advantage

A company's image and competitive advantage rely heavily on compliance with environmental regulations and practices [63]. Indeed, one of the most important components in developing a competitive edge is the use of human resources [64]. Human resources, which Tooranloo et al. [65] identify as the primary pillar of a company's competitive advantage, are regarded as an indispensable resource that is difficult to imitate by competitors. Com-

petitive advantage is viewed as the ultimate objective for every organization that wishes to survive in an environment marked by increasingly intense and often unjust competition [3]. To obtain and retain this competitive advantage, organizations must be able to emphasize a higher difference or relative value than their competitors and effectively communicate this information to their target audience [66]. Therefore, an organization has a competitive advantage if it can produce goods or services more efficiently than its competitors. In this aspect, Barney [67] contends that a company has a competitive advantage if it employs a value-creating approach that is not simultaneously employed by any existing or future competitors. Consequently, several scholars argued that human resource management has evolved from a strictly administrative and bureaucratic role to a strategic function, consequently enhancing organizations' competitive advantage and value generation [68–70]. Thus, it could be hypothesized that:

Hypothesis 2. *The adoption of GHRM practices can potentially provide HEIs with a competitive advantage.*

2.4. The Moderating Role of Environmentally Specific Servant Leadership

In the past decade, leadership studies have begun to turn their emphasis towards environmental concerns, and environmentally specific conceptions of various leadership styles have arisen [21,71–73]. To date, environmental-specific or “green” transformational leadership has received a considerable proportion of research forecasting its impact on employees' environment-related attitudes [74–76]. The field of environmentally related servant leadership had not seen much interest from academics until recently, when Tuan [24] introduced the concept of environmentally specific servant leadership (ESSL). ESSL requires leaders to provide a positive example, demonstrate dedication to green goals, possess green values, and support other employees in contributing to the company's sustainable growth [24]. Therefore, environmental leaders provide guidance on enabling and developing individuals to be ecologically conscientious and display interpersonal acceptance, humility, and contribution to green performance [24].

The conservation of resources (COR) theory [77] has been used in recent studies [20,21,78–80] to emphasize the value of servant leadership as a source of resources for employees' proactive and out-of-role actions. Consequently, this research uses COR theory to examine whether and how ESSL promotes environmental performance. According to the COR theory, when individuals have sufficient resources from a contextual source, they are more likely to adopt a proactive, as opposed to a reactive, resource gain strategy to accumulate additional resources, experience resource gain spirals, and invest their existing resources in behaviors that exceed the minimum standards [77]. As a source of green-related resources (such as expertise, value, and support), ESSL may assist its members in assembling a pool of green-related resources. In a setting rich with green-related resources that ESSL fosters, members may build and share positive perceptions of green value and norm, resulting in the creation of a green climate that further synergizes member efforts for team green performance [81]. In addition, members who hold additional green-related resources in a green atmosphere (e.g., social resources from colleagues) are more likely to acquire additional green-related resources to engage in green behaviors. Through the viewpoint of task crafting, people who have access to green-related resources in a green climate are more likely to proactively craft their green tasks and engage in green behavior [21]. Thus, it could be hypothesized that:

Hypothesis 3. *ESSL moderates the relationship between GHRM and environmental performance in organizations.*

This study is founded on the resource-based view (RBV) theory [82], which contends that an organization possesses both tangible and intangible assets that enable it to gain a competitive advantage and endure in the face of industry rivalry. The tangible assets

include fixed assets such as ownership of a building, machinery, land, and other important resources, while the intangible assets include the brand name and equity, employee competency, and other factors. There has been a rise in interest in the study of organizational resources and the formulation and implementation of sustainable business practices, and the RBV theory has often been used to examine such relationships [83,84]. Moreover, as Jackson and Seo [38] concluded, businesses that incorporate sustainable principles into their culture, particularly within human resource management, are typically more profitable. Therefore, it can be stated that the implementation of sustainable measures depends on the mobilization of both real and intangible internal resources [85–87]. Thus, it could be hypothesized that:

Hypothesis 4. *ESSL moderates the relationship between GHRM and organizational competitive advantages.*

Based on the above literature review, the theoretical framework of this study is presented in Figure 1:

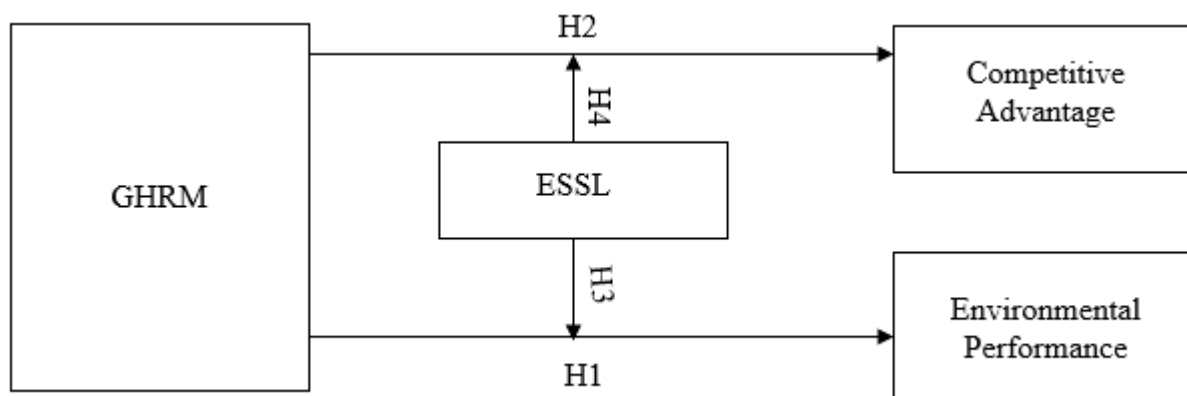


Figure 1. The theoretical model.

3. Methodology

3.1. Research Design

This study sought to investigate the relationships between green human resources management (GHRM), environmentally specific servant leadership (ESSL), environmental performance, and competitive advantage using a cross-sectional survey research design. Cross-sectional surveys are appropriate for analyzing relationships and gathering data to verify hypotheses [88]. The data were gathered from individuals using quantitative research methods. This tactic calls for the systematic collection of data from a subject using a technique that is consistent, as well as through the use of statistical measures and analysis that are generally recognized and approved [89]. In addition to this, it enables researchers to evaluate the generalizability of their findings by drawing comparisons across a variety of units [90].

3.2. Participants and Procedures

This study's population consisted of faculty and non-faculty members working in Saudi Arabia's public and private higher education institutions (HEIs). As the unit of analysis, 408 full-time employees from 58 HEIs were included. Employees are considered essential resources in the adoption of GHRM practices; therefore, the study examined GHRM practices at the micro-level, focusing specifically on individual employees. Using a simple random sampling technique, 1000 HEI employees were invited via email to participate in a 5-min, voluntary, and anonymous online survey. The sample size for this study was calculated using a power analysis, which determined that a minimum sample size of 384 was required to achieve a power of 0.8 with an alpha level of 0.05 [91]. However,

the researcher decided to increase the sample size to account for potential incomplete or invalid responses [92]. The survey contained information about the study and guaranteed participants' anonymity. The web-based survey yielded a response rate of 46%, with 462 completed questionnaires collected by the researcher. The removal of invalid responses yielded a total of 408 valid responses. The number of participants was sufficient for the study as a sample-to-item ratio of 10:1 is required for multivariate data analysis and a minimum sample size of 100 is required for structural equation modeling [93].

3.3. Measures

Specifically for this study, the researcher developed measures of green human resource management (GHRM), environmentally specific servant leadership (ESSL), environmental performance, and competitive advantage. Due to the fact that each variable was measured via two distinct statements, the survey contained a total of eight elements. These standards were developed based on prior research and the researcher's extensive experience in the relevant field to ensure that the variables were evaluated accurately throughout the investigation. The use of a limited number of statements for each variable made it possible to collect data in a more focused and directed manner while still providing sufficient data for the examination of the relationships between the variables [94]. It can aid in minimizing respondent fatigue and task difficulty [95]. Additionally, it can help keep the survey engaging and avoid overwhelming respondents with a series of difficult inquiries [96].

On a 5-point Likert scale ranging from "very strongly disagree" to "very strongly agree", all measures were ranked. The five-point scale, which was designed by the researcher, was chosen since it is widely used in contemporary scientific studies. This scale was also selected because of the accuracy it offers in measuring the respondents' attitudes and opinions [97]. In addition, this study controlled for employees' age, gender, and type of job.

