

DOI: 10.5281/zenodo.19401124

TOWARD A SMART AND SUSTAINABLE UNIVERSITY MODEL: STRATEGIC GREEN HUMAN RESOURCE MANAGEMENT AS A CATALYST FOR ORGANIZATIONAL TRANSFORMATION EVIDENCE FROM KING KHALID UNIVERSITY

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Received: 20/02/2026
Accepted: 30/03/2026

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ABSTRACT

This study examines the combined influence of strategic green human resource management and corporate social responsibility on enhancing sustainable performance in Saudi universities as they transition toward smart and sustainable institutional models aligned with Saudi Vision 2030. Drawing on the resource-based view, stakeholder theory, and triple bottom line framework, this study conceptualizes corporate social responsibility as a mediating mechanism that translates sustainability-oriented human resource practices into long-term economic, social, and environmental outcomes. A quantitative cross-sectional research design was employed using a structured survey administered to academic and administrative staff involved in human resource management and sustainability initiatives at Saudi universities, with empirical data collected from King Khalid University. The proposed conceptual model was analyzed using partial least squares structural equation modeling. The results reveal that strategic green human resource management significantly influences both corporate social responsibility and sustainable performance, while corporate social responsibility partially mediates the relationship between strategic green human resource management and sustainability outcomes. These findings highlight the strategic role of sustainability-oriented human resource practices in embedding environmental awareness, ethical values, and social accountability within university governance systems. This study contributes to the literature by providing empirical evidence on the integration of strategic green human resource management and corporate social responsibility as complementary mechanisms for enhancing sustainable performance in higher education institutions. Practically, the findings offer strategic insights for university leaders and policymakers seeking to develop intelligent, resilient, and socially responsible universities capable of generating sustainable value for diverse stakeholders.

KEYWORDS: Smart and Sustainable University; Strategic Green Human Resource Management; Corporate Social Responsibility; Sustainable Performance.

1. INTRODUCTION

There is growing recognition of universities as key agents in promoting global sustainable development by integrating environmental stewardship, social equity, and economic viability into their management and operations. In a time of technological change and environmental crisis, universities' mission also goes beyond the transmission of knowledge to include the expectation of serving as a good example in sustainable development through responsible leadership, creativity, and social responsibility. The nascent notion of a smart and sustainable university enacts this ideal by serving as an institution that integrates technological development with ethical, environmental, and social considerations to deliver sustainable value to its stakeholders (Lozano et al., 2021).

This shift is critical in Saudi Arabia, where Vision 2030 focuses on building a knowledge-based green economy that integrates education, innovation, and sustainability. Universities are leading this national change, as they are required to serve sustainability and good governance in the public sphere (Al-Sabban et al., 2024). Nevertheless, while universities are increasingly placing more emphasis on sustainability, many still struggle to make it actionable and tangible.

The problem is to connect local human resource practices with global societal effects, which requires aligning an organization's culture and people with its own institutional sustainability agenda. This gap outlines the research problem of the present study: Although green practices are increasingly being adopted within higher education, the processes by which internal sustainability-based practices—particularly in human resource management—are converted into organizational and societal outcomes remain unclear. Prior studies have commonly examined strategic green human resource management (SGHRM) and corporate social responsibility (CSR) separately or in the context of corporations; therefore, the understanding of their combined effect on SP in HEIs is minimal (Guerci et al., 2023; Jamali & Karam, 2018). In addition, empirical studies in the Middle East, especially in Saudi higher education, remain limited, despite the country's aggressive sustainability plan.

Filling this void, the present study also underscores the significance of human-centered approaches as the basis for sustainability transformation. SGHRM, as a strategic instrument, integrates environmental consciousness, ethical behavior, and social considerations into HR practices

(e.g., recruitment, training, performance assessment, and rewards) (Renwick et al., 2016). Complementarily, CSR functions as a behavioral and strategic conduit, translating these intrinsic principles into responsible conduct that deepens community involvement, stakeholder confidence, and organizational reputation (Jamali & Karam, 2018). In contrast, SHRM and CSR, combined, provide a complementary system of mechanisms that universities can employ to attain long-term, sustainable performance (SP) across economic, social, and environmental aspects.

The goals of this study are threefold.

- To explore the impact of SGHRM on SP in the context of Saudi universities.
- To assess the mediating effect of CSR between SGHRM and SP.
- To propose an integrative framework based on the resource-based view (RBV), stakeholder theory, and the triple bottom line (TBL) on the role of HR strategies in leading sustainable change in HE.

In doing so, this study contributes to both theory and practice. From a theoretical perspective, it advances the sustainability and human resource management literature by conceptualizing Corporate Social Responsibility (CSR) as a mediating mechanism that translates human capital capabilities into tangible sustainability outcomes. From a practical perspective, the study offers relevant policy and managerial implications for university leaders and decision-makers seeking to embed sustainability at the core of institutional missions, aligned with Saudi Vision 2030 and the United Nations Sustainable Development Goals (SDGs).

