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EXPLORING THE INFLUENCE OF GREEN HUMAN RESOURCE MANAGEMENT (GHRM) PRACTICES ON EMPLOYEES' PRO-ENVIRONMENTAL BEHAVIOURS IN EGYPTIAN HOSPITALS

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ABSTRACT

This study examines how green human resource management (GHRM) practices influence the development of an environmentally sustainable culture that encourages pro-environmental behaviours among employees in both public and private hospitals in Egypt. Data from 491 healthcare employees were analysed using partial least squares structural equation modelling. Results show strong positive connections between GHRM practices, green psychological climate, environmental knowledge, and employees' pro-environmental behaviours. The findings emphasise that psychological climate and knowledge mediate the relationship between HRM practices and sustainable actions. Practically, the study underscores the importance for healthcare organisations to develop sector-specific GHRM strategies and effectively incorporate them into daily operations to achieve lasting sustainability. This research contributes to the GHRM literature by applying it to a healthcare setting in a developing country, and it recommends that future studies explore the long-term effects, individual differences, and cross-sector comparisons.

KEYWORDS: Green Human Resource Management Practices; Green Psychological Climate; Environmental Knowledge; Employees' Pro-Environmental Behaviours; Public And Private Hospitals.

1. INTRODUCTION

Due to global environmental challenges, organisations are increasingly recognising the significance of sustainable activities. Green human resource management, or GHRM, is an integrated approach to environmental management within enterprises, incorporating green policies and practices in human resource management (HRM) (Shah et al., 2024). GHRM integrates concepts and practices that minimise environmental impact, so the organisation remains sustainable (Mehta and Chugan, 2015; Ren et al., 2018).

GHRM was defined by Yong et al. (2019) as organisational systems, practices, and policies that encourage employees to be environmentally friendly for the benefit of the business, the community, the natural environment, and the general population. The integration of HR practices and environmental considerations in GHRM plays an essential role in developing an organisation's environmental sustainability (Chaudhary, 2020; Farrukh et al., 2022; Saeed et al., 2019). GHRM practices, policies, and frameworks address environmental adequacy and conservation (Malik et al., 2020; Martins et al., 2022; Aukhoon et al., 2024).

Since employees are the most significant capital in any organisation, a focus on their behaviours can lead to significant positive change in businesses. There is growing recognition that GHRM is one of the best approaches for enhancing business efficiency and long-term sustainability (Munawar et al., 2022). Companies thus aim to improve employees' attitudes, behaviours, and performance through GHRM initiatives (Farrukh et al., 2022). Employees are critical organisational assets in achieving organisational greening through changing environmental activities (Lulfs and Hahn, 2013). Prior research has focused on employee attitudes towards the environment, increasing knowledge of environmental responsibility, and the potential benefits for businesses. Ren et al. (2018), for instance, claimed that GHRM initiatives play a significant role in shaping workers' views and actions towards environmental sustainability and raising levels of environmental awareness.

When employees are included in sustainability initiatives, they are empowered to share their ideas and knowledge, establishing a sense of commitment to and ownership of environmental objectives (Shah et al., 2023). Through this engagement, employee productivity, satisfaction, and motivation increase, resulting in positive environmental outcomes (Gunasekaran et al., 2014). Research emphasising the positive impact of GHRM practices on employee and organisational performance underscores the significance of HR practices that address environmental concerns in achieving individual and organisational goals (Faisal, 2023). To create a pro-environmental psychological climate within an organisation (Garavan et al., 2023), there is a need to both modify human behaviour with sustainable alternatives (Midden et al., 2007).

This involves employees utilising company tactics, strategies, processes, and metrics to promote a pro-environmental psychological climate throughout workplace interactions (Midden et al., 2007; Hameed et al., 2020). This approach also enhances employees' awareness and understanding of the environment (Wang and Sarkis, 2017; Afsar and Umrani, 2020). Moreover, environmental awareness and pro-environmental psychological climates are mutually reinforcing, as noted by Bamberg and Möser (2007).

This harmonisation, particularly when combined with GHRM frameworks, leads to a positive ecological impact (Afsar et al., 2016). The efficiency of any critical method depends on its level of accessibility and the capacity of its workforce (Hameed et al., 2020). For instance, performance appraisal, training, and development are GHRM practices through which a firm can develop a workforce with knowledge of green behaviour (Jackson and Seo, 2010). Thus, the two green practices selected for evaluation in this study focus on training and development, as well as performance appraisal, with a focus on knowledge, motivation, and behavioural change elements (which ensure that workers are both informed about their responsibilities and motivated to perform the tasks), and the effectiveness of training and development. The latter can be measured by assessing employees' knowledge and attitudes towards sustainability, as well as the behavioural changes that result from performance management efforts.

By focusing on these two GHRM practices, this study aimed to understand how information- and incentive-based strategies facilitate the establishment of a long-term corporate culture and encourage worker engagement in environmental activities (Hameed et al., 2020). In addition, the objective of this study is to analyse the effect of GHRM practices on the pro-environmental behaviours of employees in Egypt's healthcare sector. GHRM has been assessed across various sectors in the literature; however, limited information is available for the health sector, particularly in Egypt, a developing nation (Farrukh et al., 2022; Faisal, 2023; Lülfs and Hahn, 2013; Shafaei et al., 2020). By adopting GHRM practices, the

healthcare sector can make a significant contribution to environmental sustainability, as it is a high-influence and high-resource sector.

Most research has focused on industries such as airlines (Al-Romeedy, 2024), hospitality (Abedelrahim et al., 2024; Abdelwahed et al., 2024) and tourism (Farghaly et al., 2021; Al-Romeedy and Abdelfattah, 2023). Research on the healthcare sector has explicitly focused on private sector hospitals (Allam and Mansour, 2024) or nurse managers (Gomaa, 2024; Abdelrahman et al., 2023; Abd El-Monem et al., 2022), and broad employee groups and public sector hospitals remain under-researched. In addition, GHRM research focuses on developed nations, whose organisational, economic, and cultural environments differ significantly from those in Egypt.

It is essential to understand local dynamics, as cultural variables significantly influence employees' attitudes towards environmental initiatives and the overall effectiveness of GHRM. The current research aims to address the gaps described above, particularly the environmental, cultural, and operational challenges faced by the healthcare sector in Egypt, to gain insights into the potential of GHRM practices to enhance sustainability in this sector. Being able to identify and understand these relationships is critical for business entities that want to harmonise their HR practices with environmental laws and regulations.

