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Green HRM practices and corporate sustainability performance

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Green HRM Practices and Corporate Sustainability Performance

Abstract

Purpose – *The existing literature indicates that the ultimate purpose of green human resource management (GHRM) practices is to enhance sustainable corporate performance by shaping employees' green behaviors. In this vein, we argue that green organizational culture and employee existing pro-environmental behaviors are the important factors or channels through which GHRM practices shape green employee behaviors for sustainable corporate performance. Consequently, we draw on the ability, motivation, and opportunity (AMO) framework to examine how firms' GHRM practices indirectly shape employee green behavior for sustainable corporate performance by cultivating and reinforcing green organizational culture under the boundary condition of high employee pro-environmental behavior.*

Design/methodology/approach – *This study uses multi-source, dyadic, and time-lagged data collected from green HR managers and employees in 242 ISO-14001-certified green firms in the Kingdom of Saudi Arabia. The study applies structural equation modeling through LISREL 12 software for testing of hypotheses.*

Findings – *The findings support the postulation that GHRM practices, directly and indirectly, shape employee green behaviors for sustainable performance. GHRM practices indirectly enhance employee green behaviors for sustainable performance by cultivating and fostering the green organizational culture in the presence of high pro-environmental behavior.*

Practical implications – *This study outlines theoretical and practical implications on how HRM managers require an established green organizational culture and employee pro-environmental behaviors to effectively direct GHRM for enhanced sustainable corporate performance. HRM managers should make use of appropriate interventions, including but not limited to GHRM practices, to foster a green organizational culture and employee pro-environmental behaviors.*

Originality/value – *This is an original study that outlines the importance of alignment between Green HRM practices and employee pro-environmental behaviors towards shaping green organizational culture and employee behaviors for corporate sustainability. The study*

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3 *demonstrates how GHRM practices enhance sustainable corporate performance through*
4 *sequential mediations of green organizational culture and employee green behaviors, and under*
5 *the boundary condition of pro-environmental behavior.*
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10 **Keywords:** Green human resource management; Sustainable human resource management;
11 Corporate sustainability performance; Green organizational culture; Employee green
12 behavior; LISREL; Saudi Arabia.
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1. Introduction

Recently, the ever-growing global sensitivity to environmental sustainability, increasing legal and moral obligations, and pressures for firms to do eco-friendly and eco-responsive business, corporate sustainability performance has made its way to the heart of current business strategies and practices (Campos-García et al., 2024; Shah et al., 2024; Ren et al., 2023a; Yuan et al., 2024; Zhou et al., 2024). Corporate sustainability performance refers to the successful implementation of practices that help firms protect the natural environment (Algarni et al., 2022; Ali et al., 2023). Corporate sustainability protects the environment by following regulations related to ecology, pollution, or waste reduction practices, and implementing sustainable operations (Ali et al., 2023; Algarni et al., 2022; Latan et al., 2018). Employees are the individuals who execute and implement the various functions of a firm, highlighting the need to manage employee green behaviors for sustainability and functionality. Human resource management (HRM) theory and practice have developed into a toolkit for green HRM (or GHRM), in order to manage employee green behaviors for corporate sustainability (Aftab et al., 2024; Kafetzopoulos, 2023; Ren et al., 2023b; Martín-Alcázar et al., 2024; Renwick, 2018; Shah et al., 2024; Yuan et al., 2024). Chiappetta Jabbour (2013) defines GHRM as “the systematic, planned alignment of typical human resource management practices, such as recruitment, training, and motivation, with the organization’s environmental or corporate sustainability goals”. The ability, motivation, opportunity (AMO) framework in the HRM or GHRM literature categorizes HRM practices into three distinct dimensions: ability (i.e., recruitment and selection, training); motivation (i.e., performance management, pay and reward); and opportunity (i.e., involvement, green ways of working, responsibilities, and rules). The increased use of the AMO framework in GHRM research in recent years corroborates the idea that these three dimensions of GHRM, when combined, enable, motivate, and provide opportunities for employees to exercise green behaviors which, in turn, enhance corporate sustainability performance (Al-Swidi et al., 2021; Khan et al., 2024; Maheshwari et al., 2024).

There are scattered clusters of research in the existing GHRM literature that investigate how implementation of GHRM practices can directly foster corporate sustainability (e.g., Obeidat et al., 2020; Ren et al., 2023a), or indirectly through green organizational culture (Li et al., 2023), employee pro-environmental behaviors inside and outside the organization (Usman et al., 2023) and employee green behavior (e.g., Aboramadan, 2022; Aboramadan et al., 2022b;

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3 Rando Cueto et al., 2023; Yuan et al., 2024; Zhou et al., 2024; Zameer et al., 2022).
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5 Nevertheless, further comprehensive investigation is required at the intersection of these clusters
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7 into how GHRM practices interact with green organizational culture and pro-environmental
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9 behaviors to help manage employee green behaviors for corporate sustainability (Ghani et al.,
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11 2024; Khan et al., 2024; Liu et al., 2024). In this vein, the GHRM literature agrees that employee
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13 pro-environmental attitudes or eco-friendliness (Aboramadan, 2022; Aboramadan et al., 2022b)
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15 reinforces green organizational culture (Li et al., 2023) which, in turn, reinforces employee green
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17 behaviors for corporate sustainability (Aftab et al., 2024; Ren et al., 2023b; Umrani et al., 2022).
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19 The literature is in further agreement that GHRM cultivates, strengthens, and reinforces green
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21 organizational culture – e.g., the rules, norms, values, and commonly held beliefs of green
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23 working practices. Nevertheless, the existing GHRM literature is limited in terms of
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25 comprehensively accounting for the moderating and mediating role of green organizational
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27 culture (mediating between GHRM and employee green behaviors) and pro-environmental
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29 behaviors (moderating between GHRM and green organizational culture).

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31 Consequently, drawing on the AMO framework, the aim of this study is to examine how
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33 GHRM practices cultivate and strengthen green organizational culture in the presence of a high
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35 degree of employee pro-environmental behaviors in order to help shape employee green
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37 behaviors for corporate sustainability as shown in Figure 1. The AMO framework suggests that
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39 employees will consistently exhibit a culture of green behaviors when they have the abilities,
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41 motivations, and opportunities to do so. The GHRM practices together enhance employee ability,
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43 motivation, and opportunities to engage in green behaviors and help build a green organizational
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45 culture (Aust et al., 2020). Consequently, these three dimensions of GHRM practices together
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47 cultivate and strengthen the elements of organizational culture, such as norms, values, and beliefs
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49 of green working. This strengthened green organizational culture amplifies the necessary
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51 opportunity structure for employees to effectively utilize their ability, opportunity, and
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53 motivation towards green behaviors (Ghani et al., 2024; Roscoe et al., 2019). A green culture
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55 reinforces the adoption of sustainable practices, creating an environment where sustainability
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57 becomes a shared value and norm (Aboramadan, 2022; Aboramadan et al., 2022b).
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59 Consequently, we address the following research questions: (1) What is the impact of GHRM
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61 practices on green organizational culture under the moderating role of employee pro-
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63 environmental behaviors? (2) How does green organizational culture mediate the influence of