Overall, the study proposes a holistic human-centered approach that integrates Strategic Green Human Resource Management (SGHRM) and CSR as complementary strategic mechanisms for developing smart, sustainable, and socially responsible universities. Such integration has the potential to align technological innovation with ethical, social, and environmental considerations, which is increasingly essential for higher education institutions operating in the complex challenges of the twenty-first century.

2. THEORETICAL BACKGROUND

2.1. Strategic Green Human Resource Management (SGHRM)

The increasing prioritization of sustainability issues has elevated Human Resource Management (HRM) from a functional role to a strategic lever of social and environmental change. SGHRM is a

strategic-level concept that integrates green values, environmental consciousness, and social ethics into HRM practices and systems to promote long-term organizational sustainability (Guerci et al., 2023; Jabbour & de Sousa Jabbour, 2016).

SGHRM is a collection of closely linked practices—green recruitment and selection, green training and development, green performance appraisal, and green compensation and rewards—that collectively seek to infiltrate the organization's DNA with sustainability (Renwick et al., 2016; Guerci et al., 2023).

As a result of these practices, businesses recruit environmentally conscious people, develop sustainability capabilities within them, and align personal and organizational ecological/ethical goals. From the RBV perspective, SGHRM is characterized as an intangible, valuable, rare, and difficult-to-imitate resource (Barney, 1991; Hart, 1995). Green-oriented human capital is a distinct competitive edge because it fosters innovation, lifelong learning, and corporate social responsibility (Hart & Dowell, 2011). This human capital contributes not only to internal operational efficiency but also to the organization's capacity to manage a rapidly changing sustainability agenda. Empirical evidence shows that organizations implementing SGHRM systems have higher levels of innovation, better environmental performance, and greater institutional legitimacy (Guerci et al., 2023; Al-Sabban et al., 2024).

Particularly in universities, SGHRM is crucial because academic institutions fulfil two functions: knowledge production and social transformation. GHRM thus constitutes a systemic and cultural baseline through which to instill a sustainability mindset in staff, faculty, and students, and in the university as a whole space of interaction, where environmental and social invention (Lozano et al., 2021) occurs.

Therefore, universities practicing SGHRM are expected to have more robust ethical governance, stakeholder engagement, and environmental concern, all of which naturally reinforce their social responsibility activities. Hence, the following hypothesis is proposed:

H1: SGHRM positively affects CSR.

2.2 Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) is an ethical and managerial response to the demands of internal and external stakeholders regarding environmental conservation, social justice, and ethical management (Carroll, 1999; Freeman, 1984).

CSR in higher education is more than

philanthropy; it is a university's engagement in sustainable development through ethical governance, responsible campus operations, participative community engagement, and equitable stakeholder relations (Turker, 2009; Jamali & Karam, 2018).

From the perspective of Stakeholder Theory, CSR ensures that organizational behavior meets the value and interest expectations of stakeholders, including employees, students, communities, governments, and future generations (Donaldson & Preston, 1995; Mishra & Suar, 2021).

CSR Universities that put CSR into practice effectively gain a competitive advantage to position themselves as credible players in society, going beyond the mere provision of graduates and research to social value and environmental care.

In this respect, SGHRM is the internal impetus and CSR the external expression of that motility. Staffed by green HRM employees, employees who have absorbed sustainability concepts, who have gone more to socially responsible ones, such as waste recycling, waste management, ethical leadership seminars, and community organization concerning environmental work (Guerci et al., 2023; Ardito et al., 2022).

Therefore, CSR serves as a behavioral transmission mechanism through which human capital development (through SGHRM) translates into organizational behaviors, leading to sustainable results.

In other words, CSR "greens" human resource management by bringing ethical responsibility, transparency, and accountability into organizational governance mechanisms (Alotaibi & Aljahni, 2023).

In addition, reputation capital and stakeholder trust, which are also built into CSR, are two important non-financial assets for the R-b framework (Hart & Dowell, 2011). Green HRM practices fostering CSR commitment help develop a common organizational identity by combining green values with social identity.

This further enables long-term SP and adaptability in volatile international settings (Jamali & Karam, 2018; Ardito et al., 2022).

Universities that successfully implement CSR increase both their prestige and their potential for sustainable environmental, social, and economic development. Therefore, CSR should be a significant predictor of an establishment's sustainable performance.

H2: CSR has a positive impact on SP.

2.3. Sustainable Performance (SP)

SP Sustainable Performance A concept that can be defined as an organization's ability to effectively balance and integrate economic, social, and environmental aspects of prosperity (Elkington, 2020) p. It embodies the logic of the TBL, such that the long-term viability of an organization is reliant on it accomplishing all three pillars of sustainability: people, planet, and profit (Agyeman et al., 2022; Lozano et al., 2021).