2. LITERATURE REVIEW

2.1. Theoretical Models

To analyse the ability of GHRM practices to influence employees' pro-environmental behaviour in the Egyptian healthcare environment, the theory of planned behaviour (TPB) and social exchange theory (SET) were utilised to develop a comprehensive framework. The relational, psychological, and cognitive behavioural dimensions are addressed by these theories, making them appropriate for analysing the influence of GHRM practices on pro-environmental attitudes and behaviours.

2.1.1. Theory of Planned Behaviour (TPB)

According to Ajzen's theory of planned behaviour (1991, 2011), perceived behaviour control, subjective norms, and attitudes drive behaviour and shape behavioural intentions. Pro-environmental behaviours can be explained using TPB in many contexts, particularly research studies that associate organisational practices and attitudes with sustainable actions (Yuriev et al., 2020; Kan and Fabrigar, 2020). TBP theory is based on intention. This method may help clarify the relationship between attitudes, subjective norms, and volitional control in relation to green human resources practices (Ajzen, 2011).

Perceived control functions as a mediator of control over behaviour (Trafimow et al., 2002), and behaviour intention and behaviour are positively correlated (Yang et al. 2013). Personal beliefs and perceived norms are the main factors that influence behavioural beliefs. Attitude is generally considered the strongest determinant of behavioural intention, and in this case, it refers to how much one likes or dislikes to behave in a particular way. There are two categories of factors that affect a person's behaviour and attitude, which are categorised as either exogenous or endogenous.

While the latter results from external factors, like employee identification, the former is a result of an individual's inherent characteristics. Subjective norms refer to the social pressure people feel when considering the implementation of a specific behaviour. TPB is relevant for assessing the ability of GHRM practices and their influence on employee behaviours and intentions when organisations move towards sustainability. In the GHRM context, the components of the TPB provide insights into green HR practices that shape employee actions and intentions.

2.1.2. Social Exchange Theory (SET)

TPB is complemented by social exchange theory (SET) since social behaviour dynamics are addressed. SET focuses on perceived organisational support and reciprocity, in which employees reciprocate organisational support through behaviours that are aligned with organisational objectives (Gouldner, 1960; Eisenberger et al., 1986). Organisational researchers (Etzioni, 2000; Levinson, 1965; March and Simon, 2015) have long employed the concepts of social exchange (Kieserling, 2019) and the accepted principle of equality (Gouldner, 1960) to characterise the driving forces behind employee behaviour. Individuals have employed the concept of SET and the reciprocity standard to rationalise actions that are often neither sanctioned by law nor recognised by authority (Organ, 1988; Rousseau, 1989).

According to SET, this perceived organisational support generates a strong reciprocal obligation that motivates workers to go above and beyond the call of duty, participating in more voluntary pro-environmental behaviours, such as reducing waste, conserving energy, and advocating for additional green initiatives within the company (Kieserling,

2019; Eisenberger et al., 1986).

Furthermore, when workers see that the organisation genuinely values and promotes sustainability, which can be achieved through comprehensive training and fair assessment practices, they are more likely to respond positively. SET offers a valuable perspective for examining how green management performance and evaluation, together with green training and development, influence the pro-environmental behaviours of staff members. By understanding these interactions as part of a reciprocal exchange process, organisations can better design and implement HRM policies that not only promote sustainability but also foster a strong sense of shared commitment and responsibility between the company and its employees.

2.2. Green HRM Practices and Pro-environmental Activities

Green HRM has garnered considerable interest in the literature in recent years (De Stefano et al., 2018; Podgorodnichenko et al., 2020). As mentioned above, adopting GHRM practices enables organisations to involve workers in environmental choices and activities, and make them aware of their organisational and individual responsibilities beyond profit (Renwick et al., 2013).

Research has shown that stakeholders in the workplace view GHRM practices as a key factor in motivating individuals to perform their jobs effectively (Das and Dash, 2020), and that employees believe their employers' HRM policies and procedures are significant influences on their work-related attitudes and behaviours (Nishii et al., 2008). Thus, it might be expected that GHRM would have positive effects on employees' environmental perspectives (Renwick et al., 2013). It has been argued, however, that if employees are not held directly responsible for their behaviour, they may not fully embrace environmentally friendly behaviours (Manika et al., 2015).

Previous studies suggest that the psychological climate, particularly interpersonal dynamics, has a significant impact on employees' green behaviours (Dumont et al., 2017). Zafar and Suseno (2024) suggested that the implementation of green HRM practices not only encourages voluntary environmentally friendly activities but also establishes a robust psychological green climate within an organisation.

They also reported that when the green climate is favourable, it functions as a mediator to connect pro-environmental activities and green HRM. This study highlights the critical role played by organisational culture in carrying out sustainable activities. Similarly, establishing an environmentally responsible workplace through engagement in green practices and helping employees acquire new knowledge supports the creation of a green environment (Nisar et al., 2021; Hicklenton et al., 2019; Renwick et al., 2013). (See Figure 1).

H1: Green HRM practices have a positive effect on employees' pro-environmental activities

2.3. HRM Practices and Employees' Pro-Environmental Behaviours

Ngo et al. (2014) suggested that effective HRM practices can be perceived as strategic assets that develop unique, valuable, and non-replicable human capabilities. They support organisations in maintaining a competitive advantage. González-Sánchez et al. (2018) extended this idea, stating that GHRM is an essential component of strategic interventions aimed at supporting workers' pro-environmental actions within the framework of environmental management.

Businesses can enhance their capabilities by complying with GHRM standards and providing training to improve employee performance (Govindarajulu and Daily, 2004). To effectively implement GHRM practices, it is necessary to engage employees who are directly impacted by changes in both their personal and professional lives (Dezdar, 2017; Ren et al., 2018). Research on HRM behaviour suggests that GHRM practices can influence employees' attitudes and behaviours (Wright et al., 2001; Islam et al., 2020).

According to Dezdar (2017), however, staff attitudes and behaviours play a critical role in the effectiveness of environmental projects. For employees to engage in pro-environmental behaviour, they must desire to do so and not simply follow the requirements of their job descriptions (Becker and Huselid, 2006). Al-Asabi et al. (2024) found that GHRM practices enhance environmental performance in organisations, with job satisfaction mediating the relationship between GHRM practices and employees' pro-environmental behaviours.

Accordingly, in performance management systems, unambiguous green performance metrics are beneficial (Saeed et al., 2022), as such behaviour might influence employee performance results in one or more ways (Wright et al., 2001; Becker and Huselid, 2006). Practical training has a significant impact on workers' opinions and involvement in pro-green efforts (Bissing-Olson et al., 2013). Enhancing knowledge is essential for businesses to minimise

wasteful reproduction, preserve energy, and implement safety protocols (Yafi et al., 2021; Ababneh, 2021), as well as create and maintain a green culture within the organisation (Opatha and Arulrajah, 2014).