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3 GHRM practices on corporate sustainability performance? (3) How do employee green
4 behaviors mediate the influence of GHRM practices on corporate sustainability performance?
5 Finally, (4) What part do GHRM practices play in enhancing corporate sustainability
6 performance via green organizational culture and employee green behaviors?
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10 The present study is significant for both theory and practice. Accordingly, we make the
11 following contributions to the state-of-the-art literature on GHRM practices and corporate
12 sustainability performance. First, the study contributes to the growing body of literature that
13 seeks to expand the role of HRM beyond traditional personnel management to address
14 contemporary challenges, such as environmental concerns and sustainability. Thus, this study
15 responds to the call for research into GHRM for sustainability (Campos-García et al., 2024; Bos-
16 Nehles et al., 2023; Ren et al., 2023a; Shah et al., 2024). Second, we contribute to the
17 explanation of when and how GHRM practices have an indirect impact on corporate
18 sustainability performance through employee green behaviors (Mehrajunnisa et al., 2021; Al-
19 Swidi et al., 2021). We indicate that this can happen because of the alignment of GHRM
20 practices with employee pro-environmental behaviors to shape organizational green culture for
21 employee green behaviors, which in turn influence corporate sustainable performance. Although
22 green culture is regarded as a driving force for corporate sustainability, little effort has so far
23 been made to explore how GHRM practices, in alignment with employee pro-environmental
24 behaviors, affect corporate sustainability performance (Al-Swidi et al., 2021; Roscoe et al.,
25 2019). Finally, we explain how GHRM practices help shape corporate sustainability via green
26 organizational culture and employee behaviors, respectively. Thus, this indirect effect provides a
27 nuanced view of the complex relationships within the HRM-sustainability-performance
28 framework (Martín-Alcázar et al., 2024; Ren et al., 2023b; Yuan et al., 2024).
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43 ***** INSERT FIGURE 1 HERE *****
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46 2. Theoretical background and hypothesis development

47 2.1. AMO framework for GHRM

48 The framework of ability, motivation, opportunity (AMO) (Appelbaum et al., 2000)
49 provides a theoretical foundation for our research model. The framework informs the HRM
50 scholarship to utilize a set of ability-, motivation-, and opportunity-enhancing GHRM practices
51 to consistently elicit the desired employee green behaviors and performance for greater corporate
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sustainability (Al-Swidi et al., 2021; Khan et al., 2024; Maheshwari et al., 2024; Shah and Soomro, 2023). The AMO framework categorizes GHRM practices into three distinct dimensions: ability (i.e., recruitment and selection, training); motivation (i.e., performance management, pay and reward); and opportunity (i.e., involvement, and green ways of working. Responsibilities, and rules). The increased use of the AMO framework in GHRM research in recent years demonstrates that these three dimensions of GHRM, when combined, enable, motivate, and provide opportunities for employees to exercise green behaviors which, in turn, enhance corporate sustainability performance (Al-Swidi et al., 2021; Maheshwari et al., 2024; Roscoe et al., 2019). An update review on AMO theory (Bos-Nehles et al., 2023) concludes that there is a lack of consideration of the mediating and moderating process through which AMO generates performance gains. Hence, this study introduces individual level variables – green organizational culture and employee green behavior – as two mediators which act as an underlying mechanism linking GHRM practices and corporate sustainability performance. Similarly, this study introduces pro-environmental behavior as a potential moderator in the research model. It is suggested that GHRM practices strongly stimulate and reinforce green organizational behavior when firm employees exhibit a high degree of pro-environmental behaviors. Hence, it is suggested that when employees of a firm perceive themselves as pro-environmental and exhibit such behaviors, they form a pro-environmental identity together which strengthens the elements of green organizational culture, such as green values, norms, and mores, and reinforces employee green behaviors (Li et al., 2023). This study addresses this specific process by investigating the effect of GHRM practices on corporate sustainability performance through a moderated mediation model of organizational culture, employee behavior, and pro-environmental behavior.

2.2. GHRM practices and corporate sustainability performance

The AMO framework provides a systematic and practical approach for GHRM to cultivate a sustainable and engaged workforce for corporate sustainability (Maheshwari et al. 2024; Martín-Alcázar et al. 2024). GHRM practices help firms embed environmental concerns in their business strategies (Ogbeibu et al., 2024; Yong et al., 2020). Corporate sustainability performance is measured in terms of protecting the environment through regulations related to ecology, pollution or waste reduction practices, and implementing sustainable operations (Algarni et al., 2022; Latan et al., 2018). Using the lens of the AMO theory, the scholarly

community suggests that GHRM is a critical component for achieving environmental performance (Paillé et al., 2014; 2020; Ren et al., 2023; Renwick et al., 2013; Yong et al., 2020). Green practices (e.g., staff options and employee performance appraisal) congruent with environmental aims are used to execute environmental management (Tang et al., 2018). GHRM has become a fundamental part of organizational sustainability (Paillé et al., 2014, 2020; Voegtlin and Greenwood, 2016), and further robust investigation of the correlation between these two constructs is required (Renwick et al., 2013; Shah et al., 2024). Several studies have called for research explored this association with regard to environmentally sustainable performance (Shah et al., 2024; Pham et al., 2020; Ren et al., 2023a; Yong et al., 2020). The role of the green HR function is strategically important in planning and implementing strategies that lead to a high level of environmental performance (Ogbeibu et al., 2024; Shah et al., 2024). Although the current business climate encourages value development in environmental sustainability, little research has established an integrated association between GHRM and corporate sustainability performance (Shah et al., 2024; Yong et al., 2020). Consequently, HRM plays a critical role in assisting businesses in expanding their sustainability initiatives to achieve long-term gains (Shah et al., 2024). Yusliza et al. (2017) proposed that future studies should focus on the interaction between environmental sustainability and GHRM, as GHRM studies are critical for establishing sustainable firms (Ren et al., 2018). GHRM encompasses not only environmental consciousness but also a broader view that addresses the socioeconomic health of firms' and workers' (Freitas et al., 2020). According to this view, employees are involved in sustainability applications that serve them, the firm, and other stakeholders (Voegtlin and Greenwood, 2016). Additionally, adopting cleaner production and GHRM practices in firms can help enhance the attraction and retention of talented employees, thus rendering GHRM practices a critical part of environmental management (Patel, 2014). Based on the above arguments, this study proposes that GHRM practices (Ogbeibu et al., 2024; Jabbour, 2013; Renwick et al., 2013) are recommended tools for improving the level of corporate sustainability performance. Based on these arguments, this study posits the following initial hypothesis:

Hypothesis 1. *GHRM practices are positively related to corporate sustainability performance.*

2.3. *The mediating role of green organizational culture*

Green organizational culture refers to the values, beliefs, attitudes, and behaviors within a firm that prioritize environmental sustainability and responsibility (Ali et al., 2023). This entails integrating environmentally friendly practices into every aspect of a firm's operations, including its policies, processes, products, and services. Previous studies (Chiappetta Jabbour et al., 2010) demonstrate that GHRM function drives green culture (i.e., green-oriented leadership, values, beliefs, and philosophy) inside a business by matching business practices and regulations with sustainability goals. Green HRM practices and policies emphasize a culture of green behaviors, individual and collectively (Aboramadan, 2022; Aboramadan et al., 2022a, b; Gyensare et al., 2024). They create an environmentally friendly and responsive company culture (Dumont et al., 2017; Maheshwari et al., 2024). The presence of a team of employees who understand the program of promoting sustainable management makes the creation and cultivation of a greener organizational culture (Al-Swidi et al., 2021; Maheshwari et al., 2024). As a result, firms with a better green culture tend to have staff who are willing to participate in sustainability initiatives (Khan et al., 2024). A green organizational culture ensures that all business processes that involve HR practices are implemented in accordance with the cultural sustainability movement (Cordeiro & Tewari, 2015; Wang, 2019). HR practices result in a distribution network that adheres to the sustainability mandate of the company culture, while balancing the connection between sustainability culture and firm growth (Ali et al., 2023; Gürlek & Tuna, 2018). Recruiting staff dedicated to environmental concerns is a strategy for developing an ecologically conscious business culture. According to this proposition, by employing people who are eager to participate in environmental management activities, a business becomes an ecologically proactive organization (Freitas et al., 2020). In support of the arguments, previous studies (Al-Swidi et al., 2021) empirically indicate the mediating role of green organizational culture on the relationship between GHRM, employees' green behavior, and environmental performance (Roscoe et al., 2019). In light of the aforementioned points, this research puts forth the second hypothesis:

Hypothesis 2: *Green organizational culture mediates the relationship between GHRM practices and corporate sustainability performance.*

2.4. *The mediating role of employee green behavior*

Green employee behavior refers to actions exhibited by employees that positively impact the environment (Algarni et al., 2022). The scholarly community has characterized employee green behavior as a workplace-oriented type of environmentally friendly conduct (Shah and Soomro, 2023). Chaudhary (2020) defined employee green behavior as purposeful actions taken by employees to lessen the adverse environmental effects of human activities. Green behavior encompasses practices such as water conservation, resource efficiency, waste minimization, energy conservation, and recycling. Employee green behavior is one of several strategies followed by firms that leads to environmental resilience in the workplace and achieves sustainability targets (Algarni et al., 2022). Based on the AMO framework, previous research has focused on GHRM processes that are related to the overall sustainability impact on various types of businesses (Bissing-Olson et al., 2013; Owino & Kwasira, 2016; Paillé et al., 2014), and more work is required to investigate the AMO-performance link through the mediation process. Beyond AMO theory, as well as several studies' affirmations that the execution of GHRM is linked to workers' green attitudes in the workplace, existing research has certain theoretical limitations, such as the fact that little is known about the procedures and methods by which green HR implementation impacts staff's green behavior (Dumont et al., 2017; Gyensare et al., 2024). Green behavior represents the information, abilities, and capacities present in the business environment, as per the context-behavior-performance paradigm (Chan et al., 2017; Liaquat et al., 2024), and workers' green behavior generates positive results (Kim et al., 2019;). Workers' performance is enhanced by green behaviors for two reasons. First, green behavior enhances and contributes to professional knowledge, competencies, and morals. Workers involved in green behavior show concern for the business's long-term viability and obtain pro-environmental ideas and understanding at work, which increases their standard of work and their creativity in completing their work (Shen et al., 2018). Second, through service experience, fresh skills are learned, with personnel minimizing waste, reusing materials, and lowering costs, even while achieving sustainability objectives (Kim et al., 2019). GHRM focuses on the organizational systems and practices that encourage green behavior among employees. If management is unconcerned about the environment, this sends the message that they do not respect ecological sustainability and therefore do not promote staff green behavior through personal example, which can contribute to a reduction in staff green behavior. As a result, it is

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3 claimed that good governance enhances the interaction between sustainability performance and
4 GHRM in terms of green behavior (Dumont et al., 2017). This leads us to the third hypothesis, as
5 follows:
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9 ***Hypothesis 3: Employee green behavior mediates the relationship between GHRM practices and***
10 ***corporate sustainability performance.***
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13 2.5. *The sequential mediating role of green organizational culture and green employee behavior*

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16 This study further proposes that the influences of green organizational culture and
17 employee green behavior sequentially mediate the link between GHRM and corporate
18 sustainability. Previous research shows that GHRM does not have a direct effect on sustainability
19 performance but causes indirect effects via green organizational culture (Roscoe et al., 2019) and
20 employee green behavior (Ojo et al., 2022; Saeed et al., 2019). Thus, green organizational
21 culture has an unspoken impact on employee green behavior to shape sustainability performance
22 (Li et al., 2023; Liaquat et al., 2024; Turban & Greening, 2016; Wang, 2019). A positive
23 organizational culture, embraced by all employees, will make it easier to work greener (Roscoe
24 et al., 2019). According to previous studies, GHRM processes can affect a firm's behaviors
25 towards green organizational culture, which is critical for managers' and workers' long-term
26 sustainable development and for encouraging a higher level of engagement in green conduct. For
27 instance, Ghani et al. (2024) provide empirical evidence of a positive relationship between
28 GHRM practices and employees' behaviors. Li et al. (2023) provide evidence that GHRM
29 practices help to develop an organizational culture which supports green behavior. Al-Swidi et
30 al. (2021) argue that GHRM foster employees' green behavior and individual performance by
31 developing their knowledge, skills and abilities, and can mold them according to the
32 requirements of the organization. Li et al. (2023) suggest that GHRM helps individuals to strive
33 for green goals and display higher levels of environmental concern. Moreover, Maheshwari et al.
34 (2024) also provide evidence that GHRM enhances employees' awareness, willingness,
35 inspiration, and commitment to engage in environmentally friendly behaviors. This brings us to
36 the fourth hypothesis, outlined as follows:
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52 ***Hypothesis 4: Green organizational culture and employee green behavior sequentially mediate***
53 ***the relationship between Green HRM and corporate sustainability performance.***
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2.6. *The moderating role of pro-environmental behavior*

Employees are more likely to create and adhere to a culture of green work practices when the organization's values, specifically GHRM practices, are in line with their own environmental values. Consequently, GHRM practices can strongly promote and reinforce green organizational culture when there is a strong presence of employee pro-environmental behaviors. Therefore, pro-environmental behaviors are positive moderators of the positive relationship between GHRM practices and green organizational culture. Recently, Bissing-Olson et al. (2023) have suggested that GHRM practices strongly reinforce and stimulate green organizational behavior when employees exhibit a high degree of pro-environmental behaviors. Consequently, when employees of a firm identify themselves as pro-environmental and exhibit such behaviors, they form a shared pro-environmental identity that strengthens the elements of green organizational culture, such as green values, norms, and mores (Al-Swidi et al., 2021; Dumont et al., 2016; Zameer et al., 2022). This leads us to the final hypothesis, presented as follows:

Hypothesis 5: *Pro-environmental behavior moderates the relationship between GHRM and green organizational culture such that the positive relationship is stronger when pro-environmental behavior is higher.*

3. Research method

3.1. Data collection and sample

Following previous studies (Algarni et al., 2023, Ali et al., 2023), the questionnaire used in this study was administered to ISO-14001 certified firms in the Kingdom of Saudi Arabia. Several sources, including the Chambers of Commerce and Industry, the General Authority for Statistics database, and the Ministry of Finance and National Economy were considered in the sampling framework, which generated an initial list of 2,251 potential target firms in 2019; we ultimately received approval from 498 firms to participate in the survey. The selection of ISO-14001 certified firms was deliberate and was deemed to be suitable because such firms have demonstrated a stronger dedication towards environmental issues and concerns and a stronger environmental management system, with a focus on environmental, social and government (ESG) activities for environmentally sustainable practices (Algarni et al., 2022; Ali et al., 2023). Due to the COVID-19 pandemic, in-person visits were banned by the government. Thus, a web