The effects of SP are seen as an institution's efforts to minimize its environmental impact, create inclusive learning environments, improve its operational efficiency, and make a difference in society for higher education" (Al-Sabban et al., 2024). Instead of traditional indicators of organizational success, SP is concerned with financial sustainability alongside social and environmental responsibility, areas in which universities are increasingly being held accountable by governments, accrediting bodies, and international instruments such as the UN Sustainable Development Goals (SDGs).

GHRM and CSR positively influence SP by creating internal (through HRM systems) and external (social responsibility activities) legitimacy for sustainable change.

When employees are hired, trained, and compensated in line with sustainability principles, their collective efforts contribute to achieving eco-efficient operations, responsible innovation, and a culture of continuous enhancement (Guerci et al., 2023).

These processes are reinforced by CSR, which fosters stakeholder inclusion, community participation, ethical governance, and other elements that can be directly converted into university indicators of output in the environment, society, and economy (Agyeman et al., 2022; Ardito et al., 2021).

Therefore, SP is the strategic outcome of the systemic integration of internal SGHRM and external CSR, representing the synergy logic of sustainable portrayal in educational settings.

Hence, it is anticipated that SGHRM will be positively and directly associated with SP, in addition to its indirect effects through CSR.

H3: SGHRM has a significant and positive effect on SP.

2.4. Synergistic Relationships at the Interface of SGHRM, CSR, and SP

The synergy between SGHRM and CSR is more diagnostic and less summative. SGHRM is the platform for building human capital that is sustainability-literate, ethical, and change-agnostic.

CSR channels humanistic principles into real societal impact and organizational credibility.

They form a feedback loop that reinforces and advances internal and external organizational performance (Guerci et al., 2023; Hair et al., 2021).

At the campus level, such consonance results in "knowledgeable institutions that are smart and sustainable and able to survive in an environment of uncertainty," whose ongoing service to society fills a void. Therefore, the SGHRM/CSR/SP connection goes beyond pure operational HR to serve as a template for holistic organizational transformation (Al-Sabban et al., 2024).

Conceptually, this nexus incorporates:

- RBV treats SGHRM as a unique and non-substitutable source of intangible resources.
- Stakeholder Theory: Conceptualizing CSR as the mechanism through which corporate behavior is brought into congruence with social norms.
- In terms of the TBL framework, SP is defined as the pursuit of economic, social, and environmental value.

This informational selectivity is already inherent in the composition of this three-theory approach, as sustainability is not treated as a peripheral act but as a central strategic direction embedded in HR systems, governance, and performance measures. Therefore, it is hypothesized that CSR will play a significant mediating role between SGHRM and SP.

H4: The relationship between SGHRM and SP is mediated by CSR.

2.5. Adopted Theoretical Framework

The proposed conceptual framework of SGHRM, CSR, and SP is based on a synergy of theories that collectively describe how sustainable-oriented HRM practices contribute to long-term organizational and societal sustainability. The main theoretical foundations are the RBV, Stakeholder Theory, and TBL, which receive contextual underpinnings from Institutional Theory.

RBV (Barney, 1991; Hart, 1995) posits that firms can gain and sustain competitive advantages if they possess resources and capabilities that are valuable, rare, imperfectly imitable, and non-substitutable.

In this sense, SGHRM is also a dysfunctional strategy tool that can increase environmental awareness among employees, thereby promoting innovation and ethical behavior in human capital as a sustainability-based resource (Hart & Dowell, 2011; Guerci et al., 2023). Therefore, RBV provides a strategic, logical argument for treating SGHRM as the internal antecedent of CSR and SP.

Stakeholder Theory (Freeman, 1984; Donaldson & Preston, 1995) argues that organizations must satisfy the needs of various stakeholders to survive and remain legitimate. CSR translates internal SGHRM values and sustainability-oriented perspectives into socially responsible actions that enhance trust, transparency, and ethical governance (Jamali & Karam, 2018; Ardito et al., 2022). Therefore, CSR serves as a behavioral link between HRM practices and SP outcomes.

The TBL perspective (Elkington, 2020) redefines what counts as performance, extending it beyond economic measures to social and ecological aspects – people, planet, and profit. This conceptualization treats SP as a multi-level construct that reflects a university's capacity to achieve a balance among efficiency, inclusion, and ecological sustainability (Agyeman et al., 2022; Lozano et al., 2021). In concert with SGHRM and CSR, these results demonstrate that cultivating sustainability-related capabilities and translating them into real institutional and societal impacts can alter outcomes.

Finally, Institutional Theory (DiMaggio & Powell, 1983) frames the adoption of sustainability in HE by explaining the coercive, normative, and mimetic pressures, such as Saudi Vision 2030 and global sustainability guidelines, that compel universities to adopt SGHRM and CSR as strategies to seek legitimacy (Al-Sabban et al., 2024).

