

Assessing the Impact of Green HRM in Higher Education: An Empirical Approach

Nazia Sarfaraz¹, Dr. Balaji Jayakrishnan²

¹Research Scholar, Business School, Vellore Institute of Technology, Chennai, Naziasarf7@gmail.com

²Associate Professor, Business School, Vellore Institute of Technology, Chennai, jbalaji47@gmail.com

Corresponding Author

Dr. Balaji Jayakrishnan

Associate Professor, Business School, Vellore Institute of Technology, Chennai, jbalaji47@gmail.com

Abstract

Purpose – The objective of this study is to explore the green behaviour of employees towards GHRM practices through green work engagement in higher education institutions in South India.

Design/Methodology/Approach: A quantitative approach was employed in this study. Data were collected from 210 employees from 6 universities in Chennai, India, through a questionnaire survey. To measure the employees' green behaviour on GHRM initiatives, structural equation modeling was employed to gain a deeper understanding of how the green HRM framework is integrated within the higher education institutions.

This study finds that the incorporation of GHRM initiatives positively influences GWE and employees' green behaviour (Actual green behaviour, additional green behaviour, and green: innovative work behaviour) of higher education institutions.

FINDINGS The findings of the study contribute to the existing literature body of GHRM, specifically in the context of higher education.

Originality/Value: The outcomes of this study ensure a valuable contribution in the GHRM realm by enhancing the employees' participation in the development of sustainable environment with higher education institutions.

Keywords: GHRM, Green work engagement, Actual green behaviour, Additional green behaviour, Green Innovative behaviour, Higher education institutions, India,

INTRODUCTION

Businesses are under more pressure than ever to reduce the harmful environmental effects of their operations due to the devastation of the natural environment, widespread pollution, irreversible environmental changes, and the implementation of environmental laws (Satchapappichit et al., 2023; Tanveer et al., 2023). The literature on green management is presently giving a lot of attention to human resource management (HRM) as a function of management. GHRM, a notion that emerged in response to the requirement that businesses include sustainability into their company's operations plans, is currently a crucial instrument that businesses use to carry out green management initiatives (Ren et al., 2018). The term "green human resource management (GHRM)" was first used by (Renwick et al., 2013) to describe how an organization's environmental goals are integrated into its HRM practices (Jabbour, 2013). GHRM offers a strong foundation for companies to cultivate workers who are aware of their company's environmental performance and sustainability (Álvarez Jaramillo et al., 2018; Siebenhüner and Arnold, 2007; Wolf, 2013; Wong, 2018).

Academicians generally agree that green human resource management (GHRM) is an essential tool for successfully integrating sustainable practices into eco-policy domains (Farrukh et al., 2023). The environmental side of HRM is represented by GHRM, which covers green hiring, training, and pay (Farrukh et al., 2022). GHRM as a study topic has lately drawn more attention due to its benefits for businesses and people (Patwary et al., 2022). The relationship between GHRM beliefs and people's green behaviour is still unclear despite mounting research. Although there is a strong correlation between GHRM attitudes and employee behaviours, it is unclear which specific factors influence this relationship. Human resources management (HRM) experts must reassess their mission and broaden the scope of their practices by incorporating green management practices, as entities are presently reorienting their approaches and objectives towards more environmentally conscious agendas. This will help them perform the core HRM functions more effectively (Ángel del Brío et al., 2008). According to (Pham et al., 2019), HRM can measure and affect employees' motivation, awareness, and behaviours connected to

sustainability. As a result, businesses may effectively create and promote environmentally friendly policies through HRM (Renwick et al., 2013).

An increasing number of global higher education institutions have attempted in recent years to integrate green practices and environmental management into their core offerings. Higher education institutions are expected to take a leading role in implementing strategies and alternatives to address current environmental concerns because they are research and teaching organisations (Benayas et al., 2002; Disterheft et al., 2012; Leon-Fernandez and Domínguez-Vilches, 2015). In addition, they must provide a precedent for reviving environmental management issues and acknowledging their changing requirements and problems (Finlay and Massey, 2012). Therefore, higher education institutions should adopt the "Go Green" mentality in order to promote an ecologically friendly work environment (Gilal et al., 2019). Higher education personnel, including those engaged in teaching, research, and administration, would have to include eco-friendly and sustainable practices into their daily workdays (Benayas et al., 2002).

Green behaviours are often defined as employee actions that support environmental management strategies in the workplace (Dumont et al., 2017). Green workplace strategies are seen to be most successfully implemented when employees exhibit certain green behaviours. Additionally, research has shown that including staff members into green practices is essential for initiatives related to environmental management (Jabbour et al., 2008; Mazzi et al., 2016), since this will improve environmental performance and provide a competitive edge (Kim et al., 2019). Green human resources management (GHRM) techniques are regarded as a crucial HRM tactic to increase workers' environmental awareness at work and encourage green employee behaviours. Green hiring, green training, green rewarding, and green performance assessment are just a few of the GHRM activities that support environmental management (Dumont et al., 2017; Jabbour et al., 2008; Renwick et al., 2013; Tang et al., 2018).

Studies across a variety of industries, including the hospitality and tourism sectors (Luu, 2017), technological industries (Ojo and Raman, 2019), and the automotive sector (Chaudhary, 2019), have contributed to the recent boom in GHRM research. However, there is little study on GHRM in higher education (Fawehinmi et al., 2020; Gilal et al., 2019). (Pham et al., 2019) recent literature review, which emphasized the need for further research in a variety of service industries, supported this. (Gilal et al., 2019) discovered that integrating employee green behaviours into higher education organisations' management doctrine is essential to improving organizational monetary and environmental sustainability as well as winning over employees. (Fawehinmi et al., 2020) observed that GHRM increases academic employees' green behaviours through the mediating role of environmental knowledge.

In order to further the field of green HRM in general and higher education in especially, the present research set out to develop a model of how GHRM practices affect three types of green behaviour among employees: actual green behaviour, additional green behaviour (voluntary), and green innovative work behaviour. It was proposed that one of the relationships indicated above would be mediated by green work engagement, or GWE. The following are the contributions that this study makes: As the link between GHRM and employees' outcomes connected to green work is still in its early stages, it first adds to the body of literature on general GHRM (Pham et al., 2019). In addition, it adds to the scant corpus of research on HRM at higher education institutions (Aboramadan et al., 2020b) and green HRM (Fawehinmi et al., 2020). Thirdly, this study is unique because it examines a model that adds new variables - green innovative behaviour and GWE - to the body of GHRM literature. Fourthly, it enhances our comprehension of the processes that highlight the connection between GHRM and workers' green workplace practices (Ren et al., 2018).

