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From Green Human Resource Management to Perceived Organizational Performance: The Mediating Role of Green Intellectual Capital and the Moderating Effects of Conscientiousness and GHRM Awareness

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Abstract

This study investigates the impact of Green Human Resources Practices (GHRM) on Perceived Organizational Performance (POP), where Green Intellectual Capital (GIC) acts as mediating, with a focus on the moderating role of Personality Trait Conscientiousness and employees' awareness of GHRM and in the healthcare sector in Saudi Arabia. The aim is to understand the relationship between independent variable (GHRM) on Dependent variable Perceived Organizational Performance (POP), and it's mediating (GIC) and moderating effects (Personality Trait Conscientiousness and employees' awareness of GHRM). A quantitative approach is adopted, and data is collected using Google Forms distributed via email and WhatsApp to healthcare workers in Makkah, Jeddah, Medinah, Riyadh, and Dammam. A simple random sampling technique is employed, ensuring equal probability of selection for each member of the population. 365 questionnaires were distributed from March 2025 to August 2025. The study population comprises hospitals and medical cities providing healthcare services under the Ministry of Health (MOH) in Saudi Arabia. Data collected through Google Forms is analyzed using SPSS-24. Results indicate a significant positive relationship between GHRM and both OP and Green Intellectual Capital (GIC). Moreover, Green Intellectual Capital is found to mediate the relationship between GHRM and OP. However, individual awareness of GHRM practices and individuals' conscientiousness personality do not moderate the relationship between GHRM and Perceived Organizational Performance (POP). In light of these findings, it is recommended that healthcare organizations in Saudi Arabia prioritize the implementation of Green Human

Resource Management practices to enhance both Perceived Organizational Performance (POP) and green intellectual capital. Additionally, organizations should focus on fostering a culture of sustainability and environmental awareness among employees, which can further strengthen the positive impact of GHRM initiatives on organizational outcomes.

Keywords

Green Human Resources Practices, Perceived Organizational Performance Healthcare Sector, Employees' Awareness, Kingdom of Saudi Arabia

1. Introduction

In recent years, businesses are recognizing the significance of environmental sustainability for their continued existence and economic prosperity, given their reliance on the natural environment for critical resources (Paillé & Valéau 2022). In response to the growing threat and seriousness of climate change and global warming, organizations have begun to implement green practices (Maniu et al., 2021). Human Resources play a crucial role in sustaining performance and enhancing the efficient use of organizational resources to mitigate threats and obstacles, thereby maintaining competitiveness in the market (El-Kassar & Singh, 2019). Hence, Organizations can leverage human resource management (HRM) to facilitate the effective delivery and implementation of environmentally sustainable practices (Renwick et al., 2013). This explains the emergence of a new concept: the green human resource management (GHRM) (Benevene & Buonomo, 2020).

GHRM is defined as the use of HR practices to help businesses use resources more sustainably, promote environmentalism, and boost employee morale and satisfaction (Ahmad, 2015). GHRM practices include attracting/selecting talents, training & development, performance management, pay & reward system and employee empowerment functions (Renwick et al., 2013). Several studies suggest that the implementation of GHRM had a positive impact on Perceived Organizational Performance (POP) (Suharti & Sugiarto, 2020).

Several studies showed that the implementation of GHRM enhanced the Perceived Organizational Performance (POP) (Renwick et al., 2013), and the organizational sustainability (Ren et al., 2018). GRHM practices also provide a practical approach for organizations to foster human capital that can improve the environmental performance and sustainable development of the organization (Álvarez Jaramillo et al., 2019; Roscoe et al., 2019). Ren et al. (2018) suggest in their study that organizations which aim to be sustainable must ensure that their employees are engaged with and aware of environmentally friendly policies and initiatives. One way to proactively achieve this goal is through the implementation of GHRM practices.

Employees' engagement can be influenced by several factors, one of these factors is personality traits (Ababneh, 2021). Some research has specifically looked at

how individual motivational processes explain the influence of personality traits on employee behaviour. Kim et al. (2014) found that conscientiousness and moral reflectiveness were linked to voluntary workplace green behaviour regardless of whether they are in a leadership role or not. In organizations, the conscientiousness personality trait leads employees to have certain thoughts and feelings about work, which then motivates them to behave in certain ways (Barrick et al., 2013).

The Kingdom of Saudi Arabia is experiencing significant changes in all areas, including political, economic, social, and cultural, stemming from The Saudi Vision 2030. This vision has opened the door to new ideas and aspirations, and has led to the implementation of numerous programs, projects, and administrative reforms to improve and develop organizations and achieve sustainable development. Sustainability is one of the most important pillars of Saudi Vision 2030, as it is essential to preserve the present and future of the Kingdom of Saudi Arabia. The Saudi vision emphasizes the importance of sustainability in planning, infrastructure development, policymaking, and investment. One of the most important environmental initiatives of Saudi Vision 2030 is the goal of achieving net-zero future by 2060. Other initiatives include the launch of the National Environment Strategy, Integrated Waste Management and Recycling Activities, and a research fund for energy and the environment (https://www.vision2030.gov.sa/en/).

Saudi National Vision derives its strength from Saudia Arabia leaders' recognition of the importance of human resources in translating the vision into reality through the numerous goals, programs, and initiatives that focus on human resources development (AlTurki, 2023). Considering the above, this study aims to measure the impact of GHRM practices on the Perceived Organizational Performance (POP). This study also analyses the role of green intellectual capital and employees' awareness on the relationship of GHRM and organizational internal performance.

This study's importance stems from three different aspects. First, Researchers have not yet studied how entire green human resource management (GHRM) systems affect broader Perceived Organziational Performance (POP) metrics (Renwick et al., 2013). Therefore, this is an extension of the efforts made to discuss issues related to GHRM. This study aims to contribute to the body of knowledge on GHRM and its impact on Perceived Organziational Performance (POP) and green intellectual capital in the healthcare sector in Saudi Arabia. There is a limited amount of research on this topic in Saudi Arabia, and this study seeks to fill this gap. Secondly, Researchers have studied many different GHRM practices and their effects on employees and organizations, but some GHRM practices have been studied more than others. The most studied GHRM practices are training, and performance management. Other GHRM practices, such as hiring for green skills and motivating employees to be green, have not been studied as much (Penela et al., 2022). Finally, there is limited number of research that studied the role of individual personality traits, such as conscientiousness, in employee engagement with environmental initiatives. This study aims to explore the moderating

role of personality traits (conscientiousness) in the relationship between GHRM and the green intellectual capital and the organization performance. The findings and recommendations of this study are expected to pave the way for further research on GHRM and its relationship to organizational phenomena and other behaviours.