To further support conservation efforts and sustainable development, green performance management is a key component of GHRM practices (Gholami et al., 2016).

Evaluating green performance can redirect people, boost self-esteem, and modify behaviours (Farrukh et al., 2022). The system should evaluate labourers based on their needs and pro-environmental behaviour (Hameed et al., 2020). Including pro-environmental behaviours in the performance assessment system is likely to encourage employees to take ownership of sustainable practices.

H2: Green HRM practices have a positive impact on employees' pro-environmental behaviours.

2.4. HRM Practices and Environmental Knowledge

The positive relationship between environmental awareness and GHRM practices is expected to lead to an enhanced level of employee engagement in environmental activities (Afsar et al., 2016). The adoption of GHRM practices enables employees to enjoy considerable flexibility, and these strategies foster environmentally sustainable performance among firms (Saeed et al., 2019).

The effectiveness of GHRM programmes may be influenced by employees' environmental awareness, a significant factor in their implementation. GHRM practices can help employees develop and adopt pro-environmental attitudes across both their personal and work lives, encouraging a broader shift towards sustainability (Becker and Huselid, 2006).

AlKetbi and Rice (2024) suggest that training and development, as part of GHRM practices, help enhance employees' environmental awareness and knowledge, which in turn supports pro-environmental behaviours. Training 'green employees' who can evaluate and address the organisation's ecological difficulties in its operations is particularly important in this regard (Darvishmotevali and Altinayb, 2022).

Elshaer et al. (2023) stated that green HRM practices, such as green training and rewards, are linked to increased employees' green behaviour and overall organizational performance. Xie et al. (2023) emphasized the importance of GHRM practices in encouraging pro-environmental behaviour among employees.

Environmental goals and HRM procedures should be aligned so that when environmental training is carried out and employees participate in sustainability initiatives, an organization can foster an environmentally responsible culture and promote sustainable behaviour.

H3: Green HRM practices positively impact environmental knowledge and awareness

2.5. Green Psychological Climate and Employees' Pro-environmental Behaviours

Research on HRM behaviour suggests that psychological factors can influence the effectiveness of HRM practices in shaping employee behaviour (Garavan et al., 2023). When the environment and its preservation are considered an important organisational strategy, this implicitly conveys the company's expectations that its workforce will act in an environmentally responsible manner (Jiang et al., 2012).

Employees learn about a company's values by observing HRM procedures (Nishii et al., 2008), so when a firm adopts GHRM strategies and procedures, its employees perceive it as environmentally conscious and appreciate its efforts to preserve the environment. Zafar and Suseno (2024) demonstrated that a green psychological climate serves as a mediating factor between employees' voluntary pro-environmental behaviour and GHRM practices, highlighting the significance of organisational climate in fostering sustainable practices.

Qalati et al. (2023) suggest that the presence of a green psychological climate enhances the impact of GHRM practices on employees' pro-environmental behaviours. This climate also helps establish green creativity among employees, indicating the importance of a favourable organisational climate in enhancing sustainable behaviours. Employees' pro-environmental behaviours are positively correlated with a psychological climate that supports the environment (Norton et al., 2014).

H4: Green psychological environments have a positive impact on employees' pro-environmental behaviours.

2.6. Mediating Role of the Green Psychological Climate

According to Burke et al. (2002), workers behave in ways that align with their perceptions and understandings of their work environments. Workers form impressions of their employers' environmental friendliness and then act in environmentally conscious ways (Saeed et al. 2022). This is achieved by using the moderating variable of

pro-environmental psychological climate, which indicates that workers are aware of their workplace's characteristics.

Therefore, impressions of the psychological environment stem from social relationships, which help workers evaluate the significance of organisational procedures, structures, and processes (Beermann, 2011).

Employees in environmentally conscious organisations tend to share similar perceptions of their workplace because of the psychological green climate (Chatelain et al., 2018). Pro-environmental behaviour can also reflect or indicate the overall values and attitudes of a company's employees, influenced by the company culture, established laws and implementation policies. A green environment promoted through GHRM policies can encourage people to engage in discussions about environmental concerns associated with organisational practices (Saeed et al., 2019).

A positive psychological climate fosters self-generated, voluntary and helpful pro-environmental behaviours, along with additional self-directed actions (Sawitri et al., 2015). Prior research has established that people positively adjust their behaviour towards the environment when they find themselves in a green psychological climate (Whitmarsh and O'Neill, 2010). Hence, the objective of this study is to establish a correlation between green psychological climate, pro-environmental behaviour and GHRM practices.

H4a: The green psychological climate acts as a mediator in the relationship between Green HRM practices and workers' pro-environmental activities.

2.7. Environmental Knowledge and Pro-environmental Behaviours

Environmental knowledge is a crucial factor that influences employees' willingness to engage in environmentally friendly behaviours. When employees understand aspects such as waste management, environmental management systems, and their organisation's green policies, they are more likely to adopt eco-friendly practices at work, such as biking to work, turning off lights, and avoiding disposable cups (Barr, 2007).

Research indicates that employee knowledge has a significant influence on decision-making and intentions. People tend to avoid participating in situations they are unfamiliar with (Saeed et al., 2022). As individuals become more knowledgeable about environmental challenges, processes, and solutions, their concerns and awareness of the need for personal environmental action often increase (Zsóka et al., 2013). Employees' pro-environmental behaviours are enhanced through environmental awareness and knowledge facilitated through GHRM practices.

This highlights the importance of education and awareness when implementing sustainable initiatives. Environmental awareness is the extent to which people are aware of the gravity of environmental concerns and how they interact with or respond to their surroundings (Ziadat, 2010, p. 136). Cheng and Wu (2015) asserted that workers who care more about the environment are more likely to adopt initiatives that improve the workplace environment.

H5: Employee awareness and understanding of the environment have a favourable influence on their pro-environmental actions.

2.8. Mediating Role of Environmental Knowledge

The understanding and expertise of employees appear to have an impact on an organisation's objectives and decision-making processes. People generally withdraw from situations at work when they feel uncomfortable (Otto and Pensini, 2017).

By adopting pro-environmental activities and improving organisational environmental performance, people who are aware of environmental issues can fulfil their social obligations (Zareie and Navimipour, 2016). When individuals care about the environment, they typically recycle their trash, use natural and organic products, spend their money on eco-friendly goods, and participate in environmentally friendly activities.

Environmental awareness, therefore, influences individuals' inclinations to engage in pro-environmental actions. Thus, in the relationship between GHRM protocols and ecologically responsible behaviour, an employee's environmental expertise serves as a mediator. Raising employees' environmental awareness can enhance the effectiveness of GHRM methods in fostering sustainable development (Barr and Gilg, 2007; Zsoka et al., 2013; Afsar et al., 2016; Fawehinmi et al., 2020; Saeed et al., 2022).