LITERATURE REVIEW

GHRM and Green results

A number of researchers (Dumont et al., 2017; Tang et al., 2018; Pham et al., 2019) have defined and conceptualised GHRM practices as practices that include green hiring and selecting workers with green awareness and knowledge; green training to enhance workers' green skills, competencies, and knowledge; green performance appraisal using established green standards to evaluate workers' performance; and green rewards to offer incentives based on the accomplishment of the organization's green goals. Green behaviour by employees is a reflection of their own environmental consciousness (Norton et al., 2015). This covers both (voluntary) additional behaviours and actual green behaviour. Green formal activities that are an essential component of an employee assessment of performance define actual green behaviour.

On the other hand, additional green behaviour refers to voluntary green actions that an employee takes outside of their officially assigned responsibilities and is not recorded in their performance review (Paillé and Boiral, 2013). Empirical research generally indicates that green job crafting, green empowerment of staff members, green task behaviour, and organisational citizenship towards the environment are all positively correlated with green human resource management (Chaudhary, 2019; Dumont et al., 2017; Fawehinmi et al., 2020; Hameed et al., 2020; Renwick et al., 2013; Luu, 2019).

The association between GHRM and employees' green behaviours (both task-related and voluntary behaviours) may be explained by the social exchange theory's norm of reciprocity (Blau, 1964). Employees are expected to return the favour when their employers demonstrate their commitment to environmentally friendly management practices by modelling green behaviours. This can be done by offering obvious green objectives, green training and development, efficient green performance appraisal, and green reward systems. Consequently, it is possible to propose the following two theories:

H1. GHRM has a positive impact on employees' actual green behaviour.

H2. GHRM has a positive impact on additional green actions taken by employees.

According to (Scott and Bruce, 1994), innovative work behaviour is defined as employee behaviour that consists of idea generation, promotion, and realisation. It has often been believed that inventive work practices are necessary to maintain a company's competitive edge (Bos-Nehles and Veenendaal, 2019; West and Farr, 1989). Moreover, it has been suggested that HRM procedures are crucial to achieving innovative results within the company (Bos-Nehles and Veenendaal, 2019; Seeck and Diehl, 2017; Zhou et al., 2013). Green innovative work behaviour (GIWB), which is derived from the application of environmental leadership to creative work behaviour, may be defined as the actions of employees that are focused on the creation, dissemination, and implementation of green ideas.

Regarding the association among GHRM and GIWB, it may be maintained that GHRM benefits GIWB for the reasons listed below. Initially, employees with greater environmental awareness and expertise will provide more creative and useful environmental management ideas, which will advance the organization's green innovation (Renwick et al., 2013). According to (Chang and Chen, 2013), the implementation of green education and mentoring methods provides employees with opportunities to enhance their creative practices by gaining the necessary skills and experience. Furthermore, the implementation of incentive strategies and green performance assessments will align employee behaviours with the organization's environmental goals (Guerci et al., 2016). This is because green performance assessments are essential tools for fostering employee environmental commitment, which in turn promotes green innovation behaviours (Renwick et al., 2013). Finally, earlier studies (Wright and Nishii, 2013; McClean and Collins, 2011) shown that workers often give back to their employers by exhibiting creative work practices in return for the latter's dedication to human resource management. According to the social exchange theory, employees are more inclined to respond with higher levels of discretionary behaviour, like GIWB, when they perceive the organization's commitment to environmental management. Lastly, studies indicate that green innovation at the organisational level is positively impacted by GHRM practices (Song et al., 2020). It follows that the way in which workers view GHRM in relation to the environment will have a significant impact on how they innovate in the green space. On the basis of the above justifications, the following theory may be put forth:

H3. GIWB of employees is positively impacted by GHRM.

Green human resources management and green work engagement

Work engagement is defined as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication and absorption" (Schaufeli et al., 2002, p. 74). Employee engagement may be defined as the degree to which they are psychologically, emotionally, and physically engaged in their work. Adding to this, GWE may be characterised as the vigour with which a worker approaches activities linked to green work, as well as the degree of absorption that occurs in green work and the willingness to work at a green level. Work engagement was shown to have similar antecedents in the form of job features (Christian et al., 2011), leadership (Aboramadan et al., 2020), and HRM practices (Karatepe and Olugbade, 2016). The traditional body of HRM literature looked at how HR policies and procedures affected employee engagement at work from the top down. For example, a model comprised of job, motivational, organisational, and individual aspects might lead to increased degrees of work engagement (Albrecht et al., 2015). Additional research (Aboramadan et al., 2020b; Karatepe, 2012; Schaufeli et al., 2006) has shown that job resources and work engagement are positively correlated. A basis for understanding the link between GHRM and GWE is provided by the job demand-resources (JD-R) concept. Organisational and job resources, such as HRM practices, may trigger a motivational process that connects these assets

to work engagement, according to (Demerouti et al., 2001). From this angle, GHRM at work may be seen as a motivating element and is, consequently, positively correlated with workers' job engagement (Schaufeli and Bakker, 2004). Employees may be motivated in both intrinsic and extrinsic ways by resources like GHRM, which support their professional growth and help them achieve their goals. Therefore, they are thought to encourage employees' commitment to their task (Bakker and Demerouti, 2008), especially GWE. In light of this conversation, the following theory is put forth:

H4. GHRM has a positive impact on employees' GWE.

Green work engagement and green outcomes

According to GHRM practices, it seems that workers who are more engaged have a higher likelihood of having a safe and high-quality connection with their organisations. Positive job-related results follow from this (Saks, 2006). Consequently, these expressions will enable employees to engage in extracurricular activities outside of their professional duties in addition to motivating them to complete their obligations (Kahn, 1990). Past studies on GHRM (Aboramadan et al., 2020; Agarwal et al., 2012; Alfes et al., 2013; Haynie et al., 2016; Rich et al., 2010; Rodwell et al., 2017) suggest that "work engagement was found to be a significant predictor of work performance and extra-role behaviors, such as innovative and citizenship behaviors". Regarding the relationship between GWE and green outcomes, one may contend that staff members with higher GWE scores are more inclined to interact favourably with the company. In these situations, GWE could have a favourable impact on various outcomes connected to green work. In order to promote organisational and community sustainability, GWE may inspire staff members to engage in green practices as well as pledge to green projects and help other staff members understand the meaning of green behaviours (Luu, 2019).