2. Objectives of the Study

To investigate the impact of GHRM practices implemented in the healthcare sector in the Saudi Arabia, and to examine the relationship between these practices and the Perceived Organziational Performance (POP) mediated by the green intellectual capital with the moderating role of employees' awareness and the personality trait (conscientiousness).

Based on this study's importance and the objectives, this paper tries to answer these questions: What is the extent of application of the GHRM practices in the healthcare sector in Saudi Arabia?, Do personality traits influence the green behaviours of healthcare sector employees?, Does green intellectual capital mediate the relationship between GHRM practices and Perceived Organziational Performance (POP)?, What is the relationship between GHRM practices and the level of green intellectual capital in the healthcare sector in Saudi Arabia? And, Are there variations in the level of awareness of GHRM practices among healthcare sector employees in Saudi Arabia according to the demographic variables of gender, age, academic qualifications, experience, and managerial position?.

3. Literature Review

3.1. Theoretical Framework

Contemporary research in GHRM is grounded in diverse theoretical and conceptual frameworks, including those aligned with the theory-driven psychological tradition. This approach places a strong emphasis on measuring and modifying individual employee attitudes and behaviours through manager-led practices in pursuit of organizational objectives (Troth & Guest, 2020). Additionally, academic rigor is emphasized to attain significant publication goals.

Ability-Motivation-Opportunity theory (Appelbaum et al., 2000) suggests that human resource management (HRM) practices that enhance an organization's human capital through the enhancement of employee capabilities lead to positive performance outcomes, encompassing increased productivity, reduced waste, improved quality, and enhanced profitability (Renwick et al., 2013).

The Conservation of Resources (COR) theory, as propounded by (Hobfoll, 1989), asserts that individuals are motivated to minimize the overall depletion of their resources, employing proactive resource acquisition strategies to secure additional resources, and investing their existing resources in strategies to preserve their resource pool. Consequently, green-related resources acquired through environmentally conscious human resource practices can foster proactive environmental behaviour among employees (Penela et al., 2022).

Social cognitive theory (SCT), as conceptualized by Bandura (1986), suggests that a variety of personal, environmental, and behavioural variables catalyses pro-environmental behaviour, ultimately leading to enhanced environmental performance. Furthermore, green intellectual capital, encompassing an individual's knowledge, abilities, and experience in environmental stewardship, serves as a catalyst for positive behavioural outcomes (Nisar et al., 2021). In other words, individuals possessing knowledge, abilities, and experience pertinent to environmental initiatives are more likely to engage in pro-environmental behaviours.

This study also incorporates the person-organization (P-O) fit theory, which suggests that the alignment between an individual's values and those of the organization exerts a positive influence on the psychological climate and attitudinal motivation within the workplace. These factors, in turn, are anticipated to enhance employee performance and contribute to improved organizational outcomes (Kristof-Brown et al., 2005).

Building upon the aforementioned theoretical foundations, the subsequent section will delve into a comprehensive review of the study's theoretical underpinnings. This will entail a thorough examination of the concept of GHRM and its various practices, including green compensation, green performance management, green recruitment and selection, and green training & development. Additionally, the section will provide an in-depth exploration of Perceived Organziational Performance (POP) in the context of organizational sustainability. This will be followed by a review of relevant prior studies, as follows:

3.2. Green Human Resource Management (GHRM)

The concept of green human resource management (GHRM) encompasses a spectrum of practices that collectively contribute to the reduction of organizational carbon footprints (Hussain, 2018). These practices span the entire employee lifecycle, from green job design and analysis to green HR planning, recruitment and selection, induction, training and development, performance appraisal, reward systems, and employee relations (Opata & Arulrajah, 2014). The origins of GHRM can be traced to the growing recognition among organizations of the need to embed sustainability principles into their internal processes and decision-making frameworks (Howard-Grenville et al., 2014). Ahmad et al. (2025) defined green human resource management (GHRM) as an umbrella term encompassing human resource management practices that foster environmentally responsible resource utilization, thereby enhancing an organization's environmental efficiency, raising employee understanding of environmental issues, and demonstrating a commitment to addressing environmental management challenges.

GHRM plays a pivotal role in the formulation, development, and implementation of sustainable business strategies within organizations (Shaban, 2019). The implementation of GHRM practices serves as a catalyst for fostering responsible employee behaviour, empowering them with enhanced environmental stewardship capabilities and a heightened sense of environmental responsibility (Zhu et

al., 2021).

Anwar et al. (2020), drawing upon the Ability-Motivation-Opportunity (AMO) theory, have categorized green HRM practices into: green competence-building practices (i.e. green recruitment & selection and green training & development programs), green motivation enhancing practices (i.e. performance appraisal and rewards, and green employee involvement practices).

According to Nikolaou et al. (2015), A work environment characterized by GHRM practices exhibits a positive correlation with employees' capacity to develop environmentally sustainable solutions. Yen et al. (2013) suggest that integrating environmental sustainability values and competencies into recruitment and selection procedures is likely to foster a strong alignment between organizational values and those of its employees. Furthermore, conducting customized training and development programs and establishing a learning system that acknowledges ecological issues will also enhance environmentally related knowledge and competencies (Dumont et al., 2017).

Regarding performance management, Grobelna (2019) found that tailoring performance appraisals to recognize employees' environmentally responsible behaviours will positively reinforce their perception of task significance, motivating them to exert additional discretionary effort and exhibit responsible attitudes and commitment when dealing with environmental issues.

In compensation context, increasing employee motivation can be achieved by modifying reward and incentive structures to acknowledge and reinforce employees' environmentally responsible behaviours and the successful attainment of sustainability-related objectives (Ababneh, 2021).

Based on the above and drawing upon the consensus of various scholars and experts, we can categorize GHRM practices into the following dimensions:

3.3. Green Recruitment and Selection (GRS)

Attracting top talents is a critical human resource objective in the current competitive talent landscape, and companies are leveraging green human resource management (GHRM) practices to establish a strong environmental reputation and enhance their appeal to the growing cohort of ecologically conscious younger generations (Renwick et al., 2013). Saeed et al. (2019) conceptualized green recruitment and selection (GRS) as a three-pronged approach encompassing: 1) assessing job applicants' environmental awareness, 2) projecting a positive environmental employer brand, and 3) incorporating green principles into the recruitment process to attract environmentally conscious candidates. Implementing GRS effectively communicates an organization's commitment to environmental sustainability and reinforces its green brand identity (Fawehinmi et al., 2022). The evaluation and selection process should be aligned with this eco-conscious approach, incorporating environmental considerations into job descriptions and prioritizing candidates who demonstrate exceptional performance based on these criteria (Renwick et al., 2013).