H5a: Environmental knowledge and awareness operate as a mediating factor in the relationship between Green HRM practices and employees' pre-environmental knowledge and awareness.

Table 1: Summary of Hypotheses.

Category	Hypothesis	Statement
Direct Relationships	**H1**	Green HRM practices have a positive effect on pro-environmental activities
	H2	Green HRM practices have a positive impact on employees' pro-environmental behaviors.
	H3	Green HRM practices positively impact environmental knowledge and awareness.
	H4	Green psychological environments have a positive impact on the employees' pro-environmental behaviors.
	H5	Employee awareness and understanding of the environment have a favourable influence on their pro-environmental actions.
Mediating Effects	**H4a**	The green psychological climate acts as a mediator in the relationship between Green HRM practices and workers' pro-environmental activities.
	H5a	Environmental knowledge and awareness operate as a mediating factor in the relationship between Green HRM practices and employees' pro-environmental behaviours.

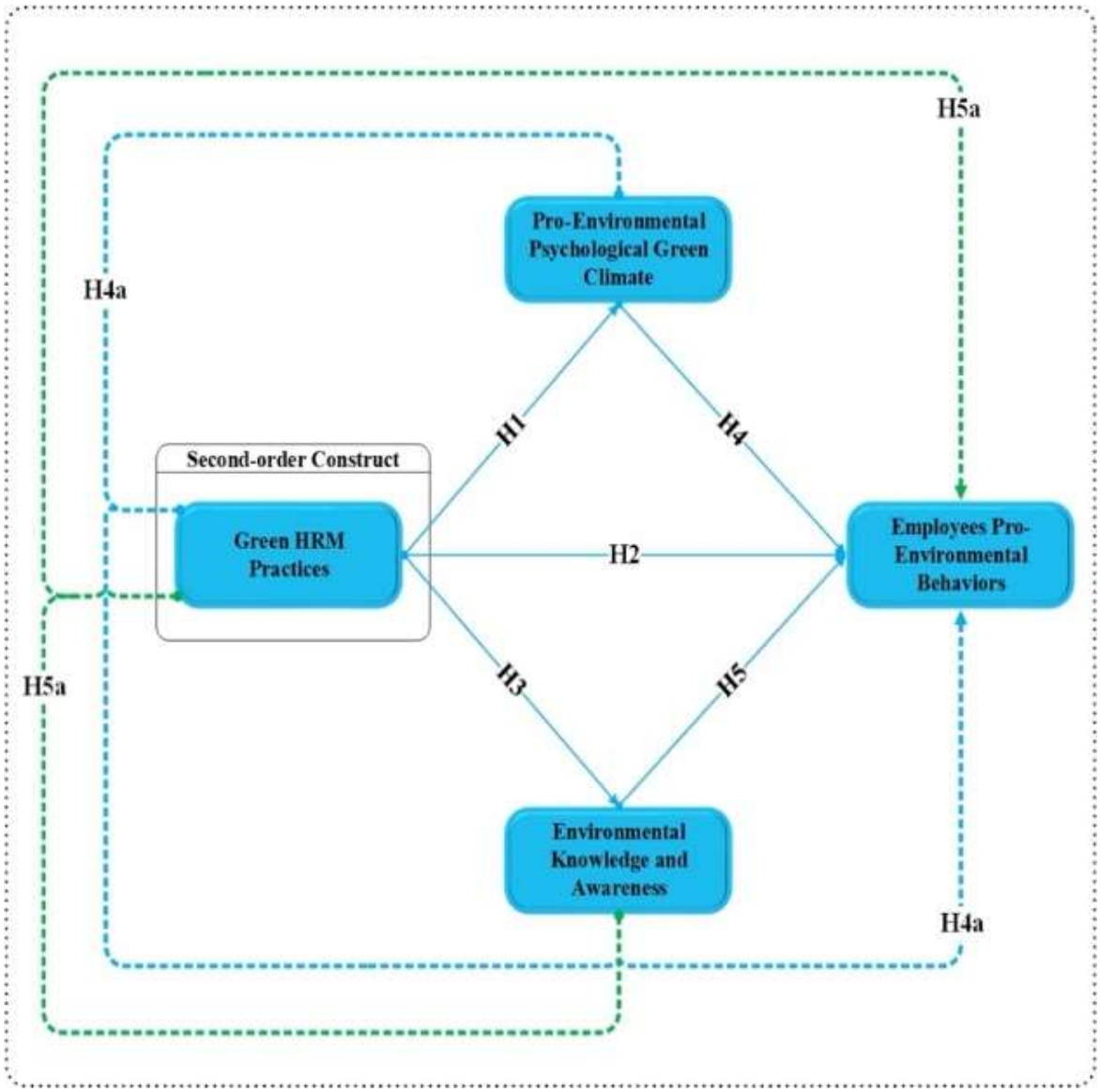

Figure 1: Conceptual Framework.

3. STUDY METHODOLOGY

3.1. Research Design

This study employed a quantitative research design to examine the impact of green performance management and assessment, as well as green training and development, on pro-environmental behaviour among hospital staff in Egypt. A quantitative research approach was used. The design's main goal was to find correlations between the variables using statistical analysis and verified scales.

3.2. Sample and Population

The target population for this study consisted of employees in public and private hospitals in Egypt, specifically those involved in GHRM practices. A total of 491 participants were selected using a sampling approach designed to ensure representativeness across various hospital roles involved in GHRM.

The questionnaire was administered in English, targeting participants proficient in the Language to ensure clarity and comprehension of the survey items. This selection criterion was established to enhance the accuracy and relevance of the data within the Egyptian hospital context.

3.3. Sampling Method

Stratified random sampling was employed to select participants from different hospital departments to ensure representation from all employment groups. To better include all the main categories of the sample population, stratification was carried out according to job title, dividing the hospital staff into administrative, medical and support roles. This contributed to reducing sample bias and increasing the generalizability of the results to the broader population of Egyptian hospital employees.

3.4. Instruments

To measure the study's variables, the following validated scales were employed:

- Green HRM Practices: This was assessed using the scale developed by Jabbour et al. (2010), which includes two sub-dimensions: green performance appraisal (8 items) and green training and development (12 items).
- Environmental Knowledge: The 9-item scale by Gatersleben et al. (2002) was used to evaluate employees' understanding of environmental issues.
- Pro-Environmental Psychological Climate: Chou's (2014) 5-item scale was used to measure the extent to which employees perceived a supportive green environment within their workplace.
- Employees' Pro-environmental Behaviour: This was measured using a combination of items from Kim et al. (2016), Robertson and Barling (2013), and Kaiser et al. (2007), resulting in a comprehensive 13-item scale.

