



## RESEARCH ARTICLE

## Understanding the Role of Green Organization Culture and Innovation between Green HRM Practices and Environmental Performance of SMEs in Saudi Arabia

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## ABSTRACT

This study aims to explore the importance of Green Human HRM Practices, Green Organizational Culture, Green Innovation, and their impact on Environmental Performance, specifically for SMEs in Saudi Arabia. Additionally, the objective is to evaluate the mediating role of a green organizational culture in this connection and its ultimate influence on organizational environmental performance. The comprehensive assessment of the collective effect of these constructs on Ecological Performance within a holistic model has not been previously undertaken. Hence, this study gains additional importance by assessing green organizational culture's mediation role in the relationship between Green HRM Practices and the organization's Environmental Performance. The study reveals that Green Organizational Culture mediates Green human resource functions and creative preservation called green innovation, emphasizing the impact of values in driving sustainability efforts. These findings support RBV theory, highlighting the importance of these factors in enhancing environmental outcomes. This study was conducted in the context of Small and Medium-sized Enterprises (SMEs) in Saudi Arabia. A total of 291 usable responses were obtained through a self-administered questionnaire. The participants were chosen through the utilization of a cluster sampling methodology. The results of this study confirm the significance of Green HRM and Green Innovation in assessing the Performance of SMEs in Saudi Arabia concerning environmental preservation. The research framework was founded on RBV theory, which builds study's underpinning theory and has been confirmed within the study's specific context. SMEs in Saudi Arabia can actively advance environmental sustainability and achieve enhanced organizational performance by using these practical steps. Nonetheless, it is crucial to account for additional cultural, demographic, and governmental factors in future research to understand their impact on the subject thoroughly. This will provide valuable insights for future implications.

## **INTRODUCTION**

Technological advancements have greatly expanded access to artificial resources, enhancing the quality of life. However, this abundance compromises sustainability and environmental integrity, necessitating a delicate balance between resource utilization and economic progress (Khan et al., 2023; Zia et al., 2021). Balancing economic growth and sustainability is a significant concern for economies, as they often entail a tradeoff. Researchers contend that achieving both simultaneously is challenging (Holmberg and Sandbrook, 2019). The close association between green growth and innovation is widely recognized. It is crucial to note that a nation's economic development is typically driven by robust industrial activities (Liang and Qamruzzaman, 2022). The current research addresses critical gaps in the prevailing literature related to Saudi Arabia (KSA), where escalating environmental concerns have necessitated a closer examination. The manufacturing sector of Saudi Arabia (KSA) takes center stage due to its substantial contribution to the country's GDP, alongside associated environmental hazards (Shoaib et al., 2022). The link between sustainability and human resources management needs further investigation. Recent research suggests examining how green organizational culture and innovation are implemented across the organization to understand their interplay (Fang et al., 2022; Lei et al., 2021). While it is recognized that green HRM and green innovation positively influence the environment, few studies have explored their interaction (Naimpally et al., 2023; Seeck and Diehl, 2017).

Furthermore, there needs to be more regarding green HRM, Green Innovation, and Green organizational culture in the literature describing their interconnection. Consequently, additional research is required to reveal the potential benefits of these constructs on the mentioned performance (Çop et al., 2021; Vasuki et al., 2023). There is limited research on these constructs in developing countries, particularly emerging markets. This study offers empirical insights from a developing country's standpoint facing resource depletion and environmental degradation issues by addressing this research gap. Industrial progress is essential as it directly contributes to national improvement

and critical environmental issues such as reducing natural reserves, raw materials, and pollution. The industrial sector generates the most perilous wastes and pollutants and threatens public health and the natural environment (Cai and Li, 2023; Kraus et al., 2020).

The pivotal role of SMEs in national development has been emphasized. However, existing studies present pressing environmental challenges, including resource depletion, diverse forms of pollution, and the alarming increase in potentially harmful emissions within Saudi Arabia (KSA), drawing attention to the need for further investigation and developing effective measures (Hawksley and Georgeou, 2023). In 2014, Saudi Arabia had higher CO<sub>2</sub> emissions at 19.53 metric tons, along with a substantial amount of energy consumption per citizen, i.e., 6937.23 kg of oil equivalent. Given its vulnerable ecosystems and resources, the country is initiating sustainable urban development to address climate change issues (Abubakar and Dano, 2020). Innovations in products and processes produce economic development. Green innovation safeguards the environment by reducing pollution, promoting waste recycling, and conserving non-biodegradable energy. The present study addresses critical gaps in accepting the association among green innovation, organizational performance, and environmental sustainability and the role of green innovation in environmental preservation, as mentioned in recent studies (Ahmed et al., 2023). Green technologies enable sustainable development. Firms must adopt team efforts for successful green innovation (Muisyo and Qin, 2022). Essential factors include data access, committed management, and optimal use of human resources (Mittal and Kaur, 2023). Firms adopt green innovation when motivated both internally and externally. Internal factors like management commitment supplier collaboration, and external factors like regulations and customer demand drive this adoption, showing a direct association between the two constructs (Irani and Kilic, 2022; Rehman Khan et al., 2022). Green innovation allows organizations to improve performance by developing policies that curtail the overuse of resources, reducing risks and carbon dioxide emissions (El-Kassar and Singh, 2019). Green development nurtures innovative systems for enhanced organizational performance