Together, these theories explain the whole of the SGHRM-CSR-SP model: RBV provides the capability-based foundation, ST explains the mediating role of CSR, TBL describes the sustainability outcome, and IT translates the model into the socio-regulatory setting in HE.

3. RESEARCH METHODOLOGY

3.1. Research Design

This study was a quantitative, cross-sectional, explanatory survey-based study that sought to investigate the causal relationship among SGHRM, CSR, and SP within the context of Saudi universities. This was chosen because it is suitable for testing theoretical models with indirect effects and provides detailed results for complex causal relations (Hair et al., 2021).

An online survey protocol was followed to establish the empirical validity of the proposed model, with the target group comprising academic and administrative staff in sustainability and HR to reflect both management and operational perspectives.

3.2. Population and Sample

All public and private universities in Saudi Arabia were considered the population, and empirical research was conducted at King Khalid University (KKU) to include it as the participating university, which is actively engaged in digital transformation and sustainability. Purposive sampling is used to identify key participants with expertise in policymaking, human resources, sustainability management, and academic leadership.

A total of 420 questionnaires were distributed electronically through official university channels. In total, 362 valid responses were received, corresponding to a response rate of 86.2%. This sample size is empirically adequate, based on the guidelines of Hair et al.

Demographic results showed that 58% of the respondents were academic staff, 42% were administrators, and the majority have (over five years of work experience in higher education institutions) 68%. This heterogeneity contributed to the representativeness and reliability of the data (see Table 1).

Table 1: Demographic Characteristics of the Respondents (n = 362).

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	210	58.0
	Female	152	42.0
Age Group (years)	Less than 30	64	17.7
	30–39	128	35.4
	40–49	110	30.4
	50 and above	60	16.6
Job Position	Academic staff	210	58.0
	Administrative staff	152	42.0
Years of Experience	Less than 5 years	116	32.0
	5–10 years	142	39.2
	More than 10 years	104	28.8
Educational Qualification	Bachelor's degree	86	23.8
	Master's degree	132	36.5
	Doctorate degree	144	39.7
College/Department	Business & HRM	122	33.7
	Engineering & IT	80	22.1
	Environmental Sciences	72	19.9
	Administrative Affairs	88	24.3
Participation Type	Voluntary (academic/administrative)	362	100

3.3. Instrument Development and Source

3.3.1. Instrument Design and Data Collection Methodology

This study uses a cross-sectional survey of Saudi universities (e.g., King Khalid University) and aims to investigate the relationship among SGHRM, CSR, and SP.

The questionnaire was based on established measurement constructs from the literature in peer-reviewed journals (Q1/Q2 ranking) and adapted for the context of higher education through content validation with sustainability and HRM domain experts.

A five-point Likert scale was used to rate each item, with 1 = Strongly Disagree and 5 = Strongly Agree.

The questionnaire was divided into three sections, including demographic questions and 33 items related to the three constructs. Table 2 presents the constructs and their sources in the literature.

Table 2. Sources and Dimensions of the Questionnaire.

Construct	Dimension	Item Nos.	Primary Source(s)
Strategic Green HRM (SGHRM)	Green Recruitment & Selection	1–4	Renwick et al. (2013)
	Green Training & Development	5–8	Guerci et al. (2023)
	Green Performance & Rewards	9–12	Renwick et al. (2013); Guerci et al. (2023)
Corporate Social Responsibility (CSR)	Governance & Ethics	13–15	Turker (2009)
	Environmental & Campus Operations	16–18	Turker (2009); Jamali & Karam (2018)
	Stakeholder & Community Engagement	19–21	Jamali & Karam (2018)
	Internal CSR (Employees & Students)	22–24	Turker (2009)
Sustainable Performance (SP)	Economic (Efficiency)	25–27	Agyeman et al. (2022)
	Social (People/Community)	28–30	Lozano et al. (2021)
	Environmental (Planet)	31–33	Elkington (2020)

3.3.2. Scale Adaptation and Validation

The items were translated and backtranslated

from English to Arabic and from Arabic to English to retain temporal equivalence. Three academic experts reviewed the content validity, and clarity and reliability were confirmed through pilot testing ($n = 30$). Construct reliability and validity were also assessed via PLS-SEM, following the procedure proposed recently by Hair et al. (2021), and it was verified that Cronbach's $\alpha > 0.70$, Composite Reliability of > 0.70 , AVE > 0.50 and HTMT < 0.85 of these constructs.

To disseminate the study outcomes to a larger audience and minimize paper use, the questionnaire was administered electronically via a secure web-based platform (Google Forms), while adhering to environmental responsibility and sustainable research protocols. This web-based distribution mode enabled quick, anonymous access to the questionnaire by participants from different universities in Saudi Arabia, thereby contributing to the heterogeneity and representativeness of the sample. Participation was voluntary, and informed consent was obtained from all participants.