A pre-test and pilot survey were conducted to assure the validity and reliability of the research instrument. The survey instrument's internal validity was evaluated by three academic experts. To ensure clarity and comprehension of the questions, minor adjustments were made in response to their feedback. The questionnaire was then distributed to 42 participants for the pilot study, and a total of 27 responses were received, 19 from men and 8 from women. The pilot survey was useful for identifying any potential issues with the survey instrument and ensuring that the questions were understandable and relevant to the participants.

To evaluate the instrument's reliability, Cronbach's alpha was calculated for each scale. A Cronbach's alpha value of 0.7 or higher is regarded as acceptable, according to Nunnally [98]. All instruments in this study had Cronbach's alpha values greater than 0.70, indicating a high level of internal consistency and instrument reliability. This ensures the survey data are reliable and can be used to derive valid conclusions regarding the relationships between GHRM, ESSL, environmental performance, and competitive advantage in the Saudi Arabian higher education sector.

3.4. Demographic Profile of the Sample

The survey reveals that the majority of respondents were male (64.7%, $n = 264$) and between the ages of 31 and 40 (64.7%, $n = 264$). In terms of the highest level of education, 47.1% of respondents ($n = 192$) held a PhD, and the majority of them were faculty members. In addition, 11.8% of respondents ($n = 48$) held a master's degree and held lecturing positions. A minor percentage of respondents (5.9%, $n = 24$) were language instructors, whereas the remainder of the sample (35.3%, $n = 144$) were administrators. The high percentage of respondents with a PhD indicates a relatively educated sample population, which may affect the generalizability of the findings in other sectors. Additionally, the preponderance of male respondents and faculty members is noteworthy, which may reflect the gender and occupational distribution within the Saudi Arabian higher education sector. Table 1 provides a more detailed description of the sample's characteristics.

Table 1. Demographic characteristics.

Demographic Variable	Characteristic	Frequency	%
Gender	Male	264	64.7
	Female	144	35.3
Age	18–30	48	11.8
	31–40	246	64.7
	41–50	72	17.6
	Above 50	24	5.9
	Faculty members	192	47.1
Type of job	Lecturers	48	11.8
	English instructors	24	5.9
	Administrations	144	35.3

3.5. Data Analysis Procedures

This study utilized IBM SPSS Statistics version 28.0 and AMOS version 28.0 to analyze the collected data. Smart-partial least squares (PLS) was utilized due to its capacity to simultaneously reveal the relationship between all latent components while accounting for measurement errors in the structural model [99]. Recent research in human resource management and marketing has shown increased interest in PLS [100–102]. As this is an explanatory study, PLS is appropriate for attaining its goals. In addition, structural equation modeling (SEM) is a second-generation multidimensional data analysis method that examines linear and additive causal links [103]. PLS is regarded as a trustworthy method for relatively small or large sample sizes [104]. SEM incorporates inner and exterior model analyses that assess the relationships between independent and dependent variables, latent constructs, and their observed points. In contrast, PLS focuses predominantly on variance analysis, which can be conducted using Smart PLS [105]. Consequently, PLS-SEM statistical analysis is suitable for the current study.

4. Results

4.1. Measurement Model Fittest

In order to examine the construct reliability, convergent validity, and discriminant validity of the multi-item measuring scales, a confirmatory factor analysis (CFA) was carried out [106]. Using AMOS v. 28.0, the results of the CFA suggest that the measurement model and the dataset have a fit that is satisfactory to one another ($\chi^2/df = 4.025$; TLI = 0.974; CFI = 0.987; IFI = 0.987; RMSEA = 0.086; RMR = 0.022).