In light of the conversation above, the following hypotheses are put forth:

H5. The actual green behaviours of employees are positively influenced by GWE.

H6. Additional green behaviours by employees are positively influenced by GWE.

H7. GIWB of employees is positively impacted by GWE.

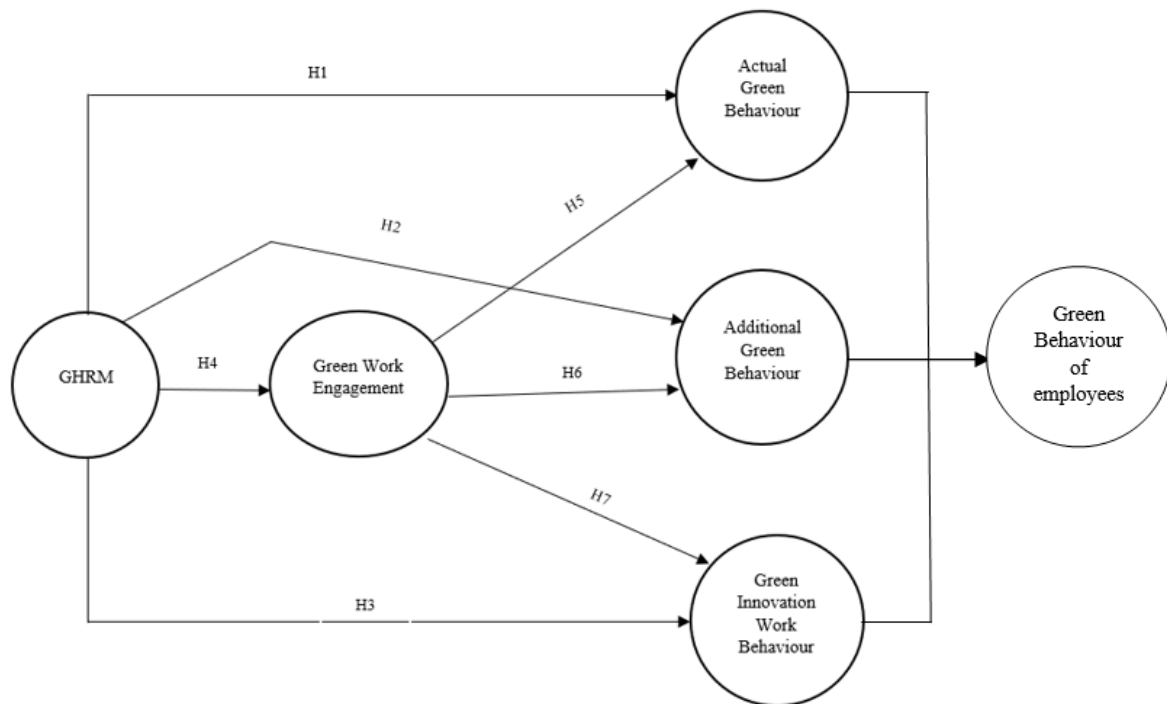
The mediating role of green work engagement

Numerous research (Aboramadan et al., 2020b; Aboramadan et al., 2019; Agarwal et al., 2012; Karatepe and Olugbade, 2016; Rich et al., 2010; Sulea et al., 2012) have generally demonstrated that work involvement is a significant mediator. Most people believe that work engagement is a motivating factor that affects performance results (Karatepe et al., 2014). As a result, GWE will instill a sense of incentive to improve staff members' capacity to exhibit pro-environmental behaviours (both required and optional), as well as to motivate individuals to try and invent new things that may develop into novel concepts and green alternatives. According to the GHRM practice, workers who exhibit higher levels of engagement - GWE in this example - are more likely to participate in positive social interactions with their employers. Employees will consequently exhibit good results, including green outcomes (Saks, 2006). Therefore, positive attitudes towards GHRM would raise employees' GWE and, eventually, their results associated to sustainability.

METHODS

Research model

The goal of the study is to develop a model that explains how GHRM in higher education affects individual outcomes linked to green work, such as GIWB, extra-role green behaviour, and in-role green behaviour. It was proposed that GWE would act as a mediating mechanism between the previously indicated linkages, as seen in Figure 1.



Source: Aboramadan, 2020

Figure 1: Conceptual Model

Participants and procedures

Employees of six higher education institutes in Tamil Nadu, India, provided the data. These comprised administrative and academic staff members. Out of the 360 questionnaires that were issued, 238 were returned; of those, 24 were eliminated for having incomplete responses, and 4 were eliminated for having multiple outliers. A total of 210 surveys, or 66.11% of the total, could be used for statistical analysis. English-language questionnaires were issued. The technique of drop-off and pick-up was employed to boost the response rate. The questionnaire was accompanied by cover letters outlining the primary goal of the study and guaranteeing the privacy of the respondents' personal data. In only fifteen minutes, the brief, straightforward questionnaire may be completed. Men made up 72.1% of the responses, while women made up 27%. In terms of age, 45.7% of the population was between the ages of 25 and 30, 6% was between the ages of 31 and 35, 22.7% was between the ages of 36 and 40, and 28.4% was older than the age of 40. In terms of experience, 54.2% had been in the field for one to five years, 15.6% for six to ten years, 31.3% for eleven to fifteen years, and just 1% for more than fifteen years. Thirty percent worked in academic jobs and seventy percent held administrative posts under full-time contracts.

Multi-collinearity and common method bias remedies

Utilising the Variance Inflation Factors for every item, multi-collinearity was examined. (Hair et al., 2018) state that if the VIF values are less than 5, the data are not multi-collinear. The VIF values in this study varied from 1.061 to 3.304. This suggests that there was no multi-collinearity in the data. The proportion of variation explained was determined using the Harman single factor test, which was used to look for common technique bias. The findings imply that only 31.495 percent of the variation was explained by a single factor. The fact that the variance described was less than the 50% cut-off limit (Podsakoff et al., 2003) suggests that there was no common method bias (CMB) taint in the data.