(Khan et al., 2023). For green processes to flourish, product development should concentrate on energy-efficient practices and seek reuse and recycling options in manufacturing (Shafique et al., 2017). Green innovation is now widely recognized in response to global environmental concerns and the urgency of addressing global warming (Odhiambo, 2020). This research bridges critical gaps in the existing literature by examining how green practices impact organizational development and economic progress. It recognizes the significance of innovative industry in driving national economic growth, with an increasing focus on eco-friendly products and processes (Hsu et al., 2021). Firm-level innovations drive economic growth as organizations aim for high-value products. Decision-makers increasingly focus on eco-friendly, environmentally conscious products and processes (Darwish et al., 2021). Organizations must innovate for a green environment and efficient resource management. Understanding stakeholders' views on green products is crucial for effective strategies (Ahmed et al., 2021; Costa, 2021; Kahupi et al., 2021). There is a limited amount of contemporary research available regarding the environmental performance of Small and Medium-sized Enterprises (SMEs) in Saudi Arabia, with only a few new initiatives being undertaken in this area (Al Doghan et al., 2022; Wasiq et al., 2023). Scholars have emphasized the need of adopting environmentally sustainable practices among Small and Medium-sized Enterprises (SMEs) in Saudi Arabia. The present studies have investigated the topic of Environmental Sustainability and Performance within the context of Small and Medium-sized Enterprises (SMEs) in the Kingdom of Saudi Arabia. The present study has examined the favorable effects of Organisational Environmental Culture, Green HRM, and Green Innovation on environmental sustainability and performance within the context of Small and Medium-sized Enterprises (SMEs) in Saudi Arabia (Al Doghan et al., 2022). At the same time, Wasiq et al. (2023) have emphasized that adopting Green Innovation in Small and Medium-sized Enterprises (SMEs) in Saudi Arabia leads to improved economic, social, and environmental outcomes. The focus is on highlighting the advantages associated with implementing Green Innovation.

The commitment of managers and the implementation of effective human resource practices play a pivotal role in tackling technological challenges, achieving a competitive edge, and improving economic and environmental performance (Irani and Kilic, 2022; Khan et al., 2023). The present study has formulated an all-encompassing framework to analyze the interconnections among Green HRM practices, green innovation, green organizational culture, and environmental performance. The study framework holds significant value, particularly within a rapidly evolving economy like Saudi Arabia (KSA). The primary objective of this study is to address a gap in the current body of research on green innovation while presenting conclusive outcomes. The study commences by evaluating the function of green corporate culture as an intermediary between Green HRM practices and Green Innovation.

#### **Research objectives**

The research is intended to attain its primary objectives. The study explores the importance of Green HRM Practices and their influence on organizational and ecological performance. The aim is to help firms in KSA cut their environmental hazards and enhance their dedication to sustainability. Finally, the objective is to assess the intermediate function of a green organizational culture in this connection and its ultimate influence on organizational environmental performance. Green innovations in processes, products, marketing, and management strongly correlate with positive environmental and organizational performances. The present study establishes that such innovations enhance organizational growth and generate a competitive advantage over peers. Industry managers can formulate strategies to integrate green innovation into products and processes for sustainable long-term growth.

#### **Theoretical development**

From the perspective of RBV, the company gains a competitive advantage based on the factors that can be defined by (VRIN) resources: valuable, rare in nature, inimitable, and non-substitutable (Barney, 1991). Organizational resources include properties, skills, organizational procedures, and learning. Sustainability management is an organization's critical strategic capability (Chen,

2008). Environmental and social considerations can transform into a crucial competence that positively impacts performance (Khan et al., 2023). Corporate ecological management enables firms to define competitive environmental standards. Regarding RBV's view, a company's culture is an intangible resource (Barney, 1991).

Organizational culture helps organizational people recognize operations, which delivers to them the norms that shape their behavior inside the organization (Khan et al., 2023). Green innovation in companies provides a competitive advantage, driven by factors like organizational culture and CSR practices (both Reactive and Proactive). Companies possessing valuable resources are inclined to cultivate socially responsible cultures, particularly when acknowledging and appreciating such conduct (Campbell, 2007; Ye et al., 2022)

## **LITERATURE REVIEW**

### **Green HRM**

Despite a growing body of exploration in Green HRM, there remains some ambiguity in defining its core principles. While strategic human resource management addresses employee environmental behavior within this context, a notable gap exists in explaining the contemporary management structure (Hooi et al., 2022). Crucial questions about the adoption of Green HRM in emerging markets, its alignment with broader CSR concepts, and its relationship with Continuous Human Resource Management or SRHRM remain unresolved (Mustafa et al., 2022). Additionally, the motivations, impacts, and consequences of implementing GHRM require further clarification as scholars continue to refine the definitions of EM, HRM, and sustainable human resource management, SRHRM (Shaaban and Rabie, 2023) and CSR (Murillo-Ramos et al., 2023). The concepts still need to be debated in the literature despite emphasizing universality and recognizing ecological sustainability as a crucial element. Green HRM involves using all aspects of an organization to promote sustainability and raise employee awareness. It reflects how an organization operates and enhances employee commitment to sustainability (Afzal et al., 2023; Ogiemwonyi et al., 2023). Some scholars link HRM with ecological management, termed "Original