In this study, reliability analyses of PLS-SEM constructs were conducted using the composite reliability technique and Cronbach's alpha coefficients, as reported by Hair et al. [97]. According to the data shown in Table 2, every value was higher than the cutoff point of 0.5, which lends credence to the conclusions drawn by Bagozzi and Yi [107] and Hair et al. [108]. According to Cronbach [109] and Bagozzi and Yi [107], a Cronbach's alpha of at least 0.60 and preferably 0.70 is required for the statistic to be accepted. Because the criteria were exceeded by this study's PLS-SEM assessments, it would indicate that the research structures could be relied upon. To determine outer model suitability, composite reliability (CR) was used to evaluate the validity and reliability of the study's measures [101]. All of the CR test findings in this study are within the acceptable range (a threshold of 0.7) [98,110]. For the components under analysis, the smallest CR coefficient is 0.712, while the highest is 0.940. Using a convergent validity indicator, this is performed to assess the nature of the relationship between constructs based on the average variance extracted (AVE) threshold of 0.50 and above, as suggested by Hair et al. [97] and Henseler et al. [111]. After the convergent validity analysis, the researcher looked at the heterotrait–monotrait (HTMT) ratio of correlations to determine the discriminant validity [111]. As mentioned by Gold et al. [112], discriminant validity is in question if the HTMT score is higher than 0.90. In this study, the results of the HTMT tests were within acceptable ranges. As a result,

one may draw the conclusion that all of the statistical numbers presented in Table 2 are accurate and trustworthy for the purpose of drawing statistical inferences.

Table 2. Construct reliability and validity.

Variables	AVE	(α)	CR	HTMT		
				1	2	3
(1) GHRM	0.702	0.790	0.822			
(2) ESSL	0.887	0.939	0.940	0.769		
(3) Environmental performance	0.596	0.821	0.712	0.669	0.703	
(4) Competitive advantage	0.847	0.910	0.917	0.785	0.850	0.636

Discriminant validity is used in a PLS-SEM analysis to verify the distinctiveness of the study's constructs [97]. Thus, the Fornell–Larcker criterion is used to check the research's discriminant validity. Moreover, the Fornell–Larcker criteria state that the square root of each AVE construct should be larger than the greatest correlation across constructs. As a result, it is possible to infer that the square root of AVE satisfies the necessary validity condition for discriminants. Table 3 displays the results of the analysis, detailing the Fornell–Larcker criteria values for each variable. The results show that the computed square root of AVE is greater than the correlation values. Thus, the statistical requirement for the discriminant validity criteria has been met for the model used in this study.

Table 3. Fornell–Larcker criterion.

	1	2	3	4
(1) GHRM	0.838			
(2) ESSL	0.782 ***	0.942		
(3) Environmental Performance	0.722 ***	0.737 ***	0.772	
(4) Competitive Advantage	0.796 ***	0.847 ***	0.674 ***	0.920

*** Correlation is significant at the 0.001 level (two-tailed).

Each of the items loaded strongly for the latent constructs that were related to them. Bagozzi and Yi [107] state that the most accurate measurement of a latent variable that is being investigated is a loading that is greater than 0.6, which serves as a threshold. In the current study, these indicators have a load range of 0.726–0.938, which corresponds to their intended measurements. In addition, multicollinearity was assessed using variance inflation factor (VIF) values. VIF values exceeding 10 were considered to indicate high multicollinearity among the independent variables [97,113]. The results revealed that the VIF values for all independent variables were below 10, indicating that multicollinearity was not a concern in the present study. Furthermore, the Durbin–Watson test was conducted to examine the presence of autocorrelation in the data. The test result indicated a Durbin–Watson value of 2.207, which is within the acceptable range of 1.5 to 2.5 [94]. Thus, there is no significant autocorrelation in the data for this study. Table 4 presents the findings of the measurement model for constructs together with their relative loadings, means, and standard deviation.

Table 4. Measurement model for constructs.

	Items	VIF	Mean	SD	Factor Loading
Green Human Resources Management	GHRM1	2.770	3.52	1.099	0.920
	GHRM2	1.896	2.70	8.64	0.732
Environmentally Specific Servant Leadership	ESSL1	4.917	3.23	1.142	0.890
	ESSL2	6.855	3.23	1.119	0.932
Environmental Performance	EP1	3.797	3.67	1.031	0.903
	EP2	1.262	3.90	8.757	0.726
Competitive Advantage	CA1	6.155	3.58	0.889	0.938
	CA2	3.697	3.35	1.004	0.850

Note: VIF = variance inflation factor; SD = standard deviation.

4.2. Hypothesis Testing

As displayed in Table 5, GHRM was positively and significantly associated with environmental performance ($\beta = 0.448$; SEM = 0.047; t-value = 9.581; p -values < 0.0001) and competitive advantage ($\beta = 0.277$; SEM = 0.043; t-value = 4.866; p -values < 0.0001). Those findings supported both the first and second hypotheses in this study.