3.4. Green Training & Development (GTD)

GHRM prioritizes knowledge enrichment, skill development, and the cultivation of environmentally friendly behaviours among employees. This is achieved through green training & development initiatives, enabling employees to acquire the necessary competencies to conserve and protect the environment, contributing significantly to the attainment of organizational sustainability goals (Zhu et al., 2021). Training plays a pivotal role in shaping employee attitudes and fostering commitment towards environmentally friendly practices (Bissing-Olson et al., 2013). GTD can effectively enhance an employee's knowledge and understanding of eco-conscious activities in the workplace. For example, GTD can equip workers with the necessary environmental knowledge to implement proper waste recycling procedures and elevate their overall ecological sustainability capabilities (Pinzone et al., 2019).

3.5. Green Performance Management (GPM)

It is important to evaluate and assess the effectiveness of environmental management practices in relation to the organization's overall environmental performance (Yusliza et al., 2019). Green performance management serves as a critical metric for assessing the effectiveness of GHRM practices within organizational settings as it entails the implementation of processes and standards designed to measure, evaluate, and provide feedback on employee performance in relation to environmental sustainability goals (AlTurki, 2023). These standards encompass a range of sustainability initiatives, including mitigating environmental incidents, fulfilling environmental responsibilities, diligently reporting environmental concerns, minimizing resource consumption, and effectively implementing environmental policies and procedures (Tang et al., 2018). Integrating green performance appraisal outcomes into a reward system serves as a powerful motivator for employees to participate in environmental initiatives and to actively contribute to the organization's sustainability objectives (Ercantan & Eyupoglu, 2022).

3.6. Green Compensation (GC)

Green compensation encompasses a system of monetary and non-monetary incentives designed to attract, retain, and motivate employees in their pursuit of environmental sustainability goals (Jabbour et al., 2013). Monetary rewards encompass cash prizes, bonuses, and discounts, while non-monetary rewards may include special recognition or awards. A prevailing consensus among researchers suggests that a combination of monetary and nonmonetary incentives yields superior motivational outcomes (Renwick et al., 2013). By implementing a comprehensive green compensation strategy, organizations can effectively encourage employee adoption of sustainable practices, thereby contributing to the achievement of broader environmental goals (Ercantan & Eyupoglu, 2022).

3.7. Perceived Organziational Performance (POP)

Rawashdeh (2018) defined the Perceived Organziational Performance (POP) as

the totality of outcomes achieved by a company through the execution of its diverse activities. According to Yu et al. (2020), Organizations should strive to conduct their operations in an environmentally responsible manner. GHRM practices are the use of the HRM policies to promote sustainable resource utilization within organizations, fostering both business objectives and environmental sustainability goals (Amjad et al., 2021). According to Aburahma et al. (2020), Effective implementation of GHRM practices empowers organizations to enhance their social and Perceived Organziational Performance (POP) in a sustainable manner, while also gaining a competitive advantage, but this necessitates an integration of environmental considerations into the organization's daily operations, strategic human resource decisions, and policy frameworks. Internationally, few studies are available which have linked GHRM with Perceived Organziational Performance (POP).

Suharti & Sugiarto (2020) conducted a qualitative study and found the benefits of GHRM practices included the creation of an environmentally friendly organizational culture and work climate, increased resource efficiency, a positive corporate image, and improved economic and environmental performance. Zaid et al. (2018) suggested in their study that GHRM aspects and attributes enhance a combination of ecological, financial, and societal sustainability.

H1: Green HRM is positively associated with Perceived Organziational Performance (POP).

3.8. The Mediating Role of Green Intellectual Capital (GIC)

Intellectual capital is an intangible asset that companies can build upon their organizational strengths, expertise, and knowledge to gain a competitive edge and enhance their overall performance (Yong et al., 2019; Rehman et al., 2020). Chen (2008) defined Green Intellectual Capital (GIC) as a combination of intellectual capital and environmental initiatives, encompassing all intangible assets such as knowledge, expertise, and collaborations at both individual and organizational levels, to foster environmental sustainability. This study adopted three elements to explain GIC, namely green human capital (GHC), green structural capital (GSC) and green relational capital (GRC), as suggested by Chen (2008). Yong et al. (2019) defined the three GIC dimensions as following:

1) Green Human capital (GHC): the collective knowledge, skills, expertise, experience, attitudes, wisdom, creativity, and commitment of employees towards environmental protection and green innovation, residing within the individuals themselves rather than the organization.

2) Green Structural Capital (GSC): the cumulative organizational capabilities, commitments, knowledge management systems, reward structures, information technology infrastructure, databases, managerial approaches, operational processes, management philosophies, organizational culture, brand reputation, intellectual property rights, and trademarks that contribute to environmental protection and green innovation within an organization.

3) Green Relational Capital (GRC): an organization's network of interconnected relationships with customers, suppliers, alliance partners, and stakeholders, fostering collaboration in corporate environmental management and green innovation, ultimately driving value creation and competitive advantage.

Yong et al. (2019) explored the connection between green human resource management (GHRM) practices and green intellectual capital (GIC), revealing a significant correlation between various dimensions of GIC and the implementation of GHRM practices (Nisar et al., 2021).

Ma et al. (2021) demonstrated that green training effectively cultivates employees' environmental stewardship, enhancing their skills, capabilities, knowledge, commitments, and overall attitude towards environmental management. Their findings further support the notion that green training contributes to the development of green human capital, a crucial component of green intellectual capital.

H2: GHRM is significantly related to Green Intellectual capital (GIC).

According to Kim et al. (2019) & Yusliza et al. (2020), by developing the human capital and effectively utilizing green intellectual capital, organizations can simultaneously achieve a competitive edge in the marketplace and contribute to environmental sustainability. Ratnasari et al. (2023) undertook a study to investigate the role of green intellectual capital in explaining the processes through which organizations can effectively accomplish their environmental and operational objectives. They found that the Green intellectual capital acts as a tool, converting knowledge and skills, acquired by green training, related to environmental sustainability into practical solutions that enhance operational efficiency. The study also explained how organizations can harness their green resources and capabilities to achieve long-term operational efficiency and secure a competitive edge.

H3: GIC Mediate the relationship between GHRM and POP.