Each instrument underwent a pilot test with a small sample of hospital employees (n = 50) to ensure clarity, reliability and validity in the Egyptian healthcare context.

3.5. Data Collection

Information was gathered using structured questionnaires for three months. Hospital administration offices were responsible for recruiting participants and distributing survey invitations to employees. To cater to a variety of preferences, questionnaires were made available in both online and paper formats, providing comfort and convenience for the participants.

The participants were thoroughly informed about the study's purpose, the stringent confidentiality measures in place and their rights to withdraw at any time before surveys were administered. The survey included questions about basic information (e.g., age, gender, job position) and measurements for GHRM practices, pro-environmental behaviour, environmental knowledge and psychological climate.

Anonymity was enforced in all surveys to enable truthful responses, and participants were assured that their answers would be kept confidential. Following data collection, the answers were meticulously checked for thoroughness and accuracy. This involved cross-checking the responses with the consent forms to ensure data integrity. Participants with a large amount of missing data were excluded from the final analysis.

4. STUDY RESULTS

Descriptive statistics were employed to summarise and describe the demographic traits of the sample. SmartPLS version 4.1.06 (Hair et al., 2024) was utilised to examine the relationships within the conceptual framework using partial least squares structural equation modelling (PLS-SEM).

PLS-SEM was selected due to its strong capability to handle complex models with numerous variables, making it suitable for this study's intricate framework (Sarstedt et al., 2014). Furthermore, its capacity to evaluate both immediate and indirect

effects enabled a comprehensive understanding of the connections and interactions among the elements (Hair et al., 2017).

4.1. Demographics of Respondents.

Table 1: Provides the Demographic Details of the Study Participants.

Items	Frequency (N=491)	(%)
Gender		
Male	258	52.5
Female	233	47.5
Age		
25-30	80	16.3
31-35	175	35.6
36-40	152	31
41 and over	84	17.1
Education		
High School Diploma or Equivalent	49	10
Associate Degree	126	25.7
Bachelor's Degree	84	17.1
Master's Degree	96	19.6
Doctorate/PhD	80	16.3
Professional Certificate/Diploma	56	11.4
Years Of Service		
0-5 year	90	18.3
6-10 year	169	34.4
11-15 year	149	30.3
16 years and over	83	16.9
Job Title		
Physician/Doctor	56	11.4
Nurse	143	29.1
Administrative Staff	113	23
Technician (e.g., Radiology, Lab)	125	25.5
Pharmacist	54	11
Sector		
Public	248	50.5
Private	243	49.5

4.2. Common Method Bias

Harman's single-factor method was used to check for common method bias. A single factor accounted for 19.067% of the variance, which is well below 50%. This suggests that common method bias was not present in this study (Podsakoff et al., 2003). This study also examined the VIF values to assess common method bias. The VIF values fell within the acceptable threshold limits (see Table 2).

4.3. Measurement Model

The first step in the analysis was to evaluate the reliability and validity of the measurement model. Reliability is established when CR and alpha values are greater than 0.7 (Gefen et al., 2000).

To confirm that there are no concerns with convergent validity, the outer loadings for each construct should be more than 0.5 (Bagozzi and Yi, 1988), and the AVE should be above 0.5 (see Table 2). The Fornell-Larcker technique was used to assess discriminant validity, which stipulates that the square root of the AVE for every construct must be higher than its correlations with other constructs (see Table 3) (Fornell and Larcker, 1981).

Following Henseler et al.'s (2014) recommendation, we assessed discriminant validity using the heterotrait-monotrait ratio (HTMT), which is the ratio of correlations within traits to correlations between traits. The maximum threshold for HTMT is 0.85, and our analysis, shown in Table 3, yielded values below this limit, confirming discriminant validity.

Table 2: Reliability & Validity Analysis.

Construct	Items	Loading	Alpha	CR	AVE
			>0.7	>0.7	>0.5
Zero-order Construct					
GTD	GTD_1	0.753	0.946	0.946	0.593
	GTD_2	0.766			
	GTD_3	0.803			
	GTD_4	0.762			
	GTD_5	0.769			
	GTD_6	0.769			
	GTD_7	0.765			
	GTD_8	0.788			
	GTD_9	0.758			
	GTD_10	0.763			
	GTD_11	0.756			
	GTD_12	0.788			
GPMA	GPMA_1	0.800	0.925	0.925	0.608
	GPMA_2	0.788			
	GPMA_3	0.752			
	GPMA_4	0.764			
	GPMA_5	0.799			
	GPMA_6	0.762			
	GPMA_7	0.782			
	GPMA_8	0.790			
EKA	EKA_1	0.797	0.921	0.921	0.566
	EKA_2	0.686			
	EKA_3	0.704			
	EKA_4	0.794			
	EKA_5	0.759			
	EKA_6	0.744			
	EKA_7	0.761			
	EKA_8	0.753			
	EKA_9	0.766			
PPC	PPC_1	0.779	0.867	0.867	0.566
	PPC_2	0.753			
	PPC_3	0.790			
	PPC_4	0.726			
	PPC_5	0.712			
EPB	EPB_1	0.804	0.945	0.945	0.570
	EPB_2	0.706			
	EPB_3	0.718			
	EPB_4	0.770			
	EPB_5	0.770			
	EPB_6	0.779			
	EPB_7	0.773			
	EPB_8	0.696			
	EPB_9	0.803			
	EPB_10	0.736			
	EPB_11	0.744			
	EPB_12	0.775			
	EPB_13	0.731			
Second-order construct					
GHRM	GPMA	0.790	0.790	0.790	0.653

	GTD	0.826			

Table 3: Discriminant Validity for Zero Order Construct (Fornel Larcker & HTMT).

Latent Variables	1	2	3	4	5
Zero-order Construct					
1. EKA	**0.752**				
2. EPB	0.631	**0.755**			
3. GPMA	0.572	0.531	**0.780**		
4. GTD	0.565	0.565	0.697	**0.770**	
5. PPC	0.616	0.635	0.541	0.579	**0.752**
Second-order construct					
Latent Variables	**1**	**2**	**3**	**4**	
1. EKA	**0.752**				
2. EPB	0.631	**0.760**			
3. GHRM	0.680	0.656	**0.808**		
4. PPC	0.616	0.635	0.671	**0.752**	

Note: "Values on the diagonal (italicized) represent the square root of the average variance extracted, while the off diagonals are correlations".