Analysis

With SPSS v.24, descriptive statistics, reliability metrics, and correlations were examined. Further the study utilized partial least squares – structural equation modeling (PLS-SEM) to assess the study hypotheses (Hair et al., 2018). PLS-SEM was employed since it is often utilized in many scientific fields, including marketing, strategic management, human resource management, and hospitality (Hair et al., 2012; Ringle et al., 2018). Using conventional least squares, the PLS-SEM approach calculates the route coefficients (Rigdon, 2012). Additionally, PLS-SEM handles ordinal measurements (Schuberth et al., 2018) and correlated measurement errors (Rademaker et al., 2019).

Green human resources management (GHRM) - The six-item scale (Dumont et al., 2017) was used to measure this in order to determine how workers felt about GHRM being implemented in their companies. Such item was "the university sets sustainable objectives for its employees." For this build, the Cronbach's alpha was 0.879.

Engagement in green work - This was assessed using six questions that were taken from Schaufeli et al. (2006). The six items on this scale were changed to evaluate green employee engagement because it was initially designed to measure job engagement. "I am enthusiastic about my environmental tasks at my job" was one example of an item. For this build, the Cronbach alpha was 0.849.

Actual green behaviour - Actual green behaviour was assessed with the three-item measure created by (Bissing-Olson et al., 2013). "I adequately complete the assigned duties in an environmentally friendly way" was one example of a sample item. For this build, Cronbach's alpha was 0.669.

Additional green behaviour - This was assessed using the three-item test designed to evaluate voluntary green behaviours by Bissing-Olson et al. (2013). "I take initiatives to act in environmentally friendly ways at work" was one example of a sample item. For this build, the Cronbach's alpha was 0.669.

Green innovative work behaviour (GIWB) - To measure inventive work behaviour, the six-item scale created by Scott and Bruce (1994) was utilised. To better fit the study's objectives, this scale was updated and given additional terms relevant to the green movement. "I investigate and secure funds needed to implement new green ideas" was one such item. For this build, the Cronbach's alpha was 0.856

Measurement model assessment

The loadings from factor analyses were verified for the research scale items. The values of the standardised factor loading varied from 0.658 to 0.866, as seen in Table 1. Significant loadings were seen at the 0.001 level for each. To assess convergent validity and internal consistency, "the average variance extracted (AVE) and composite reliability (CR)" were calculated (Fornell and Larcker, 1981). According to the findings, all of the research variables had AVE values greater than 0.5 and CR values greater than 0.70, demonstrating the internal consistency and convergence validity of the data.

Construct	Item	S.loading	t-statistic	CR	AVE
GHRM	The University has green objectives for its employees	0.773**	21.52	0.913	0.634
	For green value promotion, green training is provided by the University	0.840**	27.34		
	To develop employees' green skills and knowledge, the University provides required green training	0.814**	25.23		
	My university considers employees' workplace green behavior in performance Appraisals	0.866**	32.82		
	My university relates to employees' workplace green behavior to reward and Compensation	0.804**	17.25		
	My university considers employees' workplace green behaviors in promotion	0.666**	14.67		
GWE	My environmental-related tasks inspire me	0.709**	14.86	0.890	0.577

	Iam proud of the environmental work that I do	0.820**	25.25		
	I am immersed in my environmental work	0.806**	24.99		
	I am enthusiastic about my environmental tasks at my job	0.802**	20.56		
	I feel happy when I am working intensely on environmental tasks	0.748**	17.82		
	When environmental tasks at my job, I feel bursting with energy	0.658**	10.88		
Actual green behavior	I adequately complete the assigned duties in an environmentally friendly way	0.807**	13.64	0.81	0.59
	I fulfill the responsibilities specified in my job description in environmentally friendly ways	0.795**	12.14		
	I perform tasks that are expected of me in environmentally friendly ways	0.707**	9.30		
Additional green behavior	I take initiative to act in environmentally friendly ways at work	0.755**	10.89	0.78	0.54
	I take a chance to get actively involved in environmental protection at work	0.714**	8.20		
	I do more for the environment at work than I am expected to	0.753**	10.61		
GIWB	I search out new environmentally-related technologies, processes, techniques and/or product ideas	0.727**	16.73	0.89	0.59
	I generate green creative ideas	0.807**	30.08		
	I promote and champion green ideas with others	0.806**	27.58		
	I investigate and secure the funds needed	0.698**	12.95		

edto	
implementnewgreenideas	
Idevelopadequateplansandschedule	0.824** 26.19
sfor	
theimplementationofnewgreenideas	
Iamenvironmentallyinnovative	0.775** 27.65

Notes:**Significantat0.001level.Allscalesweremeasuredonafive-pointLikertscalerrangingfrom1(stronglydisagree)to5(stronglyagree)

Table 1: Factor Loadings

Using two tests, discriminant validity was examined. The first is the rule of Fornell and Larcker (1981), which contrasts the intercorrelations between the variables and the square root of AVE. The findings shown in Table 2 demonstrate that the square root of AVE exceeded the inter-correlation, hence signifying the fulfilment of the discriminant validity requirement. On the other hand, "the heterotrait-monotrait ratio (HTMT)" was used to further support the existence of discriminant validity. According to Hulland's (1999) suggestion, all ratios in Table 3 appear to be below 0.85, indicating that the components were validly discriminant.

Structural Model

The structural model of this study was assessed by using several computations. To begin with, the R square (R²) for the variables used in this study which include: green work engagement (0.103), actual green behaviour (0.163), additional green behaviour (0.197), and green innovative work behaviour (GIWB) (0.431). The values obtained for these variables are acceptable, as recommended by (Chin, 1998). In addition, the f square (f²) for the variables of this study include: mediation effect of GHRM on GWE (0.112), GHRM on actual green behaviour (0.025), GHRM on additional green behaviour (0.036). The impact of GHRM on GIWB is found to be string (0.507). Whereas, the impact of GWE on actual green behaviour (0.115), GWE on additional green behaviour (0.141), and GWE on GWIB (0.061). Hence the mediation effect of GHRM and GWE were found to be medium.