3.9. The Moderation Role of Awareness of GHRM Practices

Employees should exhibit a comprehensive understanding and adept application of GHRM practices, encompassing both theoretical comprehension and practical implementation strategies (El Dessouky & Alquaiti, 2020). Masri and Jaaron (2017) argue that establishing individual environmental objectives for employees can foster greater awareness and engagement in achieving the organization's green goals. This approach instils a sense of personal responsibility and ownership of environmental initiatives, reinforcing the significance of sustainability efforts. In recruitment, Fawehinmi et al. (2022) suggest that by prioritizing candidates with strong environmental awareness, organizations can cultivate a workforce that is committed to ecological responsibility and contributes to achieving their environmental objectives.

Several studies explored the role of the awareness of GHRM on the relationship between GHRM practices and Perceived Organziational Performance (POP). One of these studies is conducted by El Dessouky & Alquaiti. (2020) in which they found that Employee awareness moderates the relationship between Green HRM practices and Perceived Organziational Performance (POP).

H4: Individual's Awareness of GHRM practices moderates the relationship between GHRM and OP.

3.10. The Moderation Role of Personality Traits: Conscientiousness

A growing body of research in the field of HRM behaviour suggests that personality traits can serve as a catalyst that either strengthens or diminishes the connections between HRM practices and individual and organizational behaviours and outcomes (Ababneh, 2021). From a psychological standpoint, individuals exhibit varying patterns of behaviour, both voluntary and involuntary, shaped by the degree of alignment between their personal perceptions, needs, values, and goals and the organization's established norms, practices, and objectives (Paillé et al., 2013).

Despite growing research interest, empirical evidence supporting the moderating influence of personality traits on the relationship between GHRM practices and Perceived Organziational Performance (POP) remains limited. According to Ababneh (2021), a conscientious personality can foster a stronger connection between GHRM practices and employee engagement with environmental initiatives. Individuals with a conscientious personality are characterized by dependability, resourcefulness, self-discipline, and a focus on achieving goals. These traits are likely to align well with the values and activities promoted by GHRM, leading to increased employee involvement in environmental initiatives.

H5: Individuals' conscientiousness personality moderates the relationship between GHRM and Perceived Organziational Performance (POP).

Based on the above literature review and hypothesis, the following conceptual framework has been derived as shown in Figure 1.

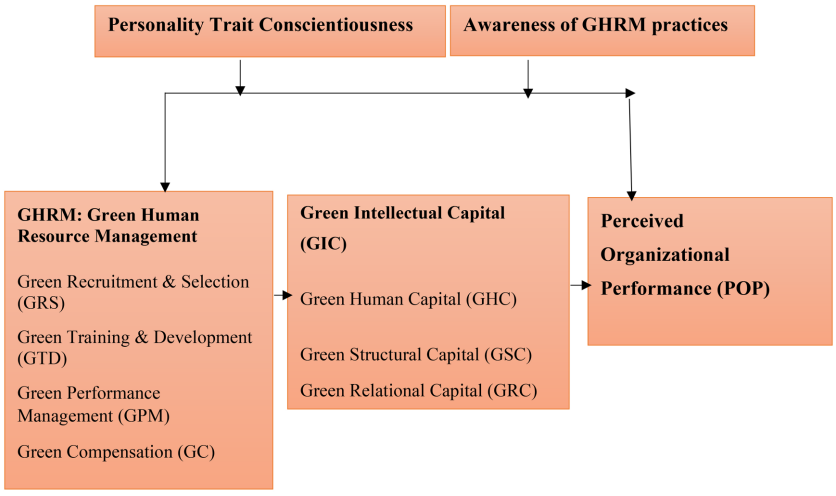

Figure 1. Conceptual framework.

4. Methodology

4.1. Sample and Procedure

This study is a quantitative study targeting the workers at healthcare sector in

Saudi Arabia. To collect the data, questionnaires were made by using Google Form (see **Appendix**) and distributed through emails and via WhatsApp to healthcare organizations workers in Makkah, Jeddah, Medinah, Riyadh, and Dammam. The purpose of the study has been described to the respondents at the beginning of the questionnaire, and they have been assured of the confidentiality of their data. In this study, simple random sampling technique was employed to select a subset of respondents from a population, ensuring that each member of the population has an equal probability of selection. We collect data from a number of members of the random subset. 365 questionnaires were distributed from March 2025 to August 2025.

The study population consists of hospitals and medical cities in Saudi Arabia that provide the full range of healthcare services offered by the Ministry of Health (MOH). Raw data about these healthcare organizations, including name, location, classification, and other details were reached and utilized by using the official MOH statistical yearbook 2021. The total population size is 64 organizations. To assess the validity, reliability, and consistency of the questionnaire prior to the commencement of the study, a pilot study conducted with a sample of 20 healthcare employees working in these organizations.

The research data collected through Google Forms was subjected to rigorous analysis using SPSS-24. Following data import, the initial stage involved confirmatory analysis employing Cronbach's alpha coefficient to assess the internal consistency and reliability of the measurement instruments. This crucial step ensures the validity and reliability of the data before proceeding with further analysis.

Subsequently, descriptive statistics were generated to explore the central tendencies (mean) and variability (standard deviation) of the key variables. Additionally, demographic variables were analysed to provide a comprehensive contextual understanding of the sample.

To delve deeper into the relationships between variables, Pearson correlation coefficients has been calculated, revealing the strength and direction of linear associations. Furthermore, Regression analysis was employed to delineate the functional relationships between the dependent and independent variables. This statistical technique facilitates the identification of significant predictors through hypothesis testing and allow for the quantification of their effects through standardized regression coefficients and associated confidence intervals. This multipronged approach utilizing SPSS enables a comprehensive and nuanced understanding of the data, ultimately contributing to robust and reliable research conclusions.

4.2. Measures

A structured questionnaire, based on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), has been used in this study to collect data from employees (top-level, middle-level, and lower-level management). The questionnaire is originally developed in English language and then will be translated into Arabic.

The questionnaire includes demographic information, as well as questions about GHRM as an independent variable, conscientiousness personality trait and awareness as moderator variables, and Perceived Organization Performance as dependent variable. Based on these variables, as proposed on theoretical model, the questionnaire was developed to contain 42 items divided into five sections. The first section measures the extent of GHRM practice implementation in the organization, including four dimensions: green compensation management, green performance management, green recruitment, and green training. The items in this section were adapted from Shah (2019) and Tang et al. (2018). Five-point Likert scale was used in this section with 1 being "strongly disagree" and 5 being "strongly agree." Two items measure green compensation management practices (e.g., "My organization rewards green skills acquisition."). Three items measure green performance management practices (e.g., "In my organization, the performance management system includes green criteria to evaluate performance."). Six items measure green recruitment practices (e.g., "In my organization, job candidates are evaluated against green aspects in job interviews."). Two items measure green training practices (e.g., "My organization assesses who need training in environmental management.").