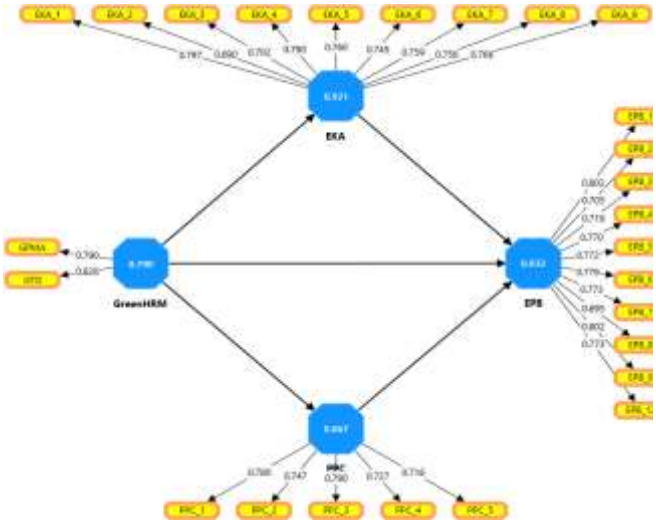

Figure 2: Representation of Assessment of Second-Order Measurement Model.

4.4. Structural Model

PLS-SEM was employed using SmartPLS software version 4.1.06 to test the hypothesis (see Figure 2). A bootstrapping procedure was used with 5,000 samples to obtain the hypothesis results, consistent with the approach recommended by Sarstedt et al. (2014). A detailed summary of the direct, indirect and interaction effects is provided in Table 4.

4.5. Hypothesis Testing: Direct Effects

The hypothesis testing results for direct relationships are summarised in Table 4. For Hypothesis H1, the correlation between GHRM and PPC was assessed, yielding a standardised beta of 0.671 with a standard error of 0.055. A t-value of 12.249 was obtained, indicating a highly significant impact ($p < 0.001$). Hypothesis H2, analysing the correlation between GHRM and EPB, presented a beta value of 0.291 and a standard error of 0.080, resulting in a statistically significant t-value of 3.630 ($p < 0.001$). Hypothesis H3 tested the effect of GHRM on EKA, with a beta value of 0.680 and a standard error of 0.054. A t-value of 12.585 was generated, which also supported a highly significant correlation ($p < 0.001$). Hypothesis H4 examined the relationship between EKA and EPB, with a beta of 0.262, a standard error of 0.064, and a t-value of 4.063, confirming statistical significance ($p < 0.001$). Finally, Hypothesis H5 investigated the relationship between PPC and EPB, with a beta of 0.279, a standard error of 0.067, and a t-value of 4.168, confirming a significant relationship between PPC and EPB ($p < 0.001$). Overall, all hypotheses had t-values greater than the statistical significance threshold, reflecting significant direct relationships.

Table 4: Direct Effect.

Hypothesis	Direct Relationships	Std. *Beta*	Std. Error	T Values	P Value
H1	GreenHRM ➔ PPC	0.671	0.055	12.249	***
H2	GreenHRM ➔ EPB	0.291	0.080	3.630	***
H3	GreenHRM ➔ EKA	0.680	0.054	12.585	***
H4	EKA ➔ EPB	0.262	0.064	4.063	***
H5	PPC ➔ EPB	0.279	0.067	4.168	***
*Indicates significant paths: *p<0.05, **p<0.01, ***p<0.001, NS = not significant.					

4.6. Hypotheses Testing Indirect Effect

The results for the indirect relationships examined in the hypotheses are presented in Figure 3 and Table 5. Hypothesis H4a analyses the indirect impact of GHRM on EPB through PPC, resulting in a standardised beta of 0.187 and a standard error of 0.052. A t-value of 3.606 was produced, which confirms a statistically significant indirect effect ($p < 0.001$). The indirect effect of GHRM on EPB via EKA is examined in Hypothesis H5a. A beta of 0.178 and a standard error of 0.050 were obtained, leading to a t-value of 3.586. Thus, a significant indirect effect is confirmed ($p < 0.001$). Strong mediation effects are shown for both hypotheses and their t-values confirm their statistical significance.

Table 5: Hypotheses Testing Mediation Effects.

Hypothesis	Direct Relationships	Std. Beta	Std. Error	T Values	P Value
H4a	GreenHRM ➔ PPC ➔ EPB	0.187	0.052	3.606	***
H5a	GreenHRM ➔ EKA ➔ EPB	0.178	0.050	3.586	***

*Indicates significant paths: *p<0.05, **p<0.01, ***p<0.001, NS = not significant.

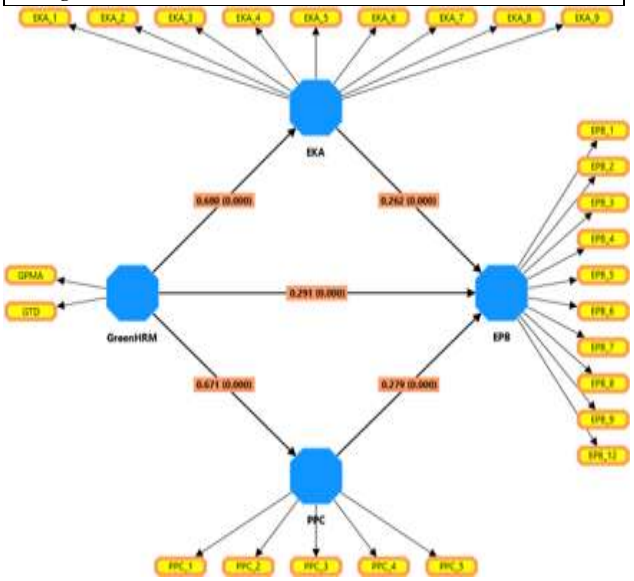

Figure 3: Representation of the structural model.

4.7. R2

In general, R-squared values of 0.25, 0.50, and 0.75 correspond to small, medium, and large effect sizes, respectively. R^2 represents the extent of variance in an endogenous construct explained by its predictor constructs (Hair et al., 2017). The following table presents the R^2 values for the three latent variables used in this study. EKA has an R^2 of 0.463, indicating that the model explains 46.3% of the variance in EKA, which signifies moderate explanatory power. EPB has a higher R^2 value of 0.533, indicating that 53.3% of its variance is explained, which reflects somewhat stronger explanatory power. The R^2 of PPC is 0.450, indicating that 45.0% of its variance is accounted for by the model, which also reflects moderate explanatory power. Overall, the model provides moderate to strong explanatory power for these latent variables, as shown in Table 6.

Table 6: R2.

Latent variables	R^2
EKA	0.463
EPB	0.533
PPC	0.450

5. DISCUSSION OF HYPOTHESIS ANALYSIS RESULTS

The research hypotheses were assessed thoroughly to consider GHRM practices and their role in Egyptian hospitals. Hypothesis 1 was supported. A significant relationship was found between GHRM practices and the psychological green climate (standardised beta = 0.671, $p < 0.001$). This highlights the importance of eco-friendly HR practices in creating a favourable environment, which, over time, influences employees to engage in sustainable behaviours. This finding aligns with research by Ren et al. (2021) and Pham et al. (2020), who discovered that an eco-friendly environment fosters GHRM practices across various sectors.