FINDINGS AND RESULTS

The following Table 2 represents "descriptive figures, means, standard deviations and correlations between the research variables of this study". The study's correlation results found to be significant and positive among the variables. Therefore, the calculated correlation of these variables include: "GHRM and GWE (r = 0.327, p = 0.000), GHRM and actual green behavior (r = 0.254, p = 0.000), GHRM and additional green behavior (r= 0.265, p = 0.000) and GHRM and GIWB (r = 0.613, p = 0.000). Significant correlations can be found between green work engagement (GWE) and actual green behaviour (r = 0.362, p = 0.000)".

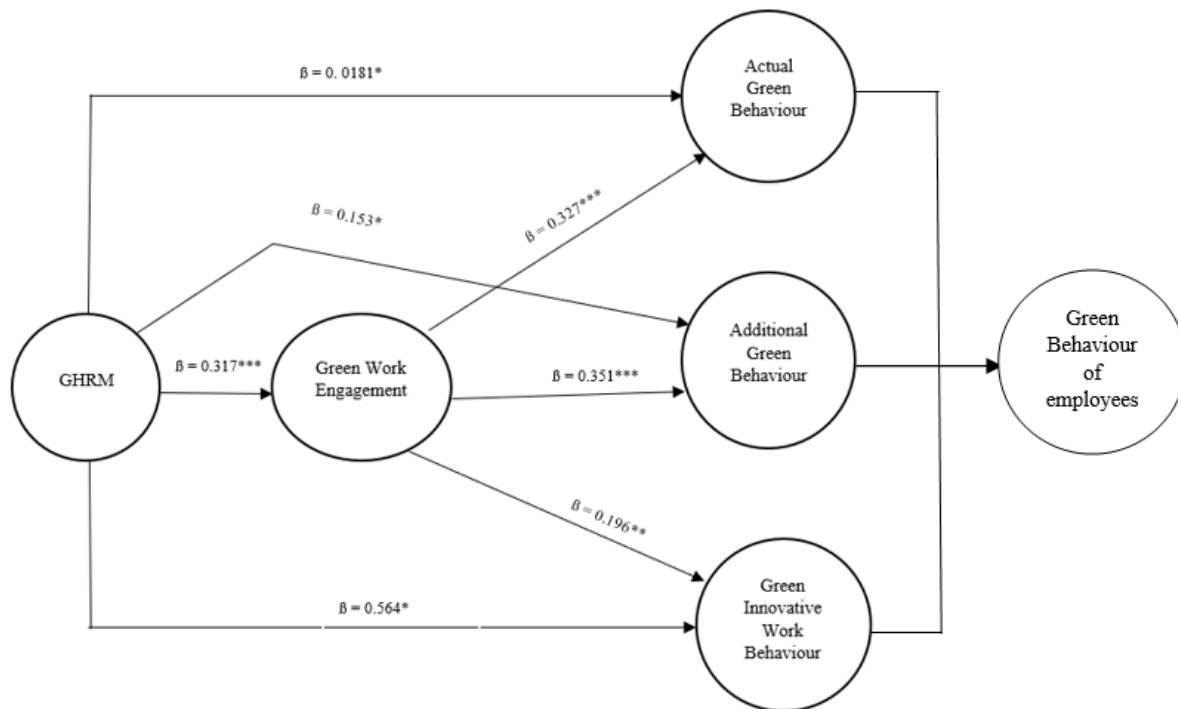
Constructs	Mean	SD	1	2	3	4	5
GHRM	5.61	0.931	(0.799)				
GWE	5.41	1.27	0.327**	(0.756)			
Actualgreenbehavior	5.53	0.961	0.254**	0.360**	(0.772)		
Additional greenbehavior	5.11	1.19	0.265**	0.389**	0.315**	(0.743)	
GIWB	5.67	0.911	0.613**	0.362**	0.283**	0.357**	(0.776)

Table 2: Descriptive statistics, correlation and square root of AVE

Constructs	GHRM	GWE	In-rolegreenbehavior	Extra-
rolegreenbehavior	GIWB			
GHRM				
GWE	0.361			
Actualgreenbehavior	0.329	0.478		
Additional greenbehavior	0.379	0.554	0.510	

GIWB	0.703	0.431	0.365	0.504
------	-------	-------	-------	-------

Table 3: Path Analysis



Note: “*Significant at 0.05 level, **Significant at 0.01 level, ***Significant at 0.001 level”

Figure 2: Model Estimation

Hypotheses testing

Figure 2 presents the results for the direct path analysis and mediation analysis. The results suggest that GHRM was positively associated with in-role green behavior ($\beta = 0.153$, $t = 2.39$, $p = 0.015$), with extra-role green behavior ($\beta = 0.181$, $t = 2.41$, $p = 0.017$) and with GIWB ($\beta = 0.564$, $t = 10.32$, $p = 0.000$). The results lend support for H1, H2 and H3. Furthermore, the results provided support for H4, in which it was indicated that GHRM showed to exert a positive effect on GWE ($\beta = 0.317$, $t = 4.91$, $p = 0.000$). GWE demonstrated to have a significant effect on in role-green behavior ($\beta = 0.327$, $t = 4.62$, $p = 0.000$), on extra-role green behavior ($\beta = 0.351$, $t = 4.82$, $p = 0.000$) and on GIWB ($\beta = 0.196$, $t = 3.43$, $p = 0.001$), suggesting that H5, H6, H7 were supported.

DISCUSSION AND IMPLICATIONS

Through the mediating function of GWE, the study looked at the relationships between GHRM and additional green behaviour, actual green behaviour, and GIWB. The findings show that GHRM substantially predicted green behaviour that was both in-role and outside of it. The outcomes corroborated the findings of Dumont et al. (2017), who discovered that GHRM had a favourable impact on green behaviour both inside and outside of roles. These outcomes also aligned with the Social Exchange Theory (SET) standard of reciprocity, which requires employees to trade related to the task and voluntary green behaviours for the organization's green management efforts. The findings also imply that GHRM had a favourable and noteworthy impact on workers' GIWB. This suggests that characteristics of HRM procedures influence workers' creative work habits (Wright and Nishii, 2013).