Table 5. Path coefficient.

Hypothesis	Effect	(β)	SEM	t-Value	p -Values	Results
Direct effect						
H1	GHRM → Environmental Performance	0.448	0.047	9.581	0.000	Supported
H2	GHRM → Competitive Advantage	0.207	0.043	4.866	0.000	Supported
Moderation (interactive) effect						
H3	ESSL: GHRM → Environmental Performance	0.157	0.027	5.799	0.000	Supported
H4	ESSL: GHRM → Competitive Advantage	−0.16	0.025	−6.78	0.000	Supported

Note: β = regression coefficient; SEM = standard error of the mean.

The findings indicated that there is a significant positive interaction term of ESSL on the association between GHRM and environmental performance for HEIs in Saudi Arabia ($\beta = 0.157$; SEM = 0.027; t-value = 5.799; p -values < 0.0001). The results of a simple slope test [114] and the plotted interaction (Figure 2), which demonstrated that ESSL reinforces the positive association between GHRM and environmental performance, were found in the previous sentence. To be more precise, the degree to which ESSL improved environmental performance was proportionally greater when GHRM was at a higher level as opposed to when it was at a lower level. This result offers additional support for the third hypothesis that was addressed in the study.

The study examined the moderating effect of ESSL on the relationship between GHRM and HEIs' competitive advantages. The results showed that ESSL has a negative and statistically significant moderating effect on the relationship between GHRM and competitive advantage ($\beta = -0.167$; SEM = 0.025; t-value = −6.777; p -values < 0.0001), confirming the fourth hypothesis of this study. Figure 3 depicts the results of a simple slope analysis conducted to better comprehend the nature of the moderating effect [114]; the line is much steeper for low ESSL. This demonstrates that at low ESSL levels, the effect of GHRM on competitive advantage is significantly greater than at high ESSL levels. Therefore, as ESSL levels increased, the relationship between GHRM and competitive advantage became weaker.

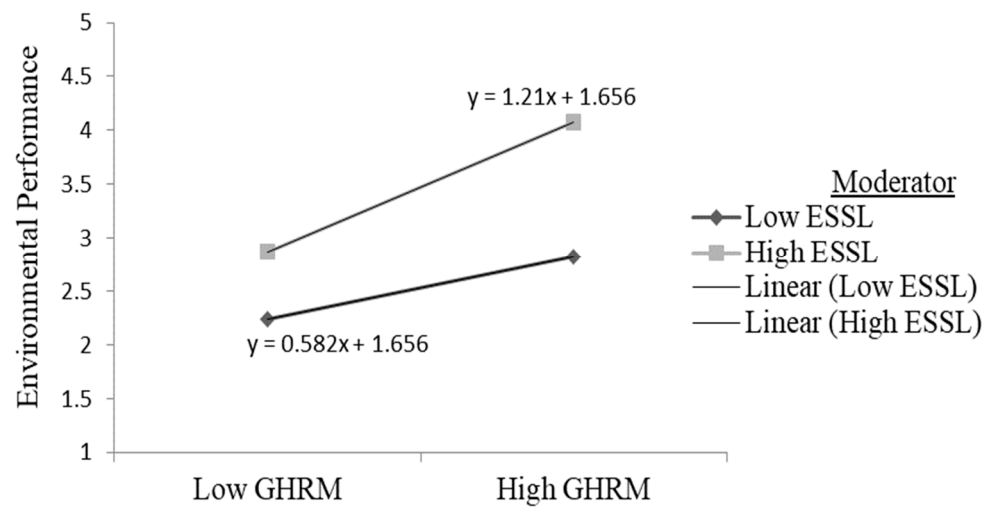


Figure 2. Moderating effect of ESSL on environmental performance.