The second section of the questionnaire assesses the respondent's personality trait of conscientiousness, one of the Big Five personality factors (John & Srivastava, 1999). This section consists of four items that measure the employee's striving for achievement (e.g., "I see myself as someone who does a thorough job"), competence (e.g., "I see myself as someone who does things efficiently"), self-discipline (e.g., "I see myself as someone who perseveres until the task is finished"), and dependability (e.g., "I see myself as someone who is a reliable worker"). Scores are measured on a five-point scale, with 1 being "strongly disagree" and 5 being "strongly agree."

The third section of the questionnaire measures green intellectual capital (GIC) using nine items adapted from Chang and Chen (2012). This section is also measured on a five-point Likert scale, with 1 being "strongly disagree" and 5 being "strongly agree." Three dimensions of GIC are measured in this section: green human capital (e.g., "In my organization, the productivity and contribution of employees concerning environmental protection is better than those of its major competitors"), green structural capital (e.g., "The management system of environmental protection in the company is better than that of its major competitors"), and green relational capital (e.g., "My organization designs its products or services in compliance with the environmental desires of its customers").

The fourth section of the questionnaire measures Perceived Organziational Performance (POP) in terms of sustainability. This section consists of five items adapted from Kordab et al. (2020) that are also measured on a five-point Likert scale, with 1 being "strongly disagree" and 5 being "strongly agree." This section measures the organization's ability to respond to change effectively (e.g., "My organization adapts quickly to unanticipated changes") and the level of effort made

to improve the effectiveness and efficiency of its operations (e.g., "My organization performs well in improving the effectiveness of services delivered").

The fifth and final section of the questionnaire measures employee awareness of GHRM practices. The items in this section were adapted from Shah (2019) and Tang et al. (2018). It is also a Five-point Likert scale with 1 being "strongly disagree" and 5 being "strongly agree". This section measures the employee's awareness of the concept of GHRM (e.g., "My organization offers a shared culture of learning for green awareness and behaviour"), the organization's efforts to promote GHRM (e.g., "My organization has a clear developmental vision to guide the employees' actions in environment management"), and task-related GHRM practices (e.g., "In my organization, employees are involved in quality improvement and problem-solving on green issues").

5. Data Analysis and Results

5.1. Reliability of Questionnaire

The reliability of a study tool refers to its ability to consistently produce similar results when applied multiple times to the same sample. It indicates the extent to which the tool provides close and consistent readings each time it is used. Reliability also ensures that the responses obtained from different individuals at different times are consistent and stable.

To assess the reliability of the questionnaire in this study, a pilot sample of 20 participants was selected. Cronbach's Alpha test was applied to measure the internal consistency of the questionnaire. Table 1 presents the results of the Cronbach's Alpha test for the pilot sample and Table 2 shows the Demographic profile for the participants.

Table 1. Cronbach's alpha coefficient to measure the stability of the study tool.

Dimensions	Number of phrases	Cronbach's Alpha
Dimension 1 (D1): GHRM Practices	13	0.87
Dimension 2 (D2): Conscientiousness	5	0.88
Dimension 3 (D3): Green Intellectual Capital	9	0.85
Dimension 4 (D4): Perceived Organziational Performance (POP)	5	0.78
Dimension 5 (D5): GHRM Awareness	10	0.88
The overall stability of the questionnaire	42	0.94

Table 2. Demographic profiles.

		Frequencies	Percentages
Gender	Male	217	59.5%
	Female	148	40.5%

Continued

Age	Less than 30 years	47	12.9%
	30 - 40 years	155	42.5%
	41 - 50 years	115	31.5%
	Above 50 years	48	13.2%
Sector	Private	73	20.0%
	Public	199	54.5%
	Semi-Public	93	25.5%
Qualification	Ph.D.	30	8.2%
	Master	91	24.9%
	Bachelor	212	58.1%
	Other	32	8.8%
WORK EXPERIENCE	Less than one years	12	3.3%
	1 - 5 Years	34	9.3%
	6 - 10 years	95	26.0%
	11 - 15 Years	92	25.2%
	16 - 20 Years	71	19.5%
	Above 20 years	61	16.7%
Position	Employee	190	52.1%
	Manager	71	19.5%
	Director	66	18.1%
	Executive Director	38	10.4%

In this study, the total number of participants was 365. Of these, 59.5% were male (217 participants), and 40.5% were female (148 participants). The age distribution showed that the largest group was those aged 30 - 40 years, representing 42.5% (155 participants) of the sample, followed by the 41 - 50 years age group at 31.5% (115 participants). The groups less than 30 years and above 50 years were fairly similar in size, at 12.9% (47 participants) and 13.2% (48 participants) respectively.

Regarding the sector of employment, the public sector comprised the majority with 54.5% (199 participants), the semi-public sector included 25.5% (93 participants), and the private sector accounted for 20.0% (73 participants) of the participants. As for educational qualifications, 58.1% had a Bachelor's degree (212 participants), 24.9% had a Master's degree (91 participants), and 8.2% held a Ph.D. (30 participants), with the remaining 8.8% having other qualifications.

Concerning the distribution of work experience among the 365 participants 12 individuals (3.3%) had less than one year of experience, 34 individuals (9.3%) had between 15 years, 95 individuals (26%) had between 6 - 10 years, 92 individuals

(25.2%) had between 1115 years, 71 individuals (19.5%) had between 16 - 20 years, and 61 individuals (16.7%) had over 20 years of experience.

Regarding the positions held, the majority were employees, with 190 individuals (52.1%) holding this role. There were 71 managers (19.5%), 66 directors (18.1%), and 38 executive directors (10.4%) among the participants.

1) What is the extent of application of the GHRM practices (Table 3) in the healthcare sector in Saudi Arabia?

Table 3. GHRM practices.