Personnel Management" or "Ecological Personnel Management." This analysis adopts the term "Green HRM," which is defined as personnel management within ecological management (Renwick et al., 2013). Experts have devised specific strategies for implementing ecological HR practices. Clair et al. (1996) proposed a four-step ecological management model involving providing an ecological perspective, training employees, and using incentives. Similarly, Daily and Huang (2001) outlined a framework including senior management support, training, certification, and recognition as vital components of environmental HR. This approach encourages staff to identify and implement eco-friendly practices. Rewards drive environmental responsibility. Renwick et al. (2013) categorize GHRM as skill development, incentivizing high-performers, and empowering employees for eco-friendly practices. Strategic plans for ecological goals meet organizational and environmental needs. Scholars recommend instilling an ecological vision, training, evaluation, and recognition for green HR practices. Renwick et al. (2013) categorized employee perceptions into skill development, eco-consciousness, and an eco-friendly workplace. Green HRM emphasizes sustainability and leverages all aspects of an organization for environmentally friendly behavior. Specific strategies, like senior support and empowerment, are crucial. Rewards drive environmental responsibility (Hooi et al., 2022).

### **Green organizational culture**

Organizational culture encompasses values, beliefs, and behavior, influencing actions and responses. It shapes ethics and moral perspectives, guiding decisions in uncertain situations. This culture is reflected in every employee's behavior, eventually forming habitual practices that define the company's culture (Kondra and Hurst, 2009). This study employs an advanced approach to define: "a set of common psychological concepts that influence interpretation and lead towards necessary and adequate activities in various contexts" (Schein, 1983; Schein, 2007; Schein, 1990). Since a green organization's culture includes symbols, norms, and values shaping behavior, it emphasizes environmental safety, influencing members' thoughts and actions (Shahriari et al., 2023). When employees strive to minimize the

organization's adverse environmental footprint and augment its positive contributions, going beyond a profit-centric approach, the organizational culture is deemed "green" (Roscoe et al., 2019).

### **Green innovation**

Green innovation refers to environment-friendly products, services, and processes that enhance natural resources without harming the environment. It includes energy efficiency, emission control, waste management, and renewable production (Ahmed et al., 2021; Yunzhao, 2022). Multiple studies support combining green innovation, operations, and creativity, enhancing societal, environmental, and organizational performance (Khan et al., 2019). Adopting 'green concepts' drives manufacturers to create inventive processes, resulting in better services and increased revenue (Amir et al., 2021; Nie et al., 2022). Green innovation, often intertwined with terms like environmental and eco-innovation, sometimes needs to be understood. According to Kemp and Pearson (2007), it involves adopting products, services, or processes to introduce innovative practices that reduce environmental risks. This includes various technologies and methods to curb ecological harm (Begum et al., 2022; Wang et al., 2023). Green innovation, encompassing new skills, products, and energy-saving processes, aims to combat environmental degradation with nuances in emphasis and application (Cai and Li, 2018).

### **Organizational environmental performance**

Developed nations and their associated countries cause environmental degradation. The environmental depolaration has negative impacts on health and the environment. Embracing green innovations and eco-friendly practices offers a more sustainable future (Ren et al., 2022). The involvement of managers in adopting green procedures and becoming environmentally conscious is crucial. There is a growing global need for management models that steer firms towards sustainability. Companies implementing sustainable innovation practices positively impact their performance by establishing a green organizational identity (Kneipp et al., 2019). Green innovation improves execution procedures, performance, and market orientation. Market positioning prioritizes customer needs for positive outcomes. Firms must reduce resource consumption

and harmful emissions. Green practices enhance performance through innovation and resource efficiency, potentially boosting labor productivity (Leal Rodríguez et al., 2018). Large, pollution-intensive organizations must adopt extensive greening practices to manage environmental waste effectively (Ahmed et al., 2023).

### **Hypothesis development**

*Link of GHRM and green innovation:* Green human resources (GHR) are crucial for implementing eco-friendly practices and achieving sustainable growth (Ren et al., 2018). Scholars have studied how GHRM impacts ecological performance and firm competitiveness. GHRM mediates stakeholder pressures and ecological performance (Guerci et al., 2016), positively affecting financial performance (Úbeda-García et al., 2021). However, limited research explores the link between GHRM and green innovation. Innovation helps reduce ecological impact and attain organizational ecological goals (Bhatti et al., 2022b). HR development enhances organizational innovation. Thus, GHRM fosters green innovation. Green hiring enhances eco-friendly image and engagement in eco-friendly actions. Strong eco-friendly commitment leads to innovative ecological management (Bhatti et al., 2022b).