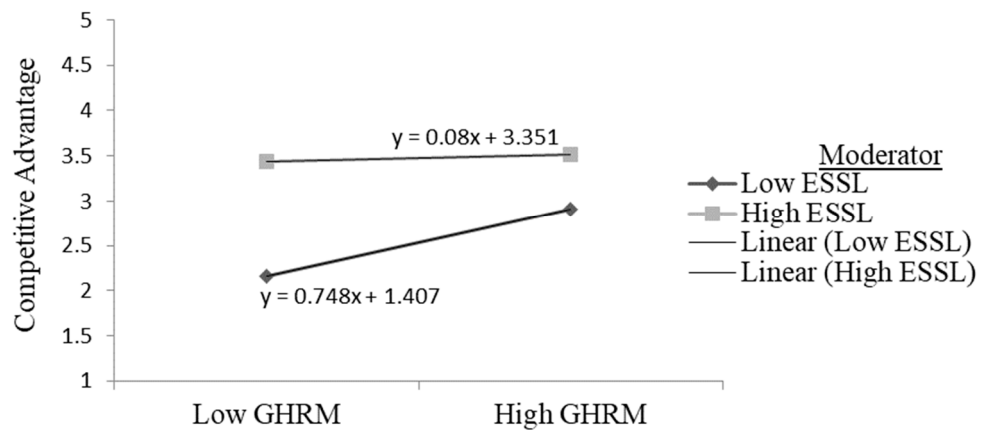


Figure 3. Moderating effect of ESSL on competitive advantage.

5. Discussion

This study developed a four-hypothesis moderating model using the COR and RBV theories. Considering ESSL's moderating effect, the study examined how GHRM practices promote environmental performance and competitiveness in Saudi Arabia's higher education institutions. This study verified the first hypothesis, which postulated a positive direct relationship between GHRM and environmental performance. This result is consistent with those of prior investigations conducted by various scholars [25,39,58,61,62,115–118].

The current research study supports the literature on the relationship between GHRM and competitive advantage, which supports the second hypothesis in this study [64,68,69,119–124]. More specifically, the current research confirmed a positive significant influence of GHRM on the competitive advantage of the higher education sector in the Saudi context. As a result, HEIs may use GHRM procedures to encourage the dissemination of information and the development of environmental consciousness among their employees through green target training and awareness-raising campaigns. This has the potential to provide HEIs with the competitive advantage they need in the marketplace.

The findings of the study supported the third and fourth hypotheses that ESSL moderates the association between GHRM and both environmental performance and competitive advantage. This is consistent with prior studies regarding ESSL's moderating impact on green-related associations [64,125,126]. The finding that ESSL weakens the relationship between GHRM and competitive advantage is particularly interesting in light of the RBV theory [82], which asserts that a company's resources and capabilities can provide it with a

competitive advantage. In the case of GHRM, HR practices that prioritize environmental concerns are viewed as rare and valuable resources that can contribute to a company's competitive advantage. To provide a sustained competitive advantage, RBV theory also posits that a resource must be difficult for competitors to imitate or substitute [127]. This is where ESSL becomes relevant. If competitors can readily imitate or replace this type of leadership, then a company's GHRM practices may not provide as much of a sustained competitive advantage as was initially assumed. The finding that ESSL weakens the relationship between GHRM and competitive advantage may indicate that ESSL is not a rare or difficult-to-imitate resource in Saudi higher education institutions.

There are various additional potential reasons that could account for the emergence of the negative moderation effect. It is possible that an ESSL approach may excessively prioritize environmental sustainability, to the detriment of other aspects of organizational performance, such as financial performance or customer satisfaction. This could lead to an imbalance in organizational priorities, resulting in a decline in competitive advantage [128]. In addition, ESSL may not be effectively integrated into the organization's culture and values, leading to a lack of buy-in from employees [129] and difficulty in implementing GHRM practices effectively. This could reduce the potential benefits of GHRM practices in improving competitive advantage. Furthermore, the negative moderation effect could also be due to the limited availability of resources [82] and funding for environmental sustainability initiatives, which could limit the potential impact of GHRM practices on competitive advantage, even with the presence of ESSL.

5.1. Theoretical Implications

This study makes a number of important contributions to the current literature in several ways: First, this research establishes GHRM as a primary factor in environmental performance and green competitive advantage. Furthermore, this study adds to the current literature in a distinctive and informative approach by empirically examining the influence of GHRM on competitive advantage in particular. A limitation of the current literature is that, with one exception [64], researchers have only conceptually studied this link in previous studies [35–37]. Second, this research offers a helpful integrated model that can be used as a road map to show how Saudi higher education institutions may use an additional framework to provide a deeper explanation of how they can strengthen their roles on the issue of environmental sustainability through the GHRM. Third, the findings of this study contribute to a deeper comprehension of the impact that ESSL has on environmental performance. Despite the fact that a number of studies have demonstrated that ESSL may be utilized as a predictor of environmentally conscious conduct on the part of employees, a comprehensive understanding of the processes via which ESSL influences such behavior is still lacking [21,24]. Fourth, this research broadens the scope of COR theory's application to studies of green management and offers a new theoretical angle on RBV theory's utility in the environmental and educational sectors.