Statement	Strongly Disagree (n)	Strongly Disagree (%)	Disagree (n)	Disagree (%)	Neutral (n)	Neutral (%)	Agree (n)	Agree (%)	Strongly Agree (n)	Strongly Agree (%)	Mean	Std. Deviation
My organization rewards green skills acquisition	43	11.80%	65	17.80%	63	17.30%	108	29.60%	86	23.60%	3.35	1.33
My organization recognizes green initiatives of employees via organization-wide publicity and	41	11.20%	62	17.00%	60	16.40%	129	35.30%	73	20.00%	3.36	1.284
My organization establishes green targets, objectives, and duties for each employee across	38	10.40%	54	14.80%	72	20.00%	134	36.70%	66	18.10%	3.37	1.233
The performance management system includes green criteria to evaluate performance	47	12.90%	86	23.60%	74	20.30%	111	30.40%	47	12.90%	3.07	1.253
My organization reinforces compliance with	39	10.70%	72	19.70%	85	23.30%	121	33.20%	49	13.20%	3.18	1.205
My organization practices the use of a paperless recruitment and selection process	25	6.80%	54	14.80%	66	18.10%	149	40.80%	71	19.50%	3.51	1.162
My organization attracts green job applicants who are competent and well-informed	31	8.50%	75	20.50%	91	24.90%	113	31.00%	55	15.10%	3.24	1.186
Job candidates are evaluated against green HR aspects	39	10.70%	88	24.10%	94	25.80%	95	26.00%	49	13.40%	3.07	1.21

Continued

Orientation programs highlight concern for workers health, safety, and green working conditions	25	6.80%	62	17.00%	93	25.50%	138	37.80%	47	12.90%	3.33	1.11
My organization delivers a general green training program	29	7.90%	76	20.80%	80	21.90%	135	37.00%	45	12.30%	3.25	1.153
My organization provides job-specific green training	31	8.50%	68	18.60%	101	27.70%	125	34.20%	40	11.00%	3.21	1.126
My organization assesses who needs training in environmental management	37	10.10%	86	23.60%	103	28.20%	102	27.90%	37	10.10%	3.04	1.152
My organization evaluates whether the incumbent has managerial and peer support to apply the	26	7.10%	66	18.10%	89	24.40%	110	30.10%	74	20.30%	3.38	1.198
Overall Mean and Std. Deviation											3.26	0.142

Based on the descriptive statistics provided, it is evident that the majority of respondents in the healthcare sector in Saudi Arabia tend to agree with the statements related to Green Human Resource Management (GHRM) practices. The responses indicate a consensus towards the positive implementation of GHRM, with a balanced distribution of neutral, strongly agree, and disagree opinions. This suggests that while there is a predominant agreement on the practices, there is also a recognition of areas for potential improvement and varying degrees of commitment among employees. Overall, the data reflects an encouraging trend towards adopting green initiatives within the sector.

2) Do personality traits influence the green behaviors of healthcare sector employees?

Simple linear regression was used to answer this question. The overall regression wasn't statistically significant ($R^2 = 0.005$, $F = 1.793$, $p = 0.181$). So we accept the null hypothesis and we conclude that personality traits don't influence the green behaviors of healthcare sector employees. ($\beta = 0.685$, $p = 0.000$).

3) Mediation Analysis of Green Intellectual Capital on GHRM Practices and Perceived Organziational Performance (POP)

The mediation analysis demonstrates that green intellectual capital serves as a full mediator between Green Human Resource Management (GHRM) practices and Perceived Organzational Performance (POP). As shown in Table 4, both the direct effect (β = 0.777, t = 22.553, $p < 0.001$) and the indirect effect (β = 0.335, t = 6.881, $p < 0.001$) are statistically significant, confirming the mediation role. This indicates that GHRM practices significantly impact Perceived Organizational Performance (POP) directly and indirectly through the enhancement of green intellectual capital as partial mediation.

Table 4. Total effects.

Effect Type	β	t-value	*p*-value	Result
Direct Effect	0.777	22.553	0.000	Significant
Indirect Effect	0.335	6.881	0.000	Significant
Total Effect	0.313	7.383	0.000	Significant

4) What is the relationship between GHRM practices and the level of green intellectual capital in the healthcare sector in Saudi Arabia?

The relationship between Green Human Resource Management (GHRM) practices and the level of green intellectual capital in the healthcare sector in Saudi Arabia was assessed using Spearman's rank-order correlation. The results revealed a positive and statistically significant correlation (r_s = 0.666, N = 365, $p = 0.000$), indicating that higher engagement in GHRM practices is associated with elevated levels of green intellectual capital in this context.

5) Are there variations in the level of awareness of GHRM practices among healthcare sector employees in Saudi Arabia according to the demographic variables of gender, age, academic qualifications, experience, and managerial position?

As Table 3 examines whether there are statistically significant differences in the level of awareness of Green Human Resource Management (GHRM) practices among healthcare employees based on demographic variables including gender, age, sector, academic qualifications, work experience, and managerial position.

- The *p*-values indicate the significance of differences found between groups within each variable, tested using Kruskal-Wallis or Mann-Whitney tests as appropriate.
- No significant variations were found by gender ($p = 0.228$), age groups ($p = 0.234$), academic qualifications ($p = 0.454$), or work experience ($p = 0.531$), suggesting awareness levels are relatively consistent across these groups.
- Significant differences were observed for sector ($p = 0.000$), indicating that awareness of GHRM practices varies notably between private, public, and semi-public healthcare sectors.
- Additionally, managerial position showed significant variation ($p = 0.009$), with different levels of awareness among employees, managers, directors, and

executive directors, highlighting the influence of job role on GHRM awareness.

These findings suggest that organizational context and hierarchical position impact awareness of GHRM practices more than personal demographics such as age, gender, qualification, or experience, underscoring the importance of tailored engagement strategies in different sectors and management levels to promote GHRM awareness effectively.

Hypothesis Testing and Model Analysis

The study tested four hypotheses to examine the relationships among Green Human Resource Management (GHRM) practices, Green Intellectual Capital (GIC), individual awareness of GHRM, and Perceived Organziational Performance (POP) (OP).

- **H1:** GHRM practices have a positive association with Perceived Organziational Performance (POP).
- **H2:** GHRM practices are significantly related to green intellectual capital.
- **H3:** Green intellectual capital mediates the relationship between GHRM practices and Perceived Organziational Performance (POP).
- **H4:** Individual awareness of GHRM practices moderates the relationship between GHRM practices and Perceived Organziational Performance (POP).

5.2. Two Regression Models Were Evaluated

Model 1: Examined the direct effect of GHRM practices on Perceived Organziational Performance (POP). The results showed a significant positive relationship, with a standardized coefficient (β) of 0.361 ($p < 0.01$) and a 95% confidence interval (CI) ranging from 0.229 to 0.396. This indicates that higher levels of GHRM practices significantly enhance Perceived Organziational Performance (POP).