According to the TPB perspective, a favourable climate fosters the emergence of subjective norms, such that environmentally friendly actions become normative behaviour within an organisation (Ajzen, 1991). As illustrated by Zafar and Suseno (2024), the intermediatory role of encouraging a supportive climate increases GHRM's impact on behaviour. Social exchange theory suggests that employees transform organisational support into active participation for the ideal development goals of organisational sustainability (Blau, 1964). The findings are consistent with Egyptian hospitals, demonstrating that centred GHRM practices could improve the psychological climate while encouraging sustainable behaviours in the healthcare sector.

H2 was confirmed by a positive correlation across GHRM practices and employees' pro-environmental behaviours (standardised beta = 0.291, $p < 0.001$).

Singh et al. (2020) and Saeed et al. (2019) reported similar findings, demonstrating that GHRM procedures encouraged team members to participate in environmentally mindful actions. TPB's theories

regarding sentiments and practices around environmental sustainability have significance, given that GHRM activities create favourable views and standards for environmentally friendly behaviour (Ajzen, 1991). SET indicates that workers respond to the organisation's support by engaging in activities that are beneficial to the environment, a finding also acknowledged by Qalati et al. (2023).

The research supported H3, showing a significant beneficial correlation between GHRM practices and knowledge of the environment (standardised beta = 0.680, $p < 0.001$). The outcomes align with previous investigations (Saeed et al., 2019; Yong et al., 2022) and are supported by TPB's view of what constitutes control, suggesting that understanding facilitates individuals' judgments that align with the organisational targets for sustainability. Within the framework of SET, individuals adapt to a commitment to knowledge by engaging in environmentally conscious behaviours. AlKetbi and Rice (2024) observed that GHRM-driven programming enhanced understanding and awareness, providing a foundation for long-term workplace practices.

H4 was confirmed by results showing that an environmentally friendly psychological climate had a significant effect on employees' sustainable behaviours (standardised beta = 0.262, $p < 0.001$). Shen and Benson (2016) and Norton et al. (2014) observed that an encouraging psychological environment stimulates environmentally conscious measures, adding support to TPB's theory that subjective standards stimulate such actions when they are incorporated into the values of an organisation. SET predicts this reciprocity interaction, whereby staff members react favourably to an environmentally sustainable work environment (Blau, 1964).

The research findings verified H5 by illustrating a positive correlation between knowledge of the environment and behaviour that protects it (standardised beta = 0.279, $p < 0.001$). Cheng and Wu (2015) and Fernández (2017) revealed that up-to-date workers are more inclined to be involved in green practices. TPB highlights how a more comprehensive understanding of the environment enhances the perception of authority, making employees feel more capable of promoting initiatives that promote sustainability (Ajzen, 1991).

H4a and H5a received backing, suggesting that overall ecological understanding and an environmentally friendly psychological atmosphere play a significant role in regulating the effect of GHRM practices on pro-environmental behaviours. TPB indicates that these intermediaries promote perceived influence as well as individual standards; both are important for achieving sustainability objectives (Ajzen, 1991). Likewise, SET posits that when staff members work in a knowledge-rich and welcoming atmosphere, they reciprocate the corporation's dedication to environmental sustainability with improved environmentally friendly behaviour. Qalati et al. (2023) corroborated this result by highlighting the critical roles of knowledge and workplace climate in enhancing the impact of GHRM on environmentally friendly behaviour.

Overall, these findings have demonstrated that comprehensive GHRM practices in the healthcare industry can create an encouraging psychological atmosphere and enhance personnel's awareness of the environment, both of which tend to drive environmental consciousness. By incorporating TPB's controlling and subjective standards and utilising SET's reciprocity framework, this research highlights the importance of ecological sustainability as an intrinsic value within corporations, contributing to environmental objectives.

Though with contextual differences, comparable findings have been documented among health sectors in developing countries. In Pakistan, for example, a study involving 347 employees across various sectors found that psychological capital mediated the relationship between the implementation of green HRM practices and employee pro-environmental behaviours (Saeed et al. 2019). In Nigeria, studies conducted among academicians on the role of GHRM and occupational health revealed that employee engagement in green initiatives heavily relied on knowledge-sharing mechanisms. Similar findings were recorded among Brazilian hospitals, where the findings suggested that the integration of green HRM practices such as training and recruitment fostered a sense of collective responsibility among employees (Saeed et al. 2019). Therefore, while the findings from the current study resonate with those of health sectors in other countries, the Egyptian case demonstrates the moderating effects of the green psychological climate and environmental knowledge.

5.1. Implications for Theory and Practice

5.1.1. Theoretical Implications

This study promotes the conceptualisation of GHRM by investigating its effect on environmentally conscious behaviour in a healthcare facility, where sustainable development initiatives tend to be overlooked. It examines the impact of GHRM

practices on an environmentally conscious psychological climate, environmental awareness, and environmentally conscious activities in both public and private hospitals.

Concerning the theory of planned behaviour, individual standards, mindset and perceived behavioural control were highlighted as major determinants of how GHRM practices impact environmentally friendly behaviours.

1. Subjective Norms: The research revealed that subjective standards, as represented through an environmentally conscious psychological climate, play a significant part in the development of employees' intentions to participate in green behaviours. GHRM practices construct an organisational environment centred on sustainability, establishing norms that motivate workers to engage in environmentally responsible behaviour. TPB posits that subjective standards have a significant impact on people's intentions, particularly in areas where community standards are essential, such as healthcare (Ajzen, 1991).
2. Attitudes: The attitudes surrounding environmentally aware conduct were explored, with a particular emphasis on how GHRM practices affect staff attitudes towards environmental sustainability. Green training, performance evaluations and support for environmentally conscious behaviour are just a few examples of GHRM practices that promote a positive mindset. TPB states that positive attitudes boost the probability of implementing the action, and this research revealed that GHRM practices could encourage greater optimism about sustainability issues among workers.
3. Perceived Behavioural Control: This component corresponds with environmental knowledge because it addresses employees' assessed capacity to engage in sustainable behaviours. The investigation found that when GHRM practices enhance employees' ecological consciousness through education and training, individuals feel more at ease and are more capable of engaging in sustainable behaviours. According to the TPB's concept of perceived behavioural control, workers who believe that they possess sufficient understanding and assets will be more inclined to execute strategies for the future.