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3 link was sent to the potential respondents via the WhatsApp messaging service. The data
4 collection process took place between April–December 2020.
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7 Due to the nature of research design, a time-lagged survey design was used to collect
8 data. This selection was made to reduce potential biases, including non-response bias and
9 common method variance (Podsakoff et al. 2024; Scheaf et al. 2023). In this study, each sample
10 firm was split into the respondent categories of HR managers and operational level employees.
11 Data about GHRM practices and corporate sustainability performance were collected from
12 GHRM managers at Time 1 (April 2020) and Time 3 (December 2020), while data for green
13 organizational culture, employee green behavior, and pro-environmental behavior were collected
14 from employees at Time 2 (August 2020). At Time 1, we contacted 498 GHRM managers. As a
15 result, 301 valid responses were received. These managers facilitated our interaction with their
16 employees to provide their responses. Subsequently, at Time 2, we surveyed these operational
17 level employees. In the second round of data collection, we excluded 48 surveys because they
18 were incomplete. Three months after Time 1, 253 out of the 301 GHRM managers were
19 contacted again (Time 3) for the final phase of data collection. In the third and final round of
20 data collection, 11 responses were identified as incomplete and/or unengaged and were deleted.
21 Ultimately, the final sample comprised 242 pairs of valid responses and was used for our final
22 analysis. The demographic characteristics of the sample and information on firms and
23 respondents are provided in Appendix 1.
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36 To ensure the absence of non-response bias, our analysis included a multivariate analysis
37 of variance (MANOVA) with a number of demographic variables (Scheaf et al. 2023). The
38 results of comparing the two groups did not suggest any significant differences at $p < 0.05$. To
39 corroborate this evidence, a t -test comparing early and late responders did not find any
40 significant differences at $p > 0.050$ (Scheaf et al. 2023). These results indicate that non-response
41 bias was not present in our study. Additionally, we addressed the potential threat of common
42 method variance (CMV) by utilizing a marker variable approach through confirmatory factor
43 analysis (CFA) (Podsakoff et al. 2024). The work of Miller and Simmering (2023) provided
44 guidance for this analysis. Following this approach, we added a variable that is not related to the
45 focal constructs. Our results indicated that there was no strong and significant correlation
46 between the marker variable and the main latent factors in our model ($r < 0.124$). Furthermore,
47 the CFA model incorporating the marker variable exhibited poor goodness-of-fit (GOFI) values
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3 compared to our main model without the marker variable. These findings provide strong
4 evidence that CMV did not pose a threat in our survey and measurements.
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7 Lastly, as gender, age, education and tenure/experience are variables that may impact
8 corporate sustainability performance (e.g., Bartram, 2021; Atnic et al., 2012), we included them
9 as control variables. As described by Bernerth and Aguinis (2016), the inclusion of these control
10 variables is justified due to their relevance to the focal construct in the model, the availability of
11 reliable measures, and empirical as well as theoretical support. Li (2021) emphasizes that the
12 improper utilization of control variables can lead to undesirable side effects and inaccurate
13 estimation results.
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19 *3.2. Measure and scales*

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21 The question items used in the survey instrument were adopted from previously
22 established measures (Haws et al. 2023). The survey items were measured using a 7-point Likert-
23 type scale with response options ranging from 1 (“strongly disagree”) to 7 (“strongly agree”).
24 The accuracy of the survey translation was ensured through back-translation of the Arabic
25 version into English (Mullen, 1995), as well as through pre-test and pilot study. To measure
26 GHRM, eighteen higher-order items were adopted from Tang et al. (2018). To measure green
27 organizational culture, this study relied on five items used in Masri and Jaaron (2017). To
28 measure employee green behavior, this study relied on six items used in Dumont et al. (2017).
29 The seven items used to measure pro-environmental behavior were adopted from Robertson and
30 Barling (2013). Tomšič et al.’s (2015) seven items were used to measure overall sustainability
31 performance.
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41 *3.3. Data analysis*

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43 We used latent variable path modeling with covariance structure analysis (CSA) to
44 estimate the relationships between latent factors. Specifically, this approach enabled us to obtain
45 unbiased and stable results from parameter estimation through the maximum likelihood (ML)
46 estimator to test our common factor model (Byrne 2016; Hoyle 2023; Mueller and Hancock
47 2019). Aside from taking measurement error into account, this method is suitable for theory-
48 driven explanatory research. We considered several advantages when choosing this method.
49 First, CSA generates a number of GOFIs to assess the quality of our theoretical model. Second, it
50 allows us to assess the measurement model through confirmatory factor analysis (CFA). Finally,
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3 this approach has been proven in most disciplines and supports many advanced features
4 (Jöreskog et al. 2016; Kline 2023; Finch et al. 2016).
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7 8 **4. Results** 9

10 We employed a linear structural relationship in the LISREL 12 software to execute our
11 common factor model. According to Jöreskog et al. (2016), LISREL is a powerful piece of
12 software, because it allows users to obtain robust estimates. We used the SIMPLIS feature to
13 create model equations and obtained the following results. To assess the multinormality
14 assumption, we conducted Mardia's multivariate test. The results indicate that the p -values
15 associated with skewness and kurtosis are all greater than 0.05, indicating no significant
16 deviations from multinormality distribution (Kline, 2023). Additionally, we confirmed that our
17 data does not possess a nested structure. As a result, it is not feasible to conduct multilevel
18 analysis or perform model comparisons.
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25 The descriptive statistics for all items, consisting of the mean, standard deviation (SD)
26 and correlations between the variables (Cox and Holcomb 2022), are depicted in Table 3.
27 Furthermore, we obtained correlation values of less than 0.70 for each relationship between
28 variables, and the sign was not reversed (see Table 2). We calculated each regression equation,
29 and these results did not differ either; in particular, the sign of the coefficient did not change.
30 Finally, no variance inflation factor (VIF) was found to be greater than 3.3 (see Table 3),
31 suggesting that there is no multicollinearity problem present to cause type 1 errors (Kalnins
32 2022).
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40 *4.1. Measurement model evaluation*

41 We evaluated the measurement model through CFA (Goretzko et al. 2024), which
42 consists of convergent and discriminant validity, and construct reliability. As seen in Table 1, the
43 convergent validity results meet all the criteria and recommended thresholds. However, we note
44 that a few items yielded values slightly below this cut-off for the standardized loading factors
45 (SFL) – i.e., GRS2, GPM4, GI5, PEB7, SCP5 and SCP6 – however, these results were still
46 acceptable for maintaining content validity.
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53 ***** INSERT TABLE 1 HERE *****
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3 In addition, we examined discriminant validity using two approaches: the heterotrait-
4 monotrait ratio (HTMT) and HTMT2 (Henseler 2021). As shown in Table 2, we obtained HTMT
5 and HTMT2 values less than 0.85, which satisfies the rule of thumb. We also calculated
6 maximum shared variance (MSV) and average shared variance (ASV); these values should be
7 less than the AVE values for each construct (see Table 2). These results support our previous
8 conclusions regarding discriminant validity.
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16 Hereafter, construct reliability was assessed using two measures: Cronbach's alpha (α)
17 and composite reliability (ρ_c). We obtained values of α and ρ_c both greater than 0.72, which
18 indicate a reliable measurement of the construct (Raykov and Marcoulides 2011), as shown in
19 Table 1. Finally, we evaluated the GOFI generated from the CFA model as follows: comparative
20 fit index (CFI) = 0.974; normed fit index (NFI) = 0.944; non-normed fit index (NNFI) = 0.921;
21 incremental fit index (IFI) = 0.974; relative fit index (RFI) = 0.967; adjusted goodness-of-fit
22 index (AGFI) = 0.909; and Steiger-Lind root mean square error of approximation (RMSEA) =
23 0.032, suggesting that our CFA model is fit.
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31 ***** INSERT FIGURE 2 HERE *****
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33 34 4.2. Structural model assessment 35