According to the findings, GHRM and GWE had a favourable relationship. The findings are consistent with the JD-R framework (Demerouti et al., 2001) discussion, which emphasises that workplace resources act as a motivating factor to boost employees' engagement at work. Additionally, it was discovered that GWE had a beneficial impact on GIWB, extra-role green behaviour, and in-role green behaviour. This suggests that workers who score higher on GWE are more likely to interact with their company in a trustworthy and high-quality manner, which will eventually motivate workers to demonstrate good results like green outcomes. Ultimately, the findings imply that GWE proved to be a noteworthy mediating mechanism in the connections under investigation. The relationships between GHRM and GIWB, GHRM and additional green behaviour, and GHRM and actual green behaviour were all significantly mediated by GWE. This suggests that there may be more than one way for GHRM and green outcomes

to interact, i.e., that GHRM in this instance influences workplace outcomes (green outcomes) via a specific mechanism like GWE (Karatepe&Olugbade, 2016).

This investigation adds in a number of ways to the body of knowledge on GHRM in general and green management in higher education specifically. The field of GHRM research is constantly changing, and further study is required (Pham et al., 2019), particularly in connection with the higher education industry (Giral et al., 2019). In response, the study put up a hypothesis and conducted an empirical investigation into a novel mechanism that explains the connection among GHRM and its effects. This is the first research of its sort to employ the GWE concept as an intervention mechanism and study variable.

Limitations and future research

The limitations of this study provide prospects for other research endeavours. First, information gathered from a single source (workers) at a single moment in time was used to examine the suggested model. While it was shown that Common Method Bias (CMB) was not an issue for this investigation, CMB would be reduced if data were gathered from other sources and at various times. This involves having managers assess how environmentally conscious their staff members are. Second, the fact that the data originate from five different higher education institutions may restrict how broadly the findings may be applied. Therefore, utilising bigger sample sizes, the study model may be replicated in further research. Third, the cross-sectional character of this study limits the inferences that can be made about causes and effects. In order to analyse the model over time, future study may take into account a longitudinal research approach. In addition, the study looked at one mediator (GWE) out of the relationships that were looked into. Future research may take into account additional mediating factors as organisational identity, perceived organisational support for sustainability, and atmosphere of green participation. In order to look for variations across other service sectors, such as higher education, nonprofits, healthcare, and hospitality, future study may look into examining the model in these and other areas.

Conclusion

Through the mediating impacts of GWE, the study examined the influence of GHRM techniques on green outcomes, including "actual green behaviour, additional green behaviour, and GIWBs". Using information gathered from Tamil Nadu, India's higher education sector, the findings indicated that GHRM positively correlated with the previously listed outcome factors. It was discovered that GWE was a key mediating factor between the relationships that were looked at. The paper makes recommendations for future research to add to the body of knowledge on GHRM by delving further into the specific processes regulating the interaction among GHRM and its effects.

REFERENCES

1. Aboramadan, M., Dahleez, K. and Hamad, M.H. (2020), "Servant leadership and academics outcomes in higher education: the role of job satisfaction", *International Journal of Organizational Analysis*.
2. Aboramadan, M., Albashiti, B., Alharazin, H. and Dahleez, K.A. (2020b), "Human resources management practices and organizational commitment in higher education: the mediating role of work engagement", *International Journal of Educational Management*, Vol. 34 No. 1, pp. 154-174.
3. Aboramadan, M., Hassi, A., Alharazin, H.J., Dahleez, K.A. and Albashiti, B. (2019), "Volunteering drivers and continuation will: the role of engagement", *Journal of Management Development*, Vol. 38 No. 5, pp. 405-420.
4. Agarwal, U.A., Datta, S., Blake-Beard, S. and Bhargava, S. (2012), "Linking LMX, innovative work behaviour and turnover intentions: the mediating role of work engagement", *Career Development International*, Vol. 17 No. 3, pp. 208-230.
5. Alfes, K., Truss, C., Soane, E.C., Rees, C. and Gatenby, M. (2013), "The relationship between line manager behavior, perceived HRM practices and individual performance. EXamining the mediating role of engagement", *Human Resource Management*, Vol. 52 No. 6, pp. 839-859.
6. Álvarez Jaramillo, J., ZarthaSossa, J.W. and Orozco Mendoza, G.L. (2018), "Barriers to sustainability for small and medium enterprises in the framework of sustainable development – literature review", *Business Strategy and the Environment*, Vol. 28 No. 4, pp. 512-524.
7. Ángel del Brío, J., Junquera, B. and Ordiz, M. (2008), "Human resources in advanced environmental approaches – a case analysis", *International Journal of Production Research*, Vol. 46 No. 21, pp. 6029-6053.
8. Bakker, A.B. and Demerouti, E. (2008), "Towards a model of work engagement", *Career Development International*, Vol. 13 No. 3, pp. 209-223.
9. Benayas, J., Alba, D. and Sánchez, S. (2002), "The university and sustainable development: the environmentalisation of university campuses: the case of the Autónoma De Madrid university", *Ecosistemas*, available at: www.aeet.org/ecosistemas/023/educativa2.htm (accessed 5 May 2020).
10. Bissing-Olson, M.J., Iyer, A., Fielding, K.S. and Zacher, H. (2013), "Relationships between daily affect and pro-environmental behavior at work: the moderating role of pro-environmental attitude", *Journal of Organizational Behavior*, Vol. 34 No. 2, pp. 156-175.
11. Blau, P.M. (1964), *Exchange and Power in Social Life*, Wiley, New York, NY.