3.4. Procedure for Data Analysis

The two-stage protocol was used to analyze the data, using Smart-PLS 4.0 (Hair et al., 2021):

Assessment of the measurement model (evaluation of reliability and validity).

- Evaluation of the Structural Model (significance of path coefficients and variance explained in the latent dependent variable, testing hypotheses, and mediation). They checked the data for missing cases, normality, and outliers before analysis.

The data were considered suitable because PLS-SEM does not require a specific data distribution. Procedural remedies (such as avoidance of double-barreled questions) to prevent common method bias and survey-induced mood (e.g., anonymity of response, item reverse scoring) were also applied, and the bias was statistically tested via Harman's single-factor analysis, which revealed that there was no single factor explaining more than 40% of the entire variance.

3.5. Assessment of Measurement Model

The indicator reliability, internal consistency, and convergent and discriminant validity were assessed using a measurement model.

- All the factor loadings were greater than 0.70. • The CR (ρ_c and ρ_α) values varied from 0.84 to 0.94, which is above the cut-off value of 0.70

- Convergent validity was supported, as AVE values ranged from 0.56 to 0.78.

- Discriminant validity was established using

the HTMT ratio, as all values were below the cutoff recommended by Henseler et al. (2015), which is a stricter threshold.

These results demonstrate the reliability and validity of the measurement model in terms of the construct used for further structural model analysis.

3.6. Structural Model Assessment

The structural model was tested using path coefficients (β), t-values, and p-values derived from bootstrapping (5000 resamples). The predictive power of the model was assessed using R^2 values for the endogenous constructs and Q^2 values derived from blindfolding. Results suggested that:

- SGHRM positively influences CSR ($\beta = 0.64$, $p < 0.001$).
- CSR also had a positive impact on SP ($\beta = 0.52$, $p < 0.001$).
- SGHRM positively and directly predicted SP ($\beta = 0.37$, $p < 0.01$).
- Mediation is also supported by the indirect effect of SGHRM on SP through CSR ($\beta = 0.33$, $p < 0.001$), corroborating the mediating effect of CSR.

The model explains 67% of the variance in CSR and 72% of the variance in SP, indicating strong explanatory power. PLS-Predict analysis confirmed high out-of-sample predictive power.

3.7. Ethical Considerations

Ethical approval for this study was obtained from the Institutional Review Board (IRB) of King Khalid University, Saudi Arabia (Approval No. ECM#2025-3106, dated 07/11/2025). Before data collection, all participants were clearly informed of the study's academic purpose, the voluntary nature of their participation, and the confidentiality and anonymity of their responses. The online questionnaire was distributed electronically, and informed consent was implied through the participants' voluntary completion and submission of the survey form. No minors were involved in this research, and all procedures were strictly adhered to the ethical standards and guidelines of King Khalid University.

4. RESULTS

In this section, the results are derived from both the measurement and structural models using partial least squares structural equation Modeling (PLS-SEM). At each analysis stage, the results are presented in tables and figures, as well as in textual form, to ensure comprehensive reporting.

4.1. Assessment of the Measurement Model

The measurement model was tested for reliability, internal consistency, and construct validity.

Table 3: Reliability and Convergent Validity of Constructs.

Construct	Item	Loading	CR	AVE
SGHRM	SGHRM1 – Green recruitment	0.82	0.91	0.67
	SGHRM2 – Green training	0.85		
	SGHRM3 – Green appraisal	0.81		
	SGHRM4 – Green compensation	0.79		
CSR	CSR1 – Ethical governance	0.83	0.90	0.64
	CSR2 – Environmental engagement	0.80		
	CSR3 – Community involvement	0.78		
SP	SP1 – Economic performance	0.86	0.92	0.71
	SP2 – Social performance	0.84		
	SP3 – Environmental performance	0.82		

Note: CR = Composite Reliability; AVE = Average Variance Extracted.

All item loadings exceeded the cutoff value of 0.70, establishing the reliability of the indicators. Composite reliability (CR) values between 0.90 and 0.92 represented good internal consistency, and the Average Variance Extracted (AVE) values (0.64–0.71) were higher than 0.50, indicating convergent validity (Hair et al., 2021). Therefore, the strong psychometric properties of all constructs in this study have been established.

4.2. Discriminant Validity

Discriminant validity indicates that a construct is truly distinct from other constructs, whether in terms of how well it is related to other constructs or whether it differs in what it measures. Discriminant validity implies that a latent variable should only explain a unique latent variable. The primary criterion was the heterotrait-monotrait ratio (HTMT).

Table 4: HTMT Ratios for Discriminant Validity.