36 The structural model was assessed as follows: The R^2 values generated by the three
37 endogenous latent variables in the model (in this case GOC, EGB and SCP) were 0.283, 0.324
38 and 0.535, respectively, as shown in Table 3, which is in line with the recommendations of
39 Cohen et al. (2003), who suggest that R^2 values between 0 and 0.50 are generally accepted in
40 most social science research.
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46 Subsequently, we evaluated the effect size (f^2), as a consequence of using null hypothesis
47 significance testing (NHST) to demonstrate the strength of the relationships between variables.
48 We calculated f^2 and obtained results ranging from 0.058 to 0.276 (see Table 3), which are
49 greater than 0.02, indicating the support for alternative hypothesis testing (Iacobucci et al. 2023).
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3 Finally, we evaluated GOFI for our common factor model simultaneously (Byrne 2016;
4 Hoyle 2023; Kline 2023). We derived the GOFI of our structural model as follows: CFI = 0.928
5 > 0.90, NFI = 0.924 > 0.90, NNFI = 0.915 > 0.90, IFI = 0.937 > 0.90, RFI = 0.937 > 0.90, AGFI
6 = 0.893 > 0.85, parsimony NFI (PCFI) = 0.731 > 0.60, parsimony GFI (PGFI) = 0.653 > 0.60
7 and RMSEA = 0.052 < 0.08, which satisfies all the relevant rules of thumb.
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10 11 12 13 *4.3. Testing of hypotheses – direct effect*

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15 First, we tested the direct effect in the model. We used standardized estimates and looked
16 at the path coefficient (β), standard error (SE) and p -values to support or reject our hypotheses.
17 Overall, the LISREL results support our empirical findings for the direct, indirect and interaction
18 effects of the hypotheses. As illustrated in Table 4 and Figure 2, all path coefficients (β) have p -
19 values < 0.01 or t -statistics > 2.33. From these results, we conclude that all the hypotheses in our
20 model are supported.
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26 Notably, we found empirical support for a causal relationship of GHRM \rightarrow SCP, with a
27 beta (β) value of 0.276 (SE = 0.046) and significance at $t = 6.022 > 2.33$ (p -value = 0.000 <
28 0.01). From this result, we confirm that hypothesis 1 (H1) is supported. Furthermore, it is
29 noteworthy that all control variables yielded non-significant results, aligning with the
30 suggestions outlined by Bernerth and Aguinis (2016).
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35 ***** INSERT TABLE 4 HERE *****

36 37 38 *4.4. Testing of hypotheses – indirect effect*

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40 We considered two combinations of indirect effects: one segment for simple mediation,
41 and two segments for two mediators. In terms of simple mediation, we identified the path
42 relationships GHRM \rightarrow GOC \rightarrow SCP and GHRM \rightarrow EGB \rightarrow SCP, with beta values (β) of 0.130
43 (SE = 0.037) and 0.206 (SE = 0.085) and significance at $t = 3.514 > 2.33$ ($p = 0.000 < 0.01$) and t
44 = 2.424 > 2.33 (p -value = 0.008 < 0.01), respectively (see Table 4 and Figure 2). Based on these
45 results, we can conclude that hypothesis 2 (H2) and hypothesis 3 (H3) are supported. In addition,
46 for two-segment mediation, the path relationship GHRM \rightarrow GOC \rightarrow EGB \rightarrow SCP was also
47 supported by our findings, with beta value (β) of 0.118 (SE = 0.033), and significance at $t =$
48 3.576 > 2.33 ($p = 0.000 < 0.01$). Based on this, we confirm that hypothesis 4 (H4) is supported.
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4.5. Testing of hypotheses – interaction effect

We tested the interaction effect in the model through the orthogonalization approach. We obtained empirical support for PEB as a moderator of the relationship between GHRM and GOC. Specifically, we found a beta (β) value of 0.249 (SE = 0.032) and significance at $t = 7.785 > 2.33$ (p -value = 0.000 < 0.01) for the path relationship GHRM x PEB \rightarrow GOC (see Table 4 and Figure 2). From this result, we confirm that hypothesis 5 (H5) is supported.

4.6. Additional tests

We also considered the endogeneity bias associated with inverse causality, sample-selection bias, and omitted variables, which might interfere with our main results. Using the Gaussian copulas test, we found no significant p -value ($p > 0.05$) for any regression equations in the model (Eckert and Hohberger, 2022). Based on these results, we therefore conclude that endogeneity bias is not a threat to our estimation results. Finally, we tested the linearity assumption in the CSA to ensure our model was correctly specified (Whittaker and Schumacker 2022). Using Ramsey's regression specification error test (RESET), we found no model specification error in our case ($p > 0.05$), and there was no non-linear relationship that might interfere with our results.

5. Discussion and conclusion

We contribute knowledge at the intersection of AMO framework (Appelbaum et al., 2000) and GHRM practices that, in addition to the direct effect of GHRM practices on employee green behavior and corporate sustainability performance, GHRM also indirectly affects sustainable performance sequentially, through fostering and strengthening green organizational culture in the presence of high pro-environmental behavior and through the mediating role of employee green behavior. We integrate previous scattered findings on positive impact of GHRM practices on employee green outcomes (Al-Swidi et al., 2021 Paillé et al., 2020) and corporate sustainable performance (Paillé et al., 2014; 2022; Ren et al., 2022; Renwick et al., 2013) to contribute different pathways through which GHRM practices interact with employees' pro-environmental green behavior to strengthen green organizational culture, shaping employee green behavior and sustainable corporate performance.

5.1. Discussion of results

The main findings of this study are as follows. The first finding provides empirical evidence that GHRM practices are positively related to corporate sustainability performance (Aftab et al., 2023, 2024; Khan et al., 2024; Paillé et al., 2014; 2022; Ren et al., 2022, 2023a, 2023b; Yuan et al., 2024). In addition, this finding provides additional support to previous studies in asserting that the association between GHRM practices and corporate sustainability performance is highly significant (Masri and Jaaron, 2017; Ogbeibu et al., 2024), as well as developing the work of other studies which found this relationship to be partially significant (Yong et al., 2020). As organizations are rapidly implementing environmentally friendly practices, the altered orientation of businesses toward becoming greener has compelled the existing HRM literature to shift the conversation toward designing green HRM practices for such organizations (Aftab & Veneziani, 2023; Maheshwari et al., 2024; Martín-Alcázar et al., 2024). The second finding provides evidence that green organizational culture mediates the link between GHRM practices and corporate sustainability performance. This finding supports the results of previous studies that found that GHRM practices have a positive effect on green organizational culture, which in turn has a positive effect on corporate sustainability performance (Chen et al., 2020; Maheshwari et al., 2024).