Model 2: Introduced individual awareness of GHRM practices as a moderating variable. The direct effect of GHRM practices on Perceived Organziational Performance (POP) remained significant but slightly reduced (β = 0.338, $p < 0.01$, 95% CI [0.197, 0.388]), suggesting a slight weakening of the relationship when considering awareness.

The interaction term representing the moderation effect (GHRM Practices × Individual Awareness) was not statistically significant (β = −0.048, $p > 0.05$), indicating that individual awareness does not significantly alter the strength or direction of the relationship between GHRM practices and Perceived Organziational Performance (POP).

Additionally, the change in explained variance (ΔR^2) between Model 1 and Model 2 was minimal (0.002), suggesting that including individual awareness as a moderator adds little explanatory power to the model.

While GHRM practices strongly predict Perceived Organziational Performance (POP), individual awareness of these practices does not significantly moderate this relationship. The findings support hypotheses H1, H2, and H3, highlighting

the positive influence of GHRM and the mediating role of green intellectual capital, whereas hypothesis H4 is not supported.

Hypothesis 5: Moderating Role of Individuals' Conscientiousness Personality on the Relationship between GHRM Practices and Perceived Organziational Performance (POP).

The analysis tested whether individuals' conscientiousness personality moderates the effect of Green Human Resource Management (GHRM) practices on Perceived Organziational Performance (POP) (OP).

Model 1 examined the direct effect of GHRM practices on Perceived Organziational Performance (POP). Results indicated a significant positive relationship ($\beta = 0.361$, $p < 0.01$, 95% CI [0.229, 0.396]), confirming that GHRM practices positively contribute to Perceived Organziational Performance (POP).

Model 2 included the interaction term between GHRM practices and individuals' conscientiousness personality to test the moderation hypothesis. The coefficient for GHRM practices slightly decreased but remained significant ($\beta = 0.341$, $p < 0.01$, 95% CI [0.205, 0.385]). The interaction term itself was positive but non-significant ($\beta = 0.054$, $p > 0.05$, 95% CI [−0.071, 0.224]), indicating no significant moderating effect of conscientiousness personality on the GHRM-OP relationship.

The model fit statistics further support these conclusions. The overall explained variance (R^2) showed a minimal increase from 0.131 in Model 1 to 0.133 in Model 2, with a negligible change ($\Delta R^2 = 0.002$), suggesting that adding conscientiousness personality as a moderator does not improve the model's explanatory power. Table 5 shows the hypothesis testing results as below:

Table 5. Hypothesis testing results.

Hypothesis	*p*-value	Decision
H1: GHRM positively associated with Perceived Organziational Performance (POP)	0.000	Supported
H2: GHRM significantly related to Green Intellectual Capital (GIC)	0.000	Supported
H3: GIC mediates the relationship between GHRM and Perceived Organziational Performance (POP)	0.000	Supported
H4: Individual Awareness of GHRM practices moderates the GHRM-POP relationship	0.394	Rejected
H5: Individuals' Conscientiousness Personality moderates the GHRM-POP relationship	0.309	Rejected

The results provide robust support for hypotheses H1, H2, and H3, confirming that GHRM practices enhance Perceived Organziational Performance (POP) both directly and indirectly through green intellectual capital. However, the data do not support hypotheses H4 and H5; neither individual awareness of GHRM practices nor individuals' conscientiousness personality significantly moderates the effect

of GHRM on Perceived Organziational Performance (POP). Thus, the impact of GHRM practices on performance appears consistent across different levels of these individual characteristics.

6. Discussion

The findings of this study provide robust support for Hypothesis 1 (H1), indicating that Green Human Resource Management (GHRM) is positively associated with Perceived Organziational Performance (POP) (OP). This result is consistent with an extensive body of literature that highlights the beneficial effects of GHRM practices on various organizational outcomes, including financial performance, employee productivity, and corporate reputation. For example, Renwick, Redman, and Maguire (2013) demonstrated that firms adopting GHRM practices achieve superior financial results relative to those that do not. Similarly, Paillé et al. (2014) found that GHRM enhances Perceived Organziational Performance (POP) by fostering employee commitment and engagement. The positive effect of GHRM on OP may be explained by mechanisms such as green training and development initiatives, which cultivate environmental awareness and a culture of sustainability within organizations (Jackson, Renwick, Jabbour, & Müller-Camen, 2011). These practices stimulate innovation and resource efficiency, ultimately driving better performance (Kramar, 2014). Additionally, green recruitment processes enable organizations to attract environmentally conscious employees who exhibit higher motivation and engagement, thereby contributing positively to operational effectiveness (Delmas & Burbano, 2011; Kapoor & Solomon, 2011).

Hypothesis 2 (H2) was also supported, showing a significant relationship between GHRM and green intellectual capital (GIC). This finding aligns with empirical studies that emphasize the integration of sustainability into HR practices as a driver of organizational learning and knowledge capabilities. Jabbour et al. (2013) highlighted that GHRM activities, such as eco-training and green skills development, enhance employees' environmental knowledge and competencies, thereby reinforcing organizational intellectual assets. Molina-Azorín et al. (2009) similarly observed that green recruitment enriches GIC by bringing in environmentally knowledgeable personnel. Furthermore, Liao, Hu, and Chung (2019) evidenced that GHRM fosters knowledge sharing and collaborative innovation through mechanisms like green teams and knowledge-sharing platforms, reinforcing the organizational capacity for sustainability.

The mediating role of GIC between GHRM and POP, proposed in Hypothesis 3 (H3), was supported in line with prior research underscoring the strategic value of knowledge assets for achieving sustainable competitive advantage. Paillé, Boiral, and Jin (2014) established that GHRM indirectly influences environmental performance via GIC, which comprises environmental know-how and capabilities. Delmas and Toffel (2008) likewise found that firms with advanced environmental capabilities demonstrate better financial outcomes. These results confirm that GIC acts as a critical conduit whereby GHRM practices translate into tangible

organizational benefits, facilitating effective environmental management and innovation (Renwick et al., 2013).

In contrast, Hypothesis 4 (H4), predicting a moderating effect of individual awareness of GHRM on the GHRM-POP relationship, was not supported. Although prior studies suggested that employee awareness enhances the efficacy of green initiatives (Jabbour et al., 2013; Zhu, Liu, & Lai, 2017; Alam, Alam, & Noor, 2018), current findings indicate that awareness alone may be insufficient to improve Perceived Organziational Performance (POP) outcomes. This discrepancy could arise because awareness does not necessarily translate into behavior change or effective implementation, highlighting the potential importance of other organizational enablers such as leadership, resources, and culture in driving performance impacts.