5.2. Practical Implications

There are a number of practical implications from this study that may be used towards greening the education sector and, more specifically, higher education institutions. First, the study's findings help the higher education sector since they encourage more environmentally friendly actions by its employees and faculty members. The results imply that GHRM characteristics might assist HEIs in recruiting, retaining, and training employees who care about the environment and will therefore back the institution's greening efforts. Because of the correlation we found between GHRM and environmental performance, the findings of this study should encourage management authorities in the higher education sector to reconsider and adopt the recommendations of Pellegrini et al. [130] about the improvement of HR practices in order to achieve environmentally friendly results. The adoption of GHRM practices may help businesses cultivate an optimistic and eco-aware

perspective, which in turn encourages environmentally responsible actions and boosts the organization's environmental sustainability.

Second, the results have important implications for HEIs that want to gain a competitive edge by improving their HRM and environmental performance. They may need to put more effort into creating unique and hard-to-replicate natural resources and skills if they want to gain a lasting competitive edge over their competitors. Green target training and awareness-raising campaigns are two additional ways in which HEIs can use GHRM practices to provide knowledge and foster environmental awareness among their staff. HEIs may gain a competitive edge as a result of this.

Third, management should support ESSL cautiously since it is a limiting factor that improves environmental performance but has an unanticipated detrimental effect on competitive advantage when GHRM is present. This study's positive finding regarding ESSL's influence on the relationship between GHRM and environmental performance is consistent with previous research showing how employees can implement GHRM principles to increase their environmental consciousness [131–134]. In addition, managers need to ensure that their leaders are putting the needs of their staff and the organization's ecosystem first [135].

5.3. Limitations and Future Research

This research has certain limitations, as previous studies do as well. The conceptual paradigm was first put to the test with information culled from Saudi Arabian HEIs. Despite the important theoretical and practical contributions of this study, the researcher notes that its results cannot be extrapolated to other countries, cultures, or economies. As a result, it is recommended that future research attempt to verify and replicate the model in many contexts, including but not limited to those with varying economic and cultural conditions. Second, only a subset of GHRM procedures were included in this analysis. Since GHRM is a multi-dimensional construct, it is advised that future research investigate the dimensions affecting behavior and environmental performance in order to obtain deeper insights. Third, a quantitative self-report questionnaire was used to compile the data. As a result, in the future, researchers may look to qualitative outcomes as evidence that HEIs' performance is affected by green activities. Fourth, demographic features in this study might give invaluable insights into the sample population and must be taken into account. Given the large proportion of Ph.D.-holding respondents, it is possible that the results cannot be extrapolated to other industries. It is also interesting to notice that most responders and professors are men, which may represent the gender and vocational distribution in Saudi Arabia's academic community. Fifth, it's equally fascinating to investigate the factors that mediate GHRM's impact on environmental performance and competitive advantage. Finally, the potential for common method bias could be seen as one of the limitations of this study. The Harman's single-factor test conducted in this study showed a value of 67.453%, which is relatively high. However, this value does not necessarily indicate the presence of common method bias [136]. To address this issue, the study employed several other techniques, including a full collinearity test, Durbin–Watson test, and assessments of reliability and validity using composite reliability technique, Cronbach's alpha coefficients, and convergent and discriminant validity analyses. Although the results of these tests and analyses suggested that the study did not suffer from common method bias, the potential for this bias cannot be entirely ruled out. Therefore, caution should be exercised when interpreting the results of this study.

6. Conclusions

This study investigates the impact of GHRM practices on the environmental performance and competitive advantage of HEIs in Saudi Arabia. The research has revealed that there exist significant positive correlations between GHRM and both environmental performance and competitive advantage, which is in line with previous studies. ESSL moderates the association between GHRM and both environmental performance and competitive

advantage. The research offers valuable perspectives on how HEIs can effectively prioritize sustainability and environmental performance by implementing GHRM practices ESSL.

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