Training and engagement empower employees, fostering creativity for innovation. Prioritizing green training leads to fresh ideas for eco-friendly products or processes. Environmental protection training spurs engagement in green initiatives (Fang et al., 2022). Green engagement encourages eco-responsible behavior and facilitates organizational green innovation. Green performance management aligns employees' conduct with the firm's environmental goals (Guerci et al., 2016). It significantly enhances eco-commitment, motivating participation in ecological innovation (Renwick et al., 2013). Recognizing and rewarding environmental efforts cultivates an innovation-supportive culture (Curran and Walsworth, 2014). Managers should inspire innovation in green initiatives without fear of losing initiative (Chowhan, 2016).

In conclusion, HRM literature suggests that HRM structures can positively impact procedures and process development (Chowhan, 2016; Verburg et al., 2007). This implies that using HR practices

collectively yields a better effect on innovation than single applications alone. Therefore, we will collectively examine three aspects of GHRM practice contributing to green innovation. Following this rationale, GHRM enhances employees' skills, motivation, and opportunities, ultimately advancing their grasp of green product or process enhancement (Awan et al., 2023). Accordingly, we propose the hypothesis:

**H1:** Green Human Resource Management has a positive impact on fostering green innovation.

### **Mediation analysis**

There must be a clear explanation of how HR systems affect organizational culture. The Resource-Based View (RBV) suggests that culture is a precious resource. It plays a crucial role in connecting HR effectiveness with how organizations adapt (Özçelik et al., 2016). This model suggests that cultural values impact HR practices, especially in the context of green organizational culture. Collective norms and beliefs influence individual attitudes and behaviors, ultimately shaping firm efficiency (Cherian et al., 2021). In the present study, organizational-level data, representing employee collective attitudes, rather than individual-level data, have been used. Organizational culture is not static and can evolve based on various factors. Scholars like Schneider (1975) argue that specific references, such as safety and service, primarily define culture. Additionally, previous studies discuss critical cultural factors, including a focus on goals, emphasis on methods, rewards, provision for jobs, and psychological assistance. Bowen et al. (1988) emphasize that businesses must have policies and procedures ranging from hiring and training procedures to monetary compensation schemes and leadership theories to improve employee retention and manage employee conduct (Cherian et al., 2021). When organizations face pressure to address ecological degradation, they could improve their organizational environment and reap the benefits, fostering a positive attitude and creating an ecological-friendly organizational culture. In summary, as ecological pressure mounts, companies can cultivate and sustain a green organizational culture by implementing essential green HR practices (Cherian et al., 2021). Therefore, this investigation suggests the below-

mentioned hypotheses:

**H2:** GHRM is positively associated with green organizational culture.

The culture of the organization substantially impacts innovation diffusion inside a firm. Innovation may be hampered or aided by culture (Tian et al., 2018). Organizations need to cultivate a culture that supports innovation to implement it effectively. This involves establishing shared values to drive innovation in processes and products. Adopting green innovation heavily depends on organizational culture, influencing activities related to ecological issues (Singh et al., 2022). With a green culture, the importance of green innovation efforts in attaining a competitive edge may remain high. Organizations should allocate the essential resources to cultivate an environmentally conscious corporate culture, which involves adopting green HRM (Tahir et al., 2019). The RBV theory posits that the organizational culture acquires value (VRIO characteristics) and a competitive edge through green innovation. Previous research has evaluated this correlation in other settings. In their study, Chen et al. (2012) found a direct link between innovation and green culture in the firm and services industries. Green innovation is influenced by corporate culture in numerous ways. In their study, Hu et al. (2009) found a favorable correlation between overall culture and green innovation. From this debate, we can derive the following hypotheses to be tested in this research.

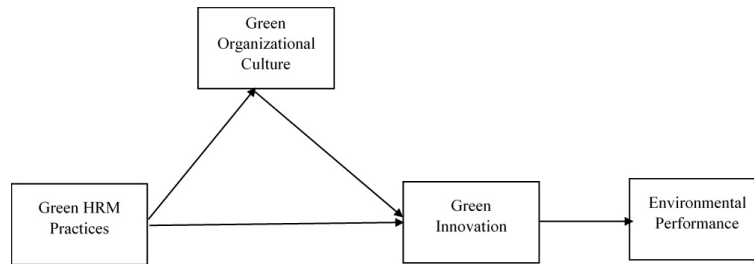
**H3:** A positive relationship exists between green organizational culture and green innovation.

**H4:** Green organizational culture mediates the relationship between GRHM and green innovation.

**H5:** GI and GOC sequentially mediate between GHRMP and Environmental Performance

### **Research framework**

The pressing issues of our time include the need for an eco-conscious environment and the threats posed by environmental dangers. The deterioration of the environment has led to significant negative impacts on global weather patterns and pollution levels (Ren et al., 2022). Embracing green innovations and eco-friendly practices offers a more sustainable future. The abovementioned relationships have been integrated into a comprehensive research framework in Figure 1.