The third finding provides evidence that employee green behavior mediates the link between GHRM practices and corporate sustainability performance. This finding supports the results of Al-Swidi et al. (2021), who found that GHRM has a positive effect on employee green behavior, which in turn has a positive effect on corporate sustainability performance. Thus, this finding provides early evidence regarding the mediating role of employee green behavior in the link between GHRM practices and corporate sustainability performance (Ghani et al., 2024; Yuan et al., 2024, Zhou et al., 2024). The fourth finding provides evidence that green organizational culture and employee green behavior sequentially mediate the link between GHRM practices and corporate sustainability performance. This finding is in line with the results of Al-Swidi et al. (2021), who found a positive link between GHRM, green organizational culture, green employee behavior, and environmental organizational performance. Therefore, this finding provides early evidence on the sequential mediating role of green organizational culture and employee green behavior in the link between GHRM practices and corporate sustainability performance. In addition, these results are aligned with previous studies (Umrani et

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3 al., 2022) which suggest sequential mediation modeling between GHRM and green performance.
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5 The final finding provides evidence that pro-environmental behavior positively moderates the
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7 link between GHRM practices and green organizational culture, such that the positive
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9 association is stronger when pro-environmental behavior is higher. This finding is consistent
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11 with previous studies (Paillé et al., 2020; Saeed et al., 2019). We outline different pathways and
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13 factors for HRM managers to consider and make use of when investing in GHRM for corporate
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15 sustainability.

16 5.2. Theoretical implications and contributions

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18 The theoretical implications of this study are as follows. First, the study extends GHRM
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20 scholarship by applying it to the specific context of environmental sustainability (Aust et al.,
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22 2020; Jia et al., 2023; Ren et al., 2022, 2023a; Shah et al., 2024; Yuan et al., 2024). This study
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24 contributes to the growing body of literature that seeks to expand the role of HRM beyond
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26 traditional personnel management to address contemporary challenges, such as environmental
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28 concerns and sustainability. Thus, this study responds to the call for research on GHRM for
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30 sustainability (Bos-Nehles et al., 2023; Ren et al., 2023a). Furthermore, this study contributes
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32 towards strengthening the utility and the pertinence of AMO theory to understand that GHRM
practices are crucial for achieving a high level of corporate sustainability performance ().

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34 Although green culture is regarded as a driving force for GHRM, little effort has been
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36 made to explore the mediating effect of green organizational culture on the link between GHRM
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38 practices and corporate sustainability performance, with few exceptions (Al-Swidi et al., 2021;
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40 Roscoe et al., 2019). Thus, this study contributes to the theory by suggesting that green
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42 organizational culture positively mediates the link between GHRM practices and corporate
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44 sustainability performance (Maheshwari et al., 2024). This contributes to our understanding of
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46 how GHRM practices can be used to cultivate a green organizational culture, which is essential
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48 for sustainability initiatives. In addition, GHRM practices drive green culture inside firms by
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50 matching their practices, policies, and regulations with sustainability goals (Maheshwari et al.,
2024).

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52 Despite the existing literature conceptually supporting the mediating effect of employee
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54 green behavior on the link between GHRM practices and corporate sustainability performance
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56 (Al-Swidi et al., 2021), the research to date does not provide sufficient empirical evidence on this
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58 matter. This study provides insights into the specific mechanisms through which GHRM
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3 practices impact sustainability outcomes, shedding light on the pathways of influence. Thus, this
4 study contributes by suggesting that employee green behavior positively mediates the link
5 between GHRM practices and corporate sustainability performance. This study demonstrates that
6 the implementation of green behaviors by employees contributes towards firms' sustainability
7 goals.
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12 Green practices are vital for organizational sustainability, as well as being thought-
13 provoking due to contemporary environmental and socioeconomic concerns (Rashid et al.,
14 2024). Few prior studies have studied the impact of GHRM practices (Liu et al., 2024). Hence,
15 an emerging need exists to understand and shape employee behavior to minimize the negative
16 environmental impacts of their activities in organizations (Anwar et al., 2020; Islam et al., 2023).
17 Therefore, to better understand the role of GHRM practices in achieving a high level of corporate
18 sustainability performance, the sequential mediating model of green organizational culture and
19 employee green behavior was introduced in the relationship between GHRM practices and
20 corporate sustainability performance. This study demonstrates that the sequential mediating
21 model analysis better explains this exploratory power. Thus, this indirect effect provides a
22 nuanced view of the complex relationships within the HRM-sustainability-performance
23 framework (Martín-Alcázar et al., 2024; Ren et al., 2023a, 2023b; Yuan et al., 2024).
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33 *5.3. Managerial implications*

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35 We have outlined various pathways and factors for HRM managers to consider and make
36 use of when investing in GHRM for corporate sustainability. We suggest to managers that
37 GHRM is a solution to the challenge of cultivating green organizational culture for employees
38 and corporate sustainability. The alignment between entire set of GHRM practices,
39 organizational behavior and contextual factors must be designed towards achieving this goal.
40 The findings of this study show that, in order to form a promising and strong green
41 organizational culture, alignment between GHRM and employee pro-environmental behaviors is
42 required. In turn, this requires solutions or practices, such as training, communication, and
43 engagement strategies, to address the lack or absence of pro-environmental behaviors when
44 starting to work greener and implement GHRM. To these ends, when pursuing green
45 organizational cultures and behaviors for sustainability, HRM managers can implement three
46 types of GHRM practices: ability (i.e., recruitment and selection, training); motivation (i.e.,
47 performance management, pay and reward); and opportunity (i.e., involvement, and green ways
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of working, responsibilities, and rules). We advocate to HRM managers that they should implement these types of GHRM practices as a whole, rather than selecting a single dimension, in order to consistently encourage green behaviors and culture among employees for corporate sustainability. Therefore, managers may consider that HR systems which include green recruitment and selection, green training, green performance management, green pay and reward, and green involvement play a pivotal role in improving organizational environmental performance (Al-Swidi et al., 2021; Renwick, 2018).

5.4. Limitations and suggestions for further research

We acknowledge the limitations and areas of future research that should be addressed. First, future researchers are encouraged to introduce organizational citizenship behavior, corporate environmental responsibility or satisfaction with employees' autonomy as mediators (Umrani et al., 2022), as well as including top management support and environmental responsibility (Anwar et al., 2020; Umrani et al., 2022) in the association between GHRM practices and corporate sustainability performance. Second, this study collected primary perceptual data reflecting the realities of GHRM in green firms. Future studies may use objective data or experimental design. Finally, for this study, the data was collected from ISO-14001 certified firms in Saud Arabia only. Further, it was difficult to control the specific working environment in the sampled firms. Therefore, future researchers are recommended to conduct comparative studies and extend the applicability of the findings of this study to non-certified firms.