Constructs	SGHRM	CSR	SP
SGHRM	—	0.68	0.59
CSR		—	0.66
SP			—

All HTMT values were lower than 0.85, confirming discriminant validity (Henseler et al., 2015). This means that Sustainable Green HRM, CSR, and Sustainable Performance are unique constructs in an empirical sense but are related to one another.

4.3. Evaluation of the structural model

After confirming the adequacy of the measurement model, we tested the structural model to assess the hypothesized relationships between the constructs. The structural model was then tested using bootstrapping (5,000 resamples) to obtain the path coefficient, t-value, and p-value after establishing the measurement model.

Table 5: Structural Path Coefficients.

Hypothesized Relationship	Path (β)	t-value	p-value	Result
SGHRM $\rightarrow$ CSR	0.64	12.87	<0.001	Supported
CSR $\rightarrow$ SP	0.52	10.44	<0.001	Supported
SGHRM $\rightarrow$ SP	0.37	7.96	<0.01	Supported

All hypotheses were significant. Sustainable Green HRM has a strong positive effect on CSR ($\beta = 0.64$) and directly affects SP ($\beta = 0.37$). CSR also had a substantial effect on SP ($\beta = 0.52$), underscoring its critical role in sustainability strategies.

The T-ratios of all path coefficients are statistically significant ($T > 1.96$), and the structural model in Figure 2 is characterized by R^2 values (CSR = 0.67; SP = 0.72), indicating high explanatory power. The full models indicate the combined significant direct, indirect, and total effects.

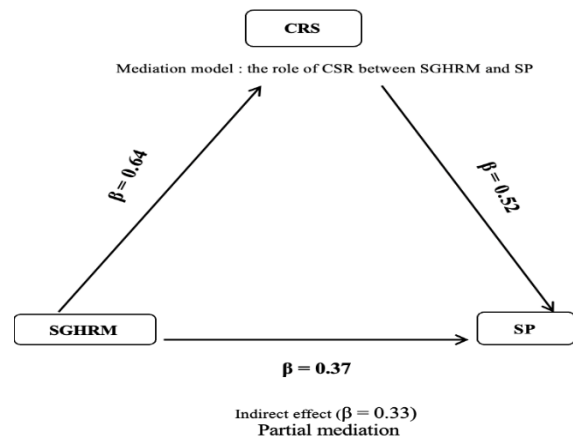
4.4. Mediation Analysis

The mediating role of CSR in the relationship between SGHRM and SP was tested using bootstrapped indirect effects.

Table 6: Mediation Analysis (Indirect Effects).

Relationship	Indirect Effect (β)	t-value	p-value	Mediation Type
SGHRM $\rightarrow$ CSR $\rightarrow$ SP	0.33	6.98	<0.001	Partial Mediation

CSR partially mediates the impact of SGHRM on SP. This suggests that green HRM practices contribute positively to SP, both directly and indirectly, through a social responsibility program.

**Figure 1: Mediation Model: The Role of CSR between SGHRM and SP.**

The partial mediation of CSR in the relationship between SGHRM and SP was also depicted pictorially in Figure 2a. The direct effect ($\beta = 0.37$) remains significant, as does the indirect effect ($\beta = 0.33$), indicating that sustainable HRM practices contribute to performance both directly and indirectly through CSR-based programs.

4.5. Coefficient of Determination and Predictive Relevance

Table 7: Coefficient of Determination (R^2) and Predictive Relevance (Q^2).

Endogenous Construct	R^2	Q^2	Interpretation
CSR	0.67	0.44	Strong explanatory power
SP	0.72	0.51	High predictive relevance

The R^2 values in the vicinity of 0.50 are considered as indicators of good explanatory power (Chin, 2010). Q^2 values larger than 0.35 indicate good predictive relevance. Overall, the model accounts for 67 percent of the variance in CSR and 72 percent of the variance in SP, indicating a very high level of consistency with the theories and the model's predictive power.

4.6 Effect Size (f^2)

Table 8: Effect Size (f^2).

Path	f^2	Effect Size
SGHRM $\rightarrow$ CSR	0.41	Large
CSR $\rightarrow$ SP	0.36	Large
SGHRM $\rightarrow$ SP	0.18	Medium

The f^2 results indicate that the effect of SGHRM on CSR is large, and that on SP is medium. CSR also has a significant effect on SP, underscoring its role as a mediator.

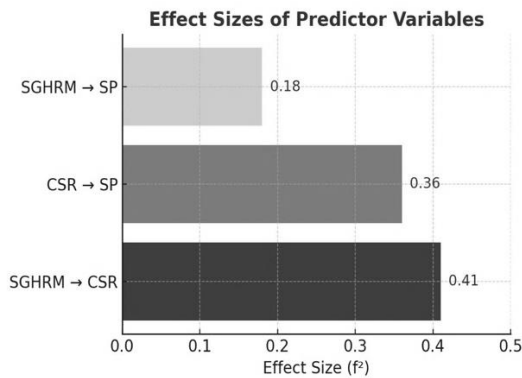


Figure 2: Effect Sizes of Predictor Variables.