12. Bos-Nehles, A.C. and Veenendaal, A.A.R. (2019), "Perceptions of HR practices and innovative work behavior: the moderating effect of an innovative climate", *The International Journal of Human Resource Management*, Vol. 30 No. 18, pp. 2661-2683.
13. Chang, C. and Chen, Y. (2013), "Green organizational identity and green innovation", *Management Decision*, Vol. 51 No. 5, pp. 1056-1070.
14. Chaudhary, R. (2019), "Green human resource management in Indian automobile industry", *Journal of Global Responsibility*, Vol. 10 No. 2, pp. 161-175.
15. Christian, M.S., Garza, A.S. and Slaughter, J.E. (2011), "Work engagement: a quantitative review and test of its relations with task and contextual performance", *Personnel Psychology*, Vol. 64 No. 1, pp. 89-136.
16. Demerouti, E., Bakker, A.B., Nachreiner, F. and Schaufeli, W.B. (2001), "The job demands-resources model of burnout", *Journal of Applied Psychology*, Vol. 86 No. 3, pp. 499-512.
17. Disterheft, A., Ferreira da Silva Caeiroa, S.S., Ramosa, M.R. and de Miranda Azeiteiroa, U.M. (2012), "Environmental management systems (EMS) implementation processes and practices in european higher education institutions - top-down versus participatory approaches", *Journal of Cleaner Production*, Vol. 31, pp. 80-90.
18. Dumont, J., Shen, J. and Deng, X. (2017), "Effects of green HRM practices on employee workplace green behavior: the role of psychological green climate and employee green values", *Human Resource Management*, Vol. 56 No. 4, pp. 613-627.
19. Farrukh, M., Raza, A., Ansari, N.Y. and Bhutta, U.S. (2022), "A bibliometric reflection on the history of green human resource management research", *Management Research Review*, Vol. 45 No. 6, pp. 781-800, doi: 10.1108/mrr-09-2020-0585.
20. Farrukh, M., Rafiq, M., Raza, A. and Ansari, N.Y. (2023), "Climate change needs behavior change: a team mechanism of team green creative behavior", *International Journal of Contemporary Hospitality Management*. doi: 10.1108/IJCHM-04-2023-0515.
21. Fawehinmi, O., Yusliza, M., Mohamad, Z., Noor Faedah, J. and Muhammad, Z. (2020), "Assessing the green behaviour of academics: the role of green human resource management and environmental knowledge", *International Journal of Manpower*.
22. Finlay, J. and Massey, J. (2012), "Eco-campus: applying the ecocity model to develop green university and college campuses", *International Journal of Sustainability in Higher Education*, Vol. 13 No. 2, pp. 150-165.
23. Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.
24. Gilal, F.G., Ashraf, Z., Gilal, N.G., Gilal, R.G. and Chaana, N.A. (2019), "Promoting environmental performance through green human resource management practices in higher education institutions: a moderated mediation model", *Corporate Social Responsibility and Environmental Management*, No. 6, pp. 1579-1590.
25. Guerzi, M., Longoni, A. and Luzzini, D. (2016), "Translating stakeholder pressures into environmental performance - the mediating role of green HRM practices", *The International Journal of Human Resource Management*, Vol. 27 No. 2, pp. 262-289.
26. Hair, J.F., Black, W.C., Anderson, R.E. and Babin, B.J. (2018), *Multivariate Data Analysis*, 8th ed., Cengage Learning EMEA, London.
27. Hair, J.F., Sarstedt, M., Pieper, T.M. and Ringle, C.M. (2012), "The use of partial least squares structural equation modeling in strategic management research: a review of past practices and recommendations for future applications", *Long Range Planning*, Vol. 45 Nos 5/6, pp. 320-340.
28. Hameed, Z., Khan, I., Islam, T., Sheikh, Z. and Naeem, R. (2020), "Do green HRM practices influence employees' environmental performance?", *International Journal of Manpower*, Vol. ahead-of- print No. ahead-of-print.
29. Haynie, J.J., Mossholder, K.W. and Harris, S.G. (2016), "Justice and job engagement: the role of senior management trust", *Journal of Organizational Behavior*, Vol. 37 No. 6, pp. 889-910.
30. Hulland, J. (1999), "Use of partial least squares (PLS) in strategic management research: a review of four recent studies", *Strategic Management Journal*, Vol. 20 No. 2, pp. 195-204.
31. Jabbour, C.J.C. (2013), "Environmental training in organizations: from a literature review to a framework for future research", *Resources, Conservation and Recycling*, Vol. 74, May, pp. 144-155.
32. Jabbour, C.J.C., Santos, F.C.A. and Nagano, M.S. (2008), "Environmental management system and human resource practices: is there a link between them in four Brazilian companies?", *Journal of Cleaner Production*, Vol. 16 No. 17, pp. 1922-1925.
33. Kahn, W.A. (1990), "Psychological conditions of personal engagement and disengagement at work", *Academy of Management Journal*, Vol. 33 No. 4, pp. 692-724.
34. Karatepe, O.M. (2012), "The effects of coworker and perceived organizational support on hotel employee outcomes: the moderating role of job embeddedness", *Journal of Hospitality and Tourism Research*, Vol. 36 No. 4, pp. 495-516.
35. Karatepe, O.M. and Olugbade, O.A. (2016), "The mediating role of work engagement in the relationship between high-performance work practices and job outcomes of employees in Nigeria", *International Journal of Contemporary Hospitality Management*, Vol. 28 No. 10, pp. 2350-2371.
36. Karatepe, O.M., Beirami, E., Bouzari, M. and Safavi, H.P. (2014), "Does work engagement mediate the effects of challenge stressors on job outcomes? Evidence from the hotel industry", *International Journal of Hospitality Management*, Vol. 36 No. 1, pp. 14-22.
37. Kim, Y.J., Kim, W.G., Choi, H. and Phetvaroon, K. (2019), "The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance", *International Journal of Hospitality Management*, Vol. 76, pp. 83-93.
38. Le'on-Fern'andez, Y. and Dom'nguez-Vilches, E. (2015), "Environmental management and sustainability in higher education: the case of Spanish universities", *International Journal of Sustainability in Higher Education*, Vol. 16 No. 4, pp. 440-455.
39. Luu, T.T. (2017), "CSR and organizational citizenship behavior for the environment in hotel industry: the moderating roles of corporate entrepreneurship and employee attachment style", *International Journal of Contemporary Hospitality Management*, Vol. 29 No. 11, pp. 2867-2900.