**Figure 1: Research framework**

### Research methodology

This research follows a quantitative approach, gathering information on all variables using a self-administered questionnaire. This allows for quantifying the associations among the various variables outlined in the research framework Figure 1.0. The study questionnaire employs a five-point Likert scale that varies from strongly disagree (1) to agree (5) strongly. The response data acquisition through a questionnaire is systematic, efficient, and quick (Wiersma, 2013).

### Measurement of variables

This study follows a quantitative approach, gathering information on all variables using a self-administered questionnaire. This allows for quantifying the associations among the various variables outlined in the research framework of Figure 1. The study questionnaire uses a five-point Likert scale ranging from strongly disagree (1) to agree (5) strongly. The response data acquisition through a questionnaire is systematic, efficient, and quick (Wiersma, 2013). The scale items were carefully selected from past studies to evaluate all the variables. They were adopted from various earlier research studies and adapted to combine into a unified questionnaire for use in this present study. For example, the independent variable, Green HRM practices, was evaluated using a 6-item scale adopted by (Dumont et al., 2017). As an illustration, one of the components encompassed within the scale is the statement, "Within my organization, there exists a provision for environmentally-conscious training programs aimed at fostering the acquisition of knowledge and skills necessary for effective green management." Similarly, environmental performance measurement was conducted utilizing the 5-item scale established by (Chow and Chen, 2012). As an illustration, the scale indicates that the organization has implemented a reduction strategy for procuring non-renewable

resources, chemicals, and components.

Moreover, a scale of six items modified from previous research conducted by Chang (2011) was used to measure green innovation. The provided example of a green innovation entails the utilization of materials that exhibit reduced energy consumption and resource utilization within my organization. This study assessed the green organizational culture using a 5-item scale derived from a previous source (Chen, 2008; Denison and Mishra, 1995). One example of a green organizational culture is, "My organization prioritizes implementing environmentally sustainable practices and preserving ecological resources."

### Sampling technique, sample size, and data collection

This questionnaire collected data from study respondents working in various SMEs in Saudi Arabia, KSA. In Saudi Arabia (KSA), SMEs are established in various states, mainly in Riyadh, Makkah, Eastern Province, Aseer, Madina, Jazan, Qassim, and Hali, and fewer in number in other states. Most of them, around 15%, are established in Riyadh and Makkah only (Altassan, 2024). Considering this, the present study used cluster sampling, which suits the availability of study respondents, study objectives, and research design (Kasunik, 2005). Based on their distribution throughout several states, the population of SMEs is divided into clusters, with a sizable share situated in Riyadh and Makkah, as previously noted.

Due to extensive elements in a population, it becomes increasingly difficult to investigate it thoroughly (Green, 1991). Due to this reason, a sample is opted from the selected population, which includes all the properties of the population and is known as the subset of the population as it can represent it feasibly (Abubakar and Dano, 2013). The sample size for the present study is selected through the thumb rule, which states that at least 200 responses are needed to perform statistical data analysis adequately (Green,

1991). Usually, the sample size is calculated as multiple (5-10 times) of total items. In the present study, the total number of questionnaire items is 26. This way, we obtain the study's sample size as a multiple 10 of the total number of items. Therefore, the sample size of the present study will be  $26 \times 10 = 260$  responses.

Five hundred questionnaires were sent out to Workers and Supervisors/Managers in SMEs in Riyadh, Makkah, and other states to obtain the appropriate responses from the target population. A 60% response rate was anticipated. The respondents were reached through the Small and Medium Enterprises General Authority, which has extensive lists and contact information of all registered SMEs, classified by state, comprising contact numbers and email addresses. The reliability of the study has been firmly established. A decent % response rate of 58% was obtained from the 291 completed and returned surveys from the targeted respondents. Once incomplete surveys were eliminated, all fully completed replies underwent a thorough evaluation process, leading to the selection of 262 questionnaires for statistical analysis.

**Data analysis**

The statistical tool for examining measurement and structural model was the Smart PLS 3.2.8 version. In survey research, the assumption of normality is not required, and SEM is used due to the complex model using moderation and mediation. We have used the variance-based approach Smart PLS because in the studies of green HRM, scholars like Kim et al. (2019)

and Pham et al. (2019). In the current study, out of 291 questionnaires, a few values needed to be added, which were less than 5% of the total data. This was treated by using the Expectation Maximization Algorithm. A single factor shows 39% of the variance per the output results, so the "common bias method" is not used in this research (Lowry and Gaskin, 2014). Two main measures for assessing the outer model are validity and reliability (Hair et al., 2011; Ramayah et al., 2011). Three things are mainly checked. Firstly, indicator and internal consistency reliability, which is individual item reliability, is verified using Composite Reliability (CR). Secondly, AVE (Average Variance Extracted) checks individual variables' convergent validity. Thirdly, the Fornell and Larcker (1981) Criterion is used to check the discriminant validity. Internal consistency is used to measure result consistency among question items of the like examination. It contains whether the same questionnaire items give similar results (Sarstedt et al., 2014). According to Hair et al. (2011) and Sarstedt et al. (2014), convergent validity is attained when all items have a factor loading of more than 0.50. The cutoff value for composite reliability should be at least 0.70 and AVE more than 0.50 (Fornell and Larcker, 1981; Hair et al., 2012). Moreover, Cronbach's Alpha is used to check internal consistency. In the current research, all alpha values are in the given range. Table 1 explains the acceptable values for Cronbach alpha, composite reliability, and Average Variance Extracted (AVE) for all variables.