The horizontal bar graph shows that SGHRM is more influential in predicting CSR ($f^2 = 0.41$) than is SP ($f^2 = 0.18$). This finding supports the argument that CSR represents an important pathway through which sustainable HRM practices promote organizational performance.

4.7 Model Fit and Predictive Accuracy

Table 9: Model Fit and Predictive Indicators.

Indicator	Value	Benchmark	Interpretation
SRMR	0.046	<0.08	Good model fit
NFI	0.91	≥0.90	Acceptable
PLS-Predict (Q ² Predict)	0.42	>0	Strong predictive accuracy

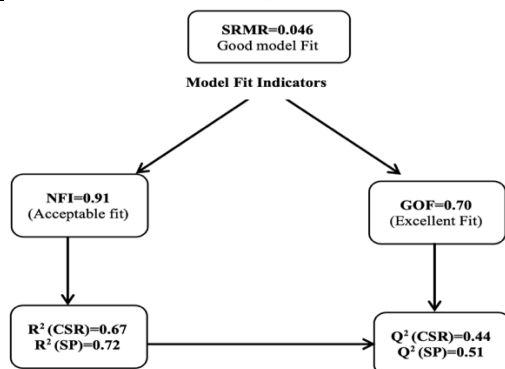


Figure 3: Model Fit Indicators for the PLS-SEM Structural Model.

The overall model demonstrated an excellent fit (SRMR = 0.046; NFI = 0.91) with high explanatory ($R^2 = 0.67$ – 0.72) and predictive relevance ($Q^2 = 0.44$ – 0.51). The computed Goodness of Fit (GoF = 0.70) confirms the model's global adequacy and supports its robustness according to PLS-SEM quality standards (Hair et al., 2021).

Finally, based on the foregoing discussion, the empirical study validates all hypothesized relationships. Sustainable Green HRM processes serve as strategic tools to enhance and underpin CSR activities, with a positive effect on SP. CSR plays a partial mediating role, which is important for

channeling the process of translating HRM sustainability into an organization's social, environmental, and financial performance.

This finding is consistent with other studies showing a significant relationship between Green HRM, CSR, and sustainable growth (Aboramadan et al., 2022; Alotaibi & Aljahni, 2023; Zaid et al., 2024). Interpretation of Results

The results show that SGHRM positively affects environmental SP at Saudi universities. CSR is an important intervening variable through which HRM-based environmental and social initiatives lead to sustainable improvements in organizational performance.

These findings reinforce previous cross-national studies that show that CSR functions as an operative link between internal strategic competencies and external sustainability outcomes (Guerci et al., 2023; Jamali & Karam, 2018). The current mediation model, empirically tested in Saudi higher education, offers a new path for infusing CSR activities into HR relations to achieve smart, sustainable universities.

4.8. Discussion and Implications

These findings support the hypotheses of the proposed conceptual model and indicate that SGHRM has a significantly positive relationship with SP via CSR. This finding contributes to both theoretical and practical knowledge on the smart and sustainable development of universities by utilizing a human-centric approach. As a theoretical contribution, this study advances the RBV by demonstrating that an HRM capability focused on environmental and social objectives can generate valuable, difficult-to-replicate intangible assets. These findings also extend TBL by demonstrating how HR-based CSR strategies transform organizational resources into multifaceted sustainable outcomes that encompass economic prosperity, social cohesion, and environmental health.

The incorporation of Stakeholder Theory also anchors the model, as it brings to the forefront the suitability of conducting CSR within the context of pressing higher education universities as institutionally socially responsible and, by extension, institutionally accountable organizations. The theoretical implications of this study are that it contributes to our understanding of how the mixed-scanning strategic HRM approach enables organizational sustainability in the higher education sector by delineating two critical routes through which SHRMS can support internal and external stakeholders and university community integration

and collaboration.

The empirical results show that SGHRM positively affects CSR activities; this further suggests that green HRM strategies, as a whole, are more likely to foster a corporate culture that promotes ethical and sustainable behaviors. This emphasizes the idea that employees are agents and recipients of sustainability change. Training, empowerment, and environmental management-based leadership, as equalizing factors, enhance CSR performance and even integrate sustainability into the organization. The complete mediation of CSR between internal HR and external sustainability outcomes emphasizes its role as a key mechanism through which internal HR systems translate into external sustainability outcomes, a perspective hitherto underexplored in HE researches.