40. Luu, T.T. (2019), "Building employees' organizational citizenship behavior for the environment: the role of environmentally-specific servant leadership and a moderated mediation mechanism", *International Journal of Contemporary Hospitality Management*, Vol. 31 No. 1, pp. 406-426.
41. McClean, E. and Collins, C.J. (2011), "High-commitment HR practices, employee effort, and firm performance: investigating the effects of HR practices across employee groups within professional services firms", *Human Resource Management*, Vol. 50 No. 3, pp. 341-363.
42. Norton, T.A., Parker, S.L., Zacher, H. and Ashkanasy, N.M. (2015), "Employee green behavior a theoretical framework, multilevel review and future research agenda", *Organization and Environment*, Vol. 28 No. 1, pp. 103-125.
43. Ojo, A.O. and Raman, M. (2019), "Role of green HRM practices in employees' pro-environmental IT practices", *World Conference on Information Systems and Technologies*, Springer International Publishing, Cham, pp. 678-688.
44. Paillé, P. and Boiral, O. (2013), "Pro-environmental behavior at work: construct validity and determinants", *Journal of Environmental Psychology*, Vol. 36, pp. 118-128.
45. Patwary, A.K., Mohd Yusof, M.F., Bah Simpong, D., Ab Ghaffar, S.F. and Rahman, M.K. (2022), "Examining proactive pro-environmental behaviour through green inclusive leadership and green human resource management: an empirical investigation among Malaysian hotel employees", *Journal of Hospitality and Tourism Insights*, Vol. 6 No. 5, pp. 2012-2029, doi: 10.1108/JHTI-06-2022-0213.
46. Pham, N., Hoang, H. and Phan, Q. (2019), "Green human resource management: a comprehensive review and future research agenda", *International Journal of Manpower*.
47. Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.
48. Rademaker, M.E., Schuberth, F. and Dijkstra, T.K. (2019), "Measurement error correlation within blocks of indicators in consistent partial least squares: issues and remedies", *Internet Research*, Emerald Publishing.
49. Ren, S., Tang, G. and E. Jackson, S. (2018), "Green human resource management research in emergence: a review and future directions", *Asia Pacific Journal of Management*, Vol. 35 No. 3, pp. 769-803.
50. Renwick, D.W.S., Redman, T. and Maguire, S. (2013), "Green human resource management: a review and research agenda", *International Journal of Management Reviews*, Vol. 15 No. 1, pp. 1-14.
51. Rigdon, E.E. (2012), "Rethinking partial least squares path modeling: in praise of simple methods", *Long Range Planning*, Vol. 45 Nos 5/6, pp. 341-358.
52. Ringle, C.M., Sarstedt, M., Mitchell, R. and Gudergan, S.P. (2018), "Partial least squares structural equation modeling in HRM research", *The International Journal of Human Resource Management*, Vol. 31 No. 12, pp. 1-27.
53. Rodwell, J., McWilliams, J. and Gulyas, A. (2017), "The impact of characteristics of nurses' relationships with their supervisor, engagement and trust, on performance behaviors and intent to quit", *Journal of Advanced Nursing*, Vol. 73 No. 1, pp. 190-200.
54. Saks, A.M. (2006), "Antecedents and consequences of employee engagement", *Journal of Managerial Psychology*, Vol. 21 No. 7, pp. 600-619.
55. Satchapappichit, S., Leerattananugulsiri, A., Kayom, W., Thanasarn, K. and Girum, T. (2023), "Investigating the stakeholder influence on environmentally sustainable practices of Thai restaurant chains in Bangkok", *Journal of Hospitality and Tourism Insights*, Vol. 6 No. 5, pp. 2525-2544, doi: 10.1108/JHTI-07-2022-0305.
56. Schaufeli, W.B. and Bakker, A.B. (2004), "Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study", *Journal of Organizational Behavior*, Vol. 25 No. 3, pp. 293-315.
57. Schaufeli, W.B., Bakker, A.B. and Salanova, M. (2006), "The measurement of work engagement with a short questionnaire: a cross-national study", *Educational and Psychological Measurement*, Vol. 66 No. 4, pp. 701-716.
58. Schaufeli, W.B., Salanova, M., Gonz'alez-Rom'a, V. and Bakker, A.B. (2002), "The measurement of engagement and burnout: a two sample confirmatory factor analytic approach", *Journal of Happiness Studies*, Vol. 3 No. 1, pp. 71-92.
59. Schuberth, F., Henseler, J. and Dijkstra, T.K. (2018), "Partial least squares path modeling using ordinal categorical indicators", *Quality and Quantity*, Vol. 52 No. 1, pp. 9-35.
60. Scott, S.G. and Bruce, R.A. (1994), "Determinants of innovative behavior: a path model of individual innovation in the workplace", *Academy of Management Journal*, *Academy of Management*, Vol. 37 No. 3, pp. 580-607.
61. Seeck, H. and Diehl, M.R. (2017), "A literature review on HRM and innovation-taking stock and future directions", *The International Journal of Human Resource Management*, Vol. 28 No. 6, pp. 913-944.
62. Siebenhüner, B. and Arnold, M. (2007), "Organizational learning to manage sustainable development", *Business Strategy and the Environment*, Vol. 16 No. 5, pp. 339-353.
63. Song, W., Yu, H. and Xu, H. (2020), "Effects of green human resource management and managerial environmental concern on green innovation", *European Journal of Innovation Management*.
64. Sulea, C., Virga, D., Maricutoiu, L.P., Schaufeli, W., Dumitru, C.Z. and Sava, F.A. (2012), "Work engagement as mediator between job characteristics and positive and negative extra-role behaviors", *Career Development International*, Vol. 17 No. 3, pp. 188-207.
65. Tang, G., Chen, Y., Jiang, Y., Paille, P. and Jia, J. (2018), "Green human resource management practices: scale development and validity", *Asia Pacific Journal of Human Resources*, Vol. 56 No. 1, pp. 31-55.
66. Tanveer, M.I., Yusliza, M.Y. and Fawehinmi, O. (2023), "Green HRM and hospitality industry: challenges and barriers in adopting environmentally friendly practices", *Journal of Hospitality and Tourism Insights*. doi: 10.1108/JHTI-08-2022-0389.
67. West, M.A. and Farr, J.L. (1989), "Innovation at work: Psychological perspectives", *Social Behaviour*, Vol. 4 No. 1, pp. 15-30.
68. Wolf, J. (2013), "Improving the sustainable development of firms: the role of employees", *Business Strategy and the Environment*, doi: 10.1002/bse.1731.
69. Wong, W.B. (2018), *Ethical and Sustainable Supply Chain Management in a Global Context*, Bagazici University, Bagazici.

70. Wright, P. and Nishii, L. (2013), "Strategic HRM and organizational behavior: Integrating multiple levels of analysis", in Paauwe, J., Guest, D. and Wright, P. (Eds), *HRM and Performance: Achievements and Challenges*, Wiley-Blackwell, Chichester, pp. 97-110.
71. Zhou, Y., Hong, Y. and Liu, J. (2013), "Internal commitment or external collaboration? The impact of human resource management systems on firm innovation and performance", *Human Resource Management*, Vol. 52 No. 2, pp. 263-288.