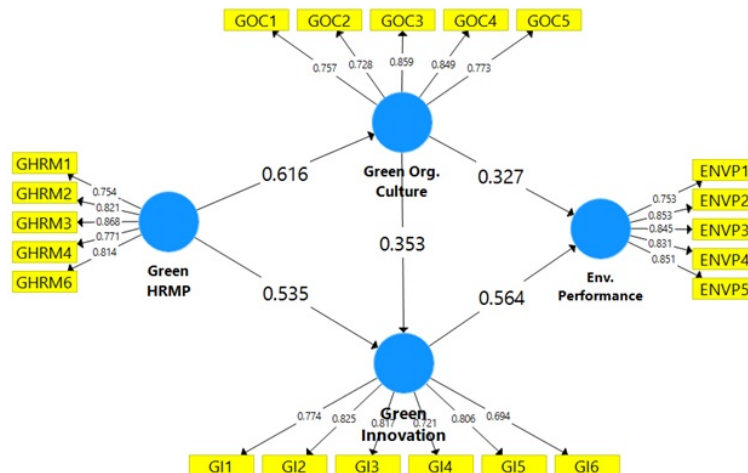


Figure 2: Confirmatory factor analysis



**Table 1: Loadings, AVE of latent variables, composite reliability and cronbach's Aapha**

	Items	Loadings	VIF	Cronbach's Alpha	Composite Reliability	AVE
Env. Performance	ENVP1	0.753	1.678	0.884	0.915	0.684
	ENVP2	0.853	2.387			
	ENVP3	0.845	2.3			
	ENVP4	0.831	2.203			
	ENVP5	0.851	2.336			
Green HRMP	GHRM1	0.754	1.645	0.865	0.903	0.651
	GHRM2	0.821	2.764			
	GHRM3	0.868	2.184			
	GHRM4	0.771	1.895			
	GHRM6	0.814	1.984			
Green Innovation	GI1	0.774	2.088	0.866	0.899	0.6
	GI2	0.825	2.319			
	GI3	0.817	2.827			
	GI4	0.721	1.822			
	GI5	0.806	2.012			
	GI6	0.694	1.598			
Green Org. Culture	GOC1	0.757	1.719	0.854	0.895	0.632
	GOC2	0.728	1.709			
	GOC3	0.859	2.458			
	GOC4	0.849	2.387			
	GOC5	0.773	1.811			

According to Fornell and Larcker (2009), Discriminant validity refers to the extent to which a specific latent variable exhibits dissimilarity compared to other latent variables. The present investigation examined

the discriminant validity by utilizing HTMT values, employing a threshold of 0.85 and a maximum of 0.90 (Fornell and Larcker, 1981). Table 2 explains the HTMT values, which are in threshold levels.

**Table 2: Heterotrait Monotrait Ratios (HTMT)**

	ENVP	GHRMP	GI	GOC
Env. Performance				
Green HRMP	0.753			
Green Innovation	0.812	0.831		
Green Org. Culture	0.804	0.706	0.78	

**Evaluation of the importance of direct relationships in the structural model**

This section provides a detailed explanation of the structural model, also known as the inner model, following the evaluation of the outer model or measurement model. The focus of this study is centered on the direct linkages, as emphasized by Hair et al. (2011). The structural model examines the interconnections between interactions within the hypothesized model under examination. Based on the

research undertaken by Hair et al. (2012), A t-value is deemed statistically significant if it is above the critical value of 1.64. The primary aim of this study is to evaluate the model by examining direct relationships and analyzing the proposed connections within the inner model. The hypotheses in the present study were thoroughly evaluated and validated utilizing the designated t-value. The results of the hypothesis are presented in Table 3 and Figure 3.