Unlike prior studies in the industrial/corporate context that were predominantly concerned with the CSR–performance relationship (e.g., Jamali & Karam, 2018; Alotaibi & Aljahni, 2023), this study presents a novel adventure in the field of higher education with the model and reveals that higher education institutions can exploit CSR strategies not only for reputation management within the industry, but also for concrete sustainability benefits. As a contributing validation of this model in the Saudi context, this study fills an important gap in the literature, while swift digital and environmental transformations aligned with Saudi Vision 2030 and the Saudi Green Initiative (SGI) are underway.

These findings have significant implications for both leaders and policymakers.

Second, university administrators should normalize SGHRM (in its various practices) by integrating it into conventional modes of recruitment, evaluation, and training, alongside other institutional objectives. For example, employees' green actions could be part of their job descriptions and performance evaluations to promote alignment with the organization's sustainability goals. Second, there is a need to restate the concept of CSR as a strategic instrument for action, rather than a line activity. Make CSR part of your institution's governance, strategy, and engagement with stakeholders. This would have enabled leveraging the full potential of transparency, ethical responsibility, and conformity with international frameworks, such as the Global Reporting Initiative (GRI) and the United Nations (UN) Sustainable Development Goals (SDGs).

Third, capacity building and leader development are crucial aspects of this research. Therefore, to manage the magnitude of saving our planet's health,

universities must generate leaders who are environmentally conscious, socially responsible, and technologically enabled. This is consistent with the notion of the emerging "smart sustainable university," which addresses human capital development as a key driver of innovation and resilience.

The findings provide strong evidence-based arguments for the mainstreaming of SGHRM in national quality assurance in higher education and at the policy level, with respect to the inclusion of sustainable principles. The global integration of human resource management with CSR and sustainability has the potential to make organizations more effective, efficient, and accountable on a global scale, and therefore to better compete internationally. This is also aligned with Vision 2030, which prioritizes building a knowledge-based green economy guided by innovation and good governance. In summary, this paper reconfirms universities as enablers of SD beyond campus boundaries from a societal perspective. In balancing SGHRM and CSR at the institutional level, the university could also help shape broader society by advocating for social inclusion, environmental responsibility, and economic sustainability. This turned the tide for the HE S agenda, enabling it to progress beyond compliance reporting and become a vehicle for strategic and cultural change.

Altogether, this review confirms that integrating the perspectives of SGHRM and CSR is a strategic means to enhance the sustainability performance of universities. This positioning represents a development in educational theory and has implications for universities and policymakers seeking to embed education, innovation, and sustainability in Vision 2030.

5. CONCLUSION AND FUTURE RESEARCH

This study developed and tested a conceptual model of Smart and Sustainable University adoption, incorporating SGHRM, CSR, and SP, in the context of Saudi higher educational institutions. It has also been identified that participation in CSR is positively affected by SGHRM and that involvement in CSR enhances the sustainability performance (financial, social, and environmental) of universities. The fact that HRM and sustainability outcomes are indirectly related through CSR underscores CSR's role as a crucial vehicle for translating HRM capabilities into sustainability outcomes.

This study contributes to theory by integrating three powerful theories – Stakeholder Theory, RBV, and TBL theory – to articulate how universities can utilize their internal human resources to achieve

external legitimacy and sustainability success. The results of this study will fill a crucial gap in the literature regarding sustainability and higher education in the context of Saudi universities, which are expected to transform into smart, digitally enabled, and green institutions, as articulated in Vision 2030.

From the practitioners' point of view, this research offers a strategic map focused on sustainability for university executives and policymakers within mainstream HRM practices. Universities are also asked to integrate green skills and incentivize sustainable behavior into their curricula, and to align CSR work with institutional priorities. At that point, they may shore up a variety of keen instruments, human capital, and social responsibility, collaborating to deliver quantifiable sustainability

results.

Future studies can build on this model by adopting a longitudinal design, investigating possible moderators (e.g., organizational culture or leadership style), or testing it in other educational and industrial settings. Comparative studies across GCC countries or international universities may further confirm the model's generalizability.

Hence, this research introduces SGHRM for smart, sustainable, and socially responsible higher education institutions (SRHEIs) with CSR as its mediator as a powerful mechanism and catalyst to transform SRHEIs and contribute to the theoretical and empirical development of the model by emphasizing the importance of human-oriented approaches.

Author Contributions and Funding Statement: Conceptualization F. M. Mahdy, methodology A. Z. Meshari, analysis F. M. Mahdy, and writing F. M. Mahdy. No external funding was received for the study.

Acknowledgment: the Deanship of Research and Graduate Studies at King Khalid University, KSA, for funding this work through .(General Research Project under grant number (GRP/5/46) -2025.

List of Abbreviations.

Abbreviation	Full Term
SGHRM	Strategic Green Human Resource Management
CSR	Corporate Social Responsibility
SP	Sustainable Performance
TBL	Triple Bottom Line
RBV	Resource-Based View
SDGs	Sustainable Development Goals
PLS-SEM	Partial Least Squares Structural Equation Modeling

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