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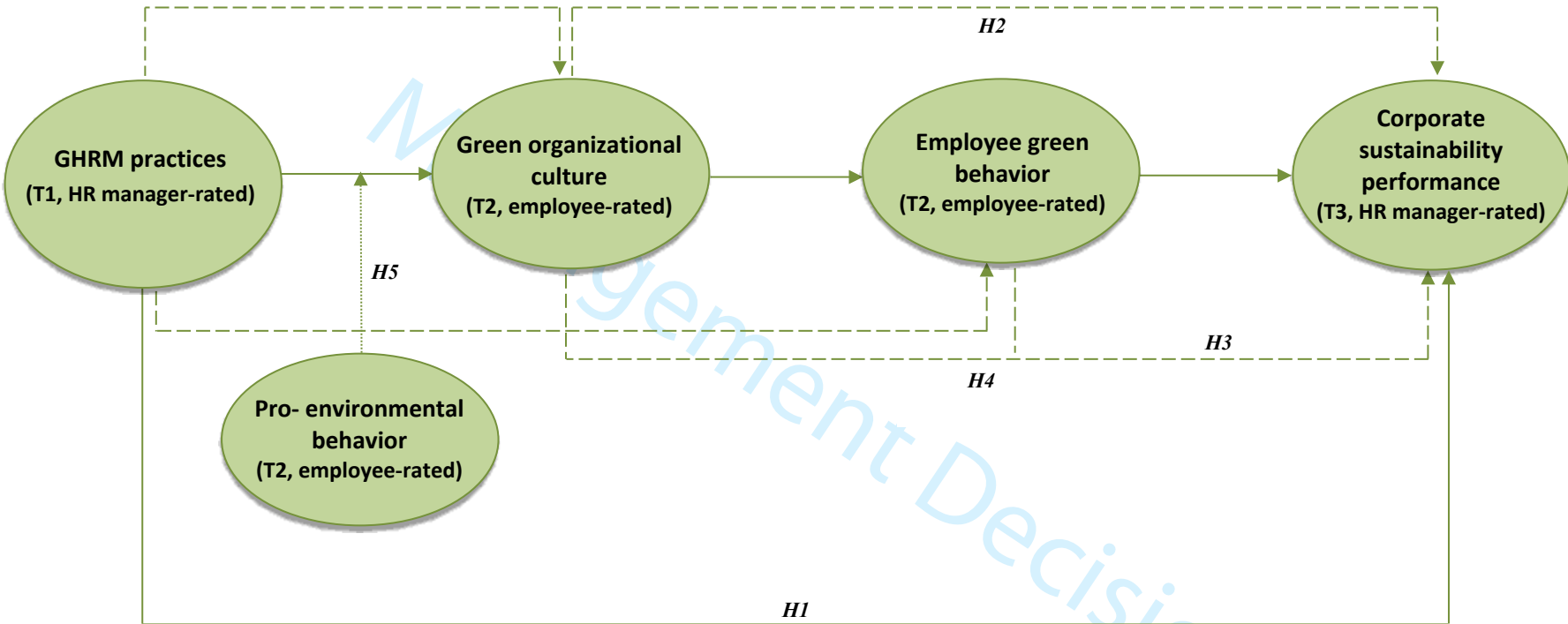


Figure 1. Theoretical framework.

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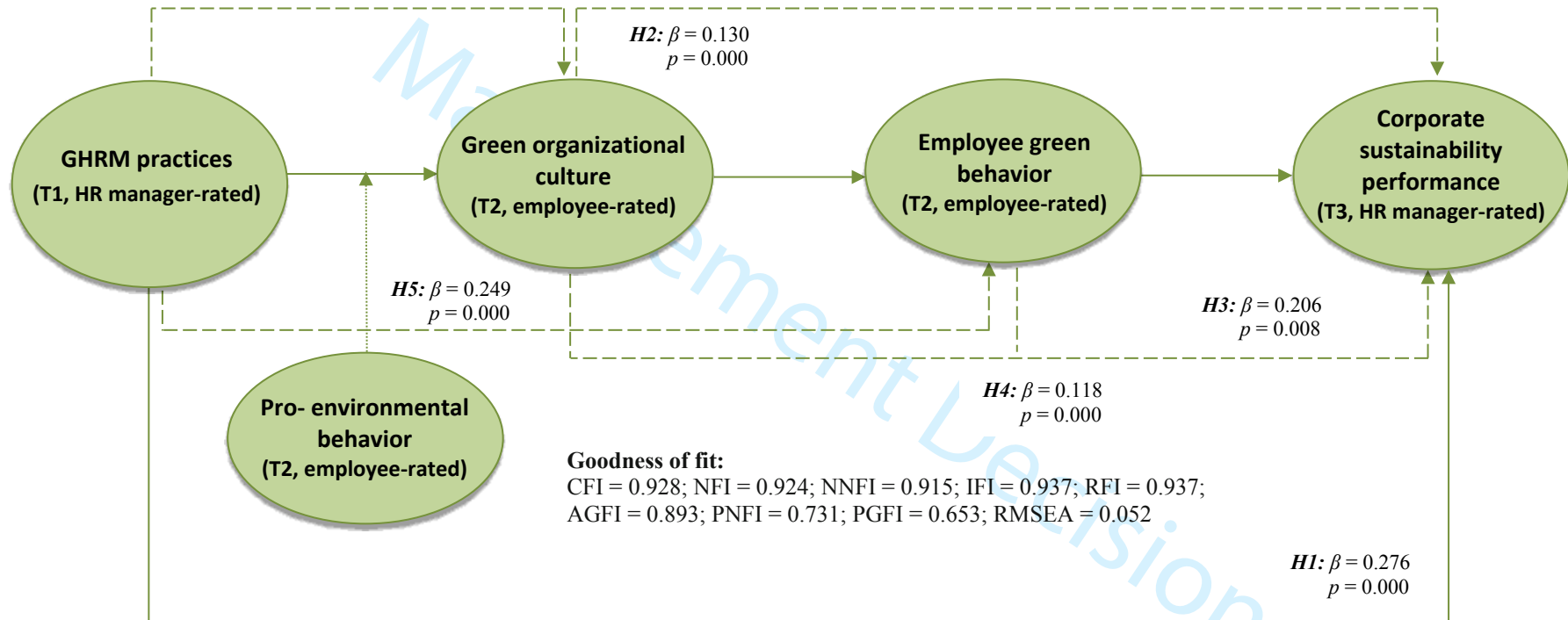


Figure 2. Evaluation of the structural model through the maximum likelihood (ML) estimator.

Table 1: Measurement model results.

<i>First-order reflective constructs</i>									
	Code	PCA	SFL	p-value	AVE	MSV	ASV	α	ρ_c
Green recruitment and selection					0.62	0.36	0.25	0.75	0.77
	GRS1	0.895	0.681	0.000					
	GRS3	0.895	0.885	0.000					
Green training					0.56	0.27	0.27	0.72	0.79
	GTR1	0.823	0.797	0.000					
	GTR2	0.787	0.763	0.000					
	GTR3	0.792	0.696	0.000					
Green performance management					0.61	0.34	0.26	0.76	0.83
	GPM1	0.825	0.753	0.000					
	GPM2	0.800	0.703	0.000					
	GPM3	0.838	0.883	0.000					
Green pay and reward					0.53	0.33	0.26	0.77	0.77
	GPR1	0.830	0.735	0.000					
	GPR2	0.814	0.707	0.000					
	GPR3	0.838	0.737	0.000					
Green involvement					0.56	0.34	0.33	0.80	0.86
	GI1	0.801	0.743	0.000					
	GI2	0.691	0.720	0.000					
	GI3	0.722	0.687	0.000					
	GI4	0.776	0.784	0.000					
	GI5	0.736	0.797	0.000					
Green organizational culture					0.52	0.19	0.12	0.81	0.85
	GOC1	0.756	0.695	0.000					
	GOC2	0.706	0.770	0.000					
	GOC3	0.785	0.715	0.000					
	GOC4	0.692	0.704	0.000					
	GOC5	0.832	0.733	0.000					
Pro-environmental behavior					0.52	0.33	0.32	0.86	0.87
	PEB1	0.801	0.758	0.000					
	PEB2	0.805	0.750	0.000					
	PEB3	0.753	0.710	0.000					
	PEB4	0.767	0.701	0.000					
	PEB5	0.739	0.683	0.000					
	PEB6	0.710	0.738	0.000					
Employee green behavior					0.60	0.52	0.43	0.77	0.90
	EGB1	0.632	0.742	0.000					
	EGB2	0.699	0.763	0.000					
	EGB3	0.688	0.747	0.000					
	EGB4	0.733	0.813	0.000					
	EGB5	0.650	0.806	0.000					
	EGB6	0.707	0.778	0.000					
Corporate sustainability performance					0.59	0.37	0.32	0.79	0.85
	SCP1	0.783	0.715	0.000					
	SCP2	0.763	0.795	0.000					
	SCP3	0.724	0.785	0.000					
	SCP4	0.849	0.782	0.000					