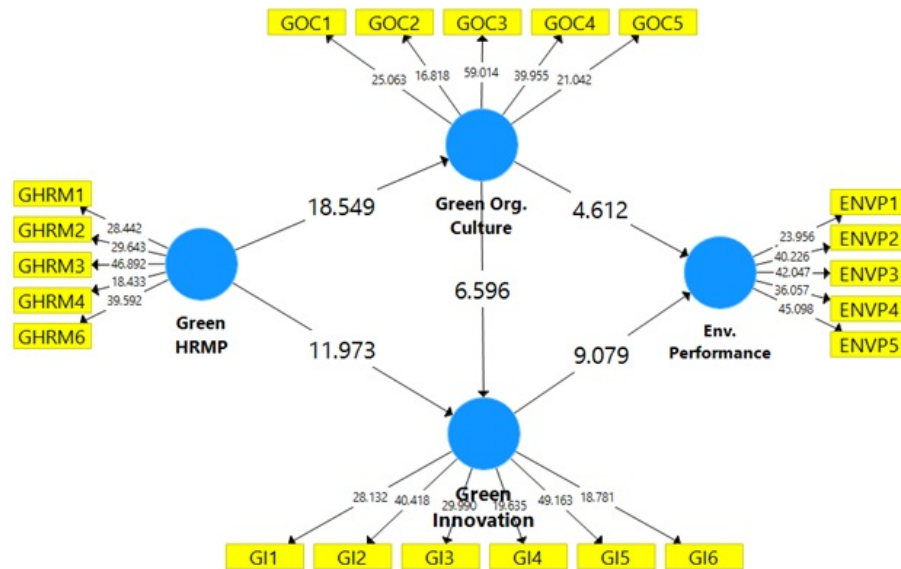


Figure 3: Hypotheses testing

Table 3: Direct hypotheses testing

	Beta	SD	T Stats	p Values	Decision
Green HRMP -> Green Innovation	0.535	0.045	11.973	0	Significant
Green HRMP -> Green Org. Culture	0.616	0.033	18.549	0	Significant
Green Innovation -> Env. Performance	0.564	0.062	9.079	0	Significant
Green Org. Culture -> Env. Performance	0.327	0.071	4.612	0	Significant
Green Org. Culture -> Green Innovation	0.353	0.054	6.596	0	Significant

**Mediation analysis**

Sarstedt et al. (2014) state that mediation assesses whether the connection between dependent and independent variables is strengthened. Various methodologies have been employed to conduct mediation tests, including Baron and Kenny (1986), the approach, the Sobel test (Sobel, 1982), and bootstrapping (Aggarwal and Agarwala, 2008). In this study, re-sampling mediation was employed to

examine all the indirect impacts of all conceivable factors. Furthermore, adhering to the prescribed technique outlined by Preacher and Hayes (2008) is imperative during the mediation analysis. This involves bootstrapping the sample distribution of the indirect effects, which applies to both simple and multiple models. The values for the mediation analysis are presented in Table 4. Results showed that H4 and H5 are supported.

Table 4: Mediation analysis

	Beta	SD	T Stats	p Values	5.00%	95.00%	Decision
Green HRMP -> Green Org. Culture -> Green Innovation -> Env. Performance	0.123	0.029	4.219	0	0.081	0.174	Mediation
Green HRMP -> Green Org. Culture -> Green Innovation	0.218	0.037	5.911	0	0.157	0.279	Mediation

**DISCUSSION**

This study provides a comprehensive understanding of the intricate association between Green GHRM

practices, Green Organisational Culture, and Green Innovation in the context of organizations in Saudi Arabia (KSA). The results confirm the proposed predictions and provide valuable insights into the

intricate dynamics between these constructs. The study demonstrates a positive correlation between implementing Green HRM practices and developing a green organizational culture. This emphasizes the crucial significance of HR practices in cultivating an organizational culture that prioritizes environmental sustainability as a fundamental value. These findings are consistent with the existing literature (Al Doghan et al., 2022; Jia et al., 2018; Perez et al., 2023; Shaaban and Rabie, 2023; Wang et al., 2023; Wasiq et al., 2023). Moreover, a solid and favorable correlation is shown between the green organizational culture and the creation of green innovation. This highlights the significant impact of an environmentally friendly culture in promoting creativity and problem-solving with a focus on environmental concerns. This statement suggests that when an organization places importance on sustainability, it can significantly encourage the development of innovative solutions to address environmental issues. Additionally, the research finds green organizational culture as a significant intermediary variable. This study examines the relationship between Green HRM practices and green innovation, specifically focusing on the importance of a green culture in facilitating the connection between HR initiatives and developing new environmental practices. This mediation highlights the significance of developing a cultural framework aligning with human resources initiatives fostering environmental innovation. This observation aligns with the conclusions drawn from recent empirical investigations about the topic (Aggarwal and Agarwala, 2023; Fang et al., 2022; Shah et al., 2021; Shahzad et al., 2023).

In addition, the study sheds light on the broader implications for organizational environmental performance. By integrating green innovation into goods and procedures, organizations can align with conservational objectives and gain a competitive edge in the market. This strategic shift can lead to enhanced resource efficiency, reduced waste generation, and lower overall environmental degradation, ultimately contributing to a more sustainable and resilient business model. These findings offer valuable discernment for organizations in KSA seeking to enhance their environmental sustainability efforts. They emphasize aligning HR practices, organizational

culture, and innovation strategies to foster a holistic approach toward environmental responsibility and long-term success. These findings align with the existing research studies (Al-Saidi and Elagib, 2018; Baeshen et al., 2021) and add more value to the study context.