This research utilised social exchange theory to highlight the importance of support from organisations and reciprocity behaviours in the exchange process. As posited by SET, when organisations invest in staff members' growth and promote long-term viability, employees reciprocate by adopting behaviours that advance the company's environmental goals. From positive feelings arising from a supportive green climate, GHRM practices transform employees' feelings of responsibility and commitment to sustainability, in line with SET's reciprocity principle (Blau, 1964). This study highlights the reciprocal connection in which employees are more likely to act in a pro-environmental manner because being sustainable (in relation to the firm's principles) is perceived as an unwritten social agreement within the organisation. To summarise, the current study used TPB and SET to develop a cognitive framework regarding GHRM practices and their effects on pro-environmental behaviours. It provides a sophisticated understanding of how GHRM practices foster an environmental culture and encourage employees to engage in pro-environmental healthcare activities based on the subjective norms, attitudes, and perceived behavioural control included in TPB, in addition to the SET's principle of reciprocity.

5.1.2. Practical Implications

This research found that embedding GHRM practices may have significant potential to reduce environmental impacts in private and public hospitals by fostering a culture of sustainability. Healthcare institutions implement GHRM practices in their human resource activities, which enhances environmental performance, involvement and satisfaction among employees. By establishing an environmentally conscious culture, GHRM practices enable staff members to develop a deeper understanding of broader sustainable development objectives, which can lead to improved motivation and retention. Hospital management should advocate for GHRM practices that involve environmentally conscious instruction, environmentally friendly performance evaluations, and workers' awareness of environmental initiatives. In practice, institutions can develop sustainable HR procedures that motivate workers to conserve energy, reduce waste, and manage resources responsibly. Considering the enormous demand for resources in healthcare, introducing GHRM practices may enhance overall ecological and operational effectiveness. Undoubtedly, low-cost GHRM practices, such as employee-led contributions to green campaigns and the implementation of environmental workshops, could help healthcare

institutions pursue their sustainability goals without incurring huge investments. This approach is particularly beneficial for public health facilities with limited funds, enabling them to enhance their environmental sustainability through employee engagement rather than costly technological upgrades. This study demonstrates the importance of integrating GHRM practices into healthcare policies at both national and regional levels. As there is a need to promote GHRM behaviours, legislative bodies could help create a more coherent focus on retraining for environmental sustainability in the future, so that national sustainable development goals can be achieved. Policies encouraging sustainable environmental practices in hospitals, such as funding green training programmes or recognition awards for eco-friendly hospitals, may solicit both public and private organisations to embrace GHRM practices. Furthermore, policies that motivate GHRM practices among healthcare organisations may encourage the use of HR strategies aimed at integrating GHRM into the daily practices of healthcare organisations. Generally, resource constraints are typical in public hospitals. This study found that the adoption of GHRM practices could enhance resilience without requiring huge financial resources. Training staff in these approaches should be a concern of health resource management, as it will reduce operational costs through the reuse of resources. For example, educating staff on waste disposal or energy conservation techniques may not only lower costs but also result in a higher demand for such resources; hence, GHRM is considered an efficient approach to cost-effectively enhancing environmental sustainability. Likewise, public hospitals can establish agreements with governmental or charitable organisations to acquire assets, assistance, and direction for implementing GHRM practices, thereby enhancing their green credentials at a low cost. In private hospitals, where regular service and differentiation are essential for competitiveness, GRHM practices represent a unique opportunity to entice both patients and practitioners who promote a green environment and sustainability in the broadest sense. Additionally, when these approaches are implemented, private medical facilities can enhance customer satisfaction and loyalty. As customers become increasingly mindful of the environment, facilities that emphasise environmentally conscious processes may gain an edge over their rivals by engaging patients who prioritise environmental sustainability within healthcare. By highlighting their ecologically friendly credentials throughout their corporate identity, private medical facilities can boost their market presence and attract individuals seeking conscientious medical services. Ultimately, the present investigation revealed that GHRM practices benefit the Egyptian healthcare system in various ways. Incorporating GHRM practices into the human resources plan aligns with overall environmentally conscious aims, enhances the durability of organisations, and encourages employees' social and environmental accountability. Healthcare facilities can achieve greater objectives for ecological sustainability by implementing and promoting GHRM procedures, in addition to enhancing their operational efficiency and public image.

6. CONCLUSION

The findings of this study have demonstrated the significance of GHRM practices in promoting and sustaining pro-environmental practices and behaviour among healthcare organisations. For instance, by integrating the social exchange theory (Blau, 1964), this study reveals that GHRM practices can influence pro-environmental behaviour through strengthening norms of reciprocity and creating a collective commitment among employees. Equally, the use of the Theory of Planned Behaviour (Ajzen, 1991) reveals that the presence of a green psychological climate can shape attitudes and intentions, thereby influencing cognitive pathways. In summary, the dual application of these theories offer a practical implication by fostering an enriched understanding on the significance of GHRM systems in driving sustainability among healthcare and other organisational settings. Furthermore, the findings show that how an organisation manages its environmental knowledge and fosters a green psychological climate highlights the importance of GHRM practices. As a result, these two functions are recognised as key mediating mechanisms for promoting and integrating the sustainability of GHRM into organisational culture. Specifically, they have practical implications for healthcare settings, where leaders must focus not only on HRM practices like training, rewards, and appraisals but also on encouraging eco-friendly behaviours and strengthening organisational resilience. Most importantly, these insights are vital for healthcare systems in developing regions, such as Egypt, where resource constraints and the need to implement green human resource management practices are pressing. By examining the concept of GHRM within Egyptian hospitals, this study demonstrates that environmental practices are not limited to Western ideals or confined to corporate environments.

Therefore, exploring this less-studied area not only contributes to global healthcare discussions but also underscores its importance in helping to achieve the UN Sustainable Development Goals. Additionally, to improve theory and practice, future discussions should focus more on the sustainable results of GHRM practices from different viewpoints, sectors, and countries.

6.1. Future Research Directions

The focus of future research should be on examining the long-term effects of GHRM practices in the context of healthcare to examine how they evolve and shape organisational culture and employee behaviour over time. In addition, the impact of individual differences, such as personal views and environmental commitment, should be explored to determine how they affect the relationship between GHRM practices and pro-environmental actions. Comparative studies across various sectors and countries would provide valuable insights into the influence of contextual factors on the success of GHRM practices, enabling the development of customised strategies for particular organisational and cultural settings. Future studies could also investigate the obstacles faced by developing countries in adopting GHRM practices and the techniques that can be used to mitigate these barriers. To gain a more comprehensive understanding of how organisations can create a holistic approach to environmental management, it is essential to understand the relationship between GHRM practices and other organisational activities, such as corporate social responsibility (CSR) and sustainability reporting.

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