Second-order reflective constructs

Latent Factor	Code	PCA	SFL	p-value	AVE	MSV	ASV	α	ρ_c
GHRM practices					0.660	0.290	0.290	0.876	0.910
Green recruitment and selection	GRS	0.704	0.736	0.000					
Green training	GTR	0.842	0.776	0.000					
Green performance management	GPM	0.876	0.845	0.000					
Green pay and reward	GPR	0.742	0.748	0.000					
Green involvement	GI	0.925	0.947	0.000					

Note(s): Item GRS2, GPM4, GI5, PEB7, SCP5 and SCP6 have low factor loadings, and were deleted accordingly; PCA = Principal component analysis; SFL = Standardized factor loading; AVE = Average variance extracted; MSV = Maximum shared variance; ASV = Average shared variance; α = Cronbach's Alpha; ρ_c = Composite reliability.

Table 2: Mean, standard deviations, correlations and discriminant validity results.

Latent factor	1	2	3	4	5
GHRM	(0.85)	0.556**	0.640**	0.354**	0.213**
GOC	0.557 [0.488;0.594]	(0.85)	0.255**	0.356**	0.630**
PEB	0.643 [0.591;0.674]	0.256 [0.186;0.312]	(0.85)	0.141**	0.750**
EGB	0.356 [0.274;0.411]	0.357 [0.289;0.413]	0.142 [0.119;0.202]	(0.85)	0.736**
SCP	0.215 [0.185;0.295]	0.630 [0.573;0.697]	0.751 [0.697;0.776]	0.737 [0.675;0.756]	(0.85)
Mean	5.120	5.093	5.650	5.234	5.319
SD	1.500	1.558	1.514	1.496	1.468

Note(s): Brackets show the upper and lower bounds of the 95% BCa confidence intervals for HTMT values. Diagonal and bold elements are cut-off values for HTMT and HTMT2. Below the diagonal are the HTMT values. Above the diagonal are the HTMT2 values. ** show the correlation of constructs is significant at the 0.01 level (2-tailed). SD = Standard deviation.

Table 3: Structural model results.

Latent factor	R^2	f^2	VIF	GOFI	Cut-off	Decision
Green HRM Practices (GHRM)	–	0.195	2.816	CFI = 0.928	> 0.90	Fit
				NFI = 0.924	> 0.90	Fit
Green Organizational Culture (GOC)	0.283	0.063	1.000	NNFI = 0.915	> 0.90	Fit
Pro Environmental Behavior (PEB)	–	0.276	2.816	IFI = 0.937	> 0.90	Fit
Employee Green Behavior (EGB)	0.324	0.058	1.000	RFI = 0.937	> 0.90	Fit
				AGFI = 0.893	> 0.85	Fit
Corporate Sustainability Performance (SCP)	0.535	–	–	PNFI = 0.731	> 0.60	Fit
				PGFI = 0.653	> 0.60	Fit
				RMSEA = 0.052	< 0.08	Fit

Note(s): R^2 = r-square; f^2 = effect size; VIF = variance inflation factor; GOFI = goodness of fit indices.

Table 4: Testing of hypotheses (direct, indirect and interaction effects).

Structural path relationships	Coef (β)	SE	<i>p</i> value	<i>t</i> -statistics	Conclusion
Direct effect					
SCP ← GHRM	0.276	0.046	0.000**	6.022**	H1 supported
Indirect effect					
SCP ← GOC ← GHRM	0.130	0.037	0.000**	3.514**	H2 supported
SCP ← EGB ← GHRM	0.206	0.085	0.008**	2.424**	H3 supported
SCP ← EGB ← GOC ← GHRM	0.118	0.033	0.000**	3.576**	H4 supported
Interaction effect					
GOC ← GHRM x PEB	0.249	0.032	0.000**	7.785**	H5 supported
Control Variables					
SCP ← Gender	-0.008	0.085	0.463 ^{n.s.}	0.092 ^{n.s.}	—
SCP ← Age	-0.102	0.039	0.005 ^{n.s.}	2.612 ^{n.s.}	—
SCP ← Education	-0.045	0.036	0.103 ^{n.s.}	1.265 ^{n.s.}	—
SCP ← Tenure	-0.036	0.038	0.174 ^{n.s.}	0.939 ^{n.s.}	—

Note(s): Coef (β) = Beta coefficient; SE = Standard error; ** = Statistically significant at the 1 percent level ($t > 2.33$); n.s. = not significant.

Appendix 1: Demographic characteristics of the sample.

Personal information			Firm information		
Variable	Category	Frequency & Percentage	Variable	Category	Frequency & Percentage
Gender	Male (M)	185 (76.45%)	Industry type	Hospitals, health, clinics, and pharmaceutical	34 (14.05%)
	Female (M)	57 (23.55%)		Consulting, service industry	18 (7.44%)
	Male (E)	140 (69.70%)		Electronics, equipment, and cabling	21 (8.68%)
	Female (E)	102 (30.30%)		IT, software, and telecommunication	20 (8.26%)
Age	31-40 years (M)	74 (30.58%)		Chemicals and associated products	32 (13.22%)
	41-50 years (M)	110 (45.45%)		Transportation and travel	12 (4.96%)
	50s or above (M)	58 (23.97%)		Distribution and logistics	10 (4.13%)
	20-30 years (E)	101 (41.74%)		Finance and banking	27 (11.16%)
	31-40 years (E)	101 (41.74%)		Construction	10 (4.13%)
	41-50 years (E)	37 (15.29%)		Power plants	12 (4.96%)
Education	50s or above (E)	3 (1.24%)	Other*	46 (19.01%)	
	Bachelors degree (M)	112 (46.28%)	Firm age	1-5 years	45 (18.60%)
	Masters degree (M)	114 (47.11%)		6-10 years	81 (33.47%)
	Diploma (M)	7 (2.89%)		11-15 years	64 (26.45%)
	Ph.D (M)	9 (3.72%)		16 and more years	52 (21.49%)
	High school (E)	19 (7.85%)	Firm size	1-49 employees	100 (41.32%)
	Junior college (E)	4 (1.65%)		50-200 employees	84 (34.71%)
	Bachelors degree (E)	164 (67.77%)		201 employees and above	58 (23.97%)
Masters degree (E)	21 (8.68%)	Firm type	Manufacturing	94 (38.84%)	
Diploma (E)	22 (9.09%)		Services	148 (61.16%)	
Tenure	Ph.D (E)	12 (4.96%)			
	0-2 years (M)	25 (10.33%)			
	2-5 years (M)	34 (14.05%)			
	6-9 years (M)	63 (26.03%)			
	10-15 years (M)	51 (21.07%)			
	16 years and above (M)	69 (28.51%)			
	0-2 years (E)	33 (13.64%)			
	2-5 years (E)	64 (26.45%)			
6-9 years (E)	97 (40.08%)				
10-15 years (E)	32 (13.22%)				

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3 16 years and above (E) 16 (6.61%)

4 *Notes:* M= Manger; E = Employee; *Other includes research and development, logistics department, IT and technology department, and finance and accounting
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Management Decision