Similarly, Hypothesis 5 (H5) concerning the moderating role of individuals' conscientiousness personality was rejected. Despite evidence linking conscientiousness with positive workplace behaviors and environmental citizenship (Raineri & Paillé, 2016; Shen & Benson, 2016), the influence of GHRM on performance does not appear contingent on this personality trait. This may be due to overriding organizational factors shaping the effectiveness of GHRM practices or the possibility that other personality dimensions or contextual moderators play a more substantive role in this dynamic.

7. Conclusion

This study examined the impact of Green Human Resources Practices (GHRM) on Perceived Organziational Performance (POP) in the Healthcare sector in Saudi Arabia, with a particular focus on the moderating role of employees' awareness of GHRM. The findings offer valuable insights into the relationship between green HRM practices and Perceived Organziational Performance (POP) within the healthcare sector. Firstly, our results confirm a significant positive association between GHRM and Perceived Organziational Performance (POP), indicating that integrating environmentally sustainable practices into HRM strategies is crucial for enhancing overall performance in healthcare organizations. These practices include initiatives such as green recruitment, training, and performance management aimed at fostering environmental awareness and sustainability among employees.

However, contrary to our initial hypothesis, employees' awareness of GHRM practices did not moderate this relationship. This suggests that while employee awareness is important, it may not independently influence the effectiveness of GHRM practices in improving Perceived Organziational Performance (POP). Instead, factors such as leadership support, organizational culture, and resource allocation might play more significant roles in shaping the outcomes of GHRM initiatives. Therefore, organizations should adopt a comprehensive approach to GHRM implementation, focusing on creating an organizational culture that supports sustainability and providing necessary resources and support for green initiatives.

8. Contribution to the Knowledge

This study makes several significant contributions to the existing knowledge of Green Human Resources Practices (GHRM) and its impact on Perceived Organziational Performance (POP), particularly within the healthcare sector in Saudi Arabia. Firstly, it adds empirical evidence to the growing body of literature on the relationship between GHRM and Perceived Organziational Performance (POP), specifically in the context of the healthcare sector in Saudi Arabia. By confirming a significant positive association between GHRM and Perceived Organziational Performance (POP), this study reinforces the importance of integrating environmentally sustainable practices into HRM strategies to enhance overall performance in healthcare organizations.

Secondly, the study highlights the moderating role of employees' awareness of GHRM practices. While previous research has emphasized the importance of employee awareness, our findings suggest that awareness alone may not significantly moderate the relationship between GHRM and Perceived Organziational Performance (POP). This underscores the need for a more comprehensive approach to GHRM implementation, considering factors beyond individual awareness, such as leadership support, organizational culture, and resource allocation.

Furthermore, this study extends the understanding of GHRM practices in the unique context of the healthcare sector in Saudi Arabia, which has received limited attention in previous research. Healthcare organizations face distinct challenges and opportunities related to environmental sustainability, making it essential to examine the effectiveness of GHRM practices within this sector. By focusing on Saudi Arabia, this study provides insights relevant to organizations operating in similar contexts characterized by rapid economic development and increasing environmental concerns.

9. Practical Implications

The findings of this study have several practical implications for healthcare organizations in Saudi Arabia. The study underscores the importance of integrating Green Human Resources Practices (GHRM) into organizational strategies. Healthcare organizations should prioritize the implementation of environmentally sustainable HRM practices, such as green recruitment, training, and performance management, to improve Perceived Organziational Performance (POP). This includes hiring individuals with a strong commitment to sustainability, providing relevant training programs, and incorporating green objectives into performance evaluations.

The study highlights the need for a comprehensive approach to GHRM implementation. While employee awareness of GHRM practices is important, it is not sufficient on its own to enhance Perceived Organziational Performance (POP). Healthcare organizations should ensure strong leadership support for green initiatives, foster a culture that values sustainability, and allocate resources effectively to support green HRM practices.

Moreover, healthcare organizations need to invest in employee development programs that focus on raising awareness and building capabilities in environmental sustainability. Training programs should cover topics such as waste reduction, energy conservation, and sustainable healthcare practices to empower employees to contribute effectively to the organization's green objectives.

Additionally, the study suggests that healthcare organizations should regularly assess the effectiveness of their GHRM practices and adjust them as needed. This could involve collecting feedback from employees, monitoring key performance indicators related to sustainability, and benchmarking against industry best practices.

10. Limitations

Despite its contributions, this study has several limitations that should be acknowledged. The study relied on self-reported data from employees, which may be subject to common method bias and social desirability bias. Future research could use multiple data sources or objective performance measures to mitigate these biases. The study focused exclusively on the healthcare sector in Saudi Arabia, which limits the generalizability of the findings to other sectors or countries. Different organizational contexts may influence the effectiveness of GHRM practices differently.

Additionally, the study only examined the moderating role of employee awareness of GHRM practices. Future research could explore other potential moderators, such as leadership support, organizational culture, or individual characteristics, to provide a more comprehensive understanding of the mechanisms underlying the relationship between GHRM and Perceived Organziational Performance (POP). The study did not consider the potential interaction effects between different GHRM practices. Different combinations of green initiatives may have varying impacts on Perceived Organziational Performance (POP).

11. Future Directions

Building on the findings and limitations of this study, several avenues for future research can be identified. Future studies could employ longitudinal research designs to establish causality between Green Human Resources Practices (GHRM), employee awareness, and Perceived Organziational Performance (POP) over time. Longitudinal studies would provide a clearer understanding of how changes in GHRM practices and awareness influence Perceived Organziational Performance (POP) in the healthcare sector in Saudi Arabia.

Researchers could explore the mediating mechanisms through which GHRM practices impact Perceived Organziational Performance (POP). For example, studies could investigate the role of employee engagement, job satisfaction, or organizational commitment as potential mediators in the relationship between GHRM and performance outcomes.

Moreover, researchers could explore the role of leadership support and organ-

izational culture in facilitating the implementation of GHRM practices. Understanding how leadership behaviours and organizational values influence the adoption and effectiveness of GHRM initiatives could provide valuable insights for organizational leaders and policymakers.

Additionally, future studies could investigate the potential moderating effects of individual characteristics, such as demographic factors, on the relationship between GHRM and Perceived Organziational Performance (POP). Exploring how individual differences shape the impact of GHRM practices could help tailor HRM strategies to the specific needs and preferences of employees in the healthcare sector.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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