## CONCLUSION

This study provides a detailed analysis of the relationship between Green HRM, Green Organisational Culture, and Green Innovation within Small and Medium-sized Enterprises (SMEs) in Saudi Arabia. The results confirm the crucial significance of human resource practices in fostering a culture that promotes environmental sustainability. Furthermore, the authors emphasize the significant impact of a green organizational culture on advancing environmentally sustainable performance, innovation, and problem-solving. The research also underscores the mediating function of Green Organisational Culture in establishing a connection between Green HRM practices and green innovation, underscoring the significance of a supporting cultural framework. Furthermore, integrating green innovation into organizational processes and products aligns with environmental goals and discusses a competitive advantage. This strategic shift leads to enhanced resource efficiency, reduced waste generation, and lower environmental degradation, ultimately contributing to a more sustainable business model. These insights provide valuable guidance for organizations in Saudi Arabia seeking to strengthen their environmental sustainability efforts, emphasizing the need for a coordinated approach involving HR practices, organizational culture, and innovation strategies. The findings of this study align with existing research and contribute to the growing body of knowledge in this area.

### Theoretical implications

The theoretical frameworks of the resource-based view and the theory of planned behaviour are used in this investigation, with significant results for the theory. In the first place, it describes the benefits that might accrue to a company when it has adopted a "green organizational culture" and "green innovation" programs. Through training, knowledge, skill development, and the cultivation of a

green culture, green organizational culture empowers employees to contribute effectively to environmental sustainability. Similarly, green innovation reinforces an organization's capacity to develop and implement environmentally friendly products and processes, aligning with the focus of the resource-based view in building capabilities for enhanced performance. The present study offers a multidimensional novelty and substantial theoretical and practical contributions. It introduces an innovative, adapted conceptual framework that assesses the influence of green HRM practices on green innovation. This framework also scrutinizes the impact of green innovation on organizational environmental performance. The study also provides measurement scales, offering a valuable resource for future research. Researchers in various industries and geographic regions can apply this modified framework. The present study can be a source of several significant managerial implications. This study contributes to the field of green HRM in several ways. Despite Saudi Arabia's (KSA) significant endeavors in environmental conservation, there needs to be more research focusing on these specific variables. Apart from expanding the existing research literature, this study will offer valuable insights for policymakers and practitioners in Saudi Arabia (KSA) and other developing nations, enabling them to understand the impact of these variables on environmental performance. In line with the study's objectives, aligning consumer demands with product innovation positively impacts the firm's overall performance. This is following the study's predominant goal of promoting green practices. Consequently, managers are advised to prioritize understanding and meeting customer needs to formulate effective competitive strategies. Offering environmentally friendly products supports sustainability objectives and enhances customer performance, aligning with the study's emphasis on ecological and organizational performance. Implementing green Human Resource Management (HRM) practices and promoting green innovation are very effective means of motivation. These practices foster a culture that prioritizes sustainability and innovation inside the organization. The study examines the mediating function of green organisational culture in the relationship between

green HRM practices and green innovation and assesses its overall influence on organizational environmental performance. This is consistent with the tenets of the resource-based view, which highlights the significance of a conducive environmental setting in facilitating enhanced environmental performance and resource allocation inside organizations. Therefore, the study framework supports and validates these fundamental theories, offering significant theoretical perspectives on the interplay between Green HRM, green innovation, green organisational culture, and the environmental context in fostering sustainability within Small and Medium-sized Enterprises (SMEs).

### **Practical implications**

This study provides invaluable guidance for SMEs seeking to enhance their sustainability endeavors in Saudi Arabia. It underscores the importance of incorporating green HRM practices, cultivating a green organizational culture, and promoting green innovation within HR strategies. This approach fosters an environmentally conscious workforce through targeted training, awareness initiatives, and incentives for eco-friendly behavior. Additionally, nurturing a culture of innovation and creativity proves crucial, as it positively influences employees' adoption of green practices. Recognizing the pivotal role of employees in driving environmental performance is paramount, achieved by implementing eco-friendly workplace policies, providing resources for sustainable practices, and acknowledging and rewarding environmentally responsible actions. Furthermore, considering the local environmental context amplifies the positive effects of green HRM and Innovation. By implementing these practical measures, SMEs in Saudi Arabia can proactively contribute to environmental sustainability while concurrently enjoying the benefits of enhanced organizational performance.

### **Limitations and future directions**

While this study successfully assessed the impact of green HRM, green innovation, and green organizational culture on the organizational environmental performance of SMEs in Saudi Arabia, it is essential to acknowledge certain limitations. However, the study recommends that this study's findings be generalized to other regions and

countries. Although green HRM supports green organizational culture development, other factors beyond this study's scope may hinder or limit progress toward sustainable development and organizational performance. Factors such as employee eco-friendly behavior, demographic, and legal domains require further consideration to refine and strengthen the research model. Hence, it is recommended that forthcoming research endeavors integrate these external aspects to establish a more thorough and verisimilar portrayal. In summary, the findings obtained from this research provide a substantial addition to the current scholarly knowledge on Green HRM practices and the environmental performance of Small and Medium-sized Enterprises (SMEs) in the Gulf area. Future research endeavors must also consider more prominent contextual aspects to attain a more comprehensive and holistic comprehension of this association.

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