



Research Article

Relationships between Green Human Resource Management Practices on In-role and Extra-role Employee Green Behaviour in a Higher Education Institution

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Abstract

To effectively preserve the natural ecosystem and resources for future generations, it is important for the organisation to adopt environmental practices. Green human resource management (GHRM) has been identified as an important tool for the implementation of environmental practices in an organisation. Although GHRM has become a strategic practice for many successful corporations in Malaysia to engage in environmental management activities, little is known on how GHRM affects the green behaviour of employees in higher education institutions. Thus, adopting GHRM, this study extends Ability, Motivation and Opportunities (AMO) theory to identify the determinants of employee green behaviour in higher education institutions. Specifically, this study attempts to examine the effects of green recruitment and selection; green training and development; green performance management and appraisal; green reward and compensation; and green empowerment on in-role and extra-role employees' green behaviour at a higher education institution. Findings yielded from a data analysis of 126 employees from a higher education institution in the East Coast Region of Peninsular of Malaysia show that in-role green behaviour is determined by green empowerment. Green empowerment and green performance management and appraisal, on the other hand, effect extra-role green behaviour. These findings can help organisations better understand employees' green behaviour practices and, as a result, promote green behaviour among employees.

Keywords: green human resource management practices, in-role green behaviour, extra-role green behaviour, higher education institution

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Introduction

The United Nation in the year 2015 has launched seventeen goals of Sustainable Development Goals (SDG) for all countries as a universal call to ensure by year 2030, all people enjoy peace, equality and prosperity. Green behaviour among employees should be cultivate to support the SDG by adopting environmental practices at the workplace. In recent decades, there are considerable demands for a more sustainability-oriented and environmentally friendly global agenda. In addition, it has been stated that environmentally responsible practices are attracting more interest from stakeholders. Therefore, adopting environmental practices is a critical change that is needed worldwide. Adopting such measures would assist companies in becoming “green and competitive” (Yusliza *et al.*, 2017; Yong, *et al.*, 2019; Islam *et al.*, 2021).

The implementation of pro-environmental strategies at the firm mainly depends on the employees’ behaviour (Saeed *et al.*, 2019). It is important for a company to understand how GHRM influences employees’ green behaviour as this will affect the environmental performance of any company aiming to implement ecological sustainability (Kim *et al.*, 2019). Hence, organisations are increasingly, albeit gradually, adopting green HRM to promote employee green behaviour in the workplace (Dumont *et al.*, 2017). Employees’ green behaviour can be categorised into in-role and extra-role behaviour. The achievement of organisational sustainable goals in general is enhanced by such behaviours and influenced by the employees’ performance (Islam *et al.*, 2021). Both in-role and extra-role green behaviours are associated with organisational GHRM practices (Dumont *et al.*, 2017).

In-role green behaviour is also identified as task-related green behaviour. It is mentioned in formal job descriptions and linked to job tasks in the workplace (Zhang *et al.*, 2019). Employees are required to behave and act according to organisational policies and regulations. For example, they are instructed to protect local water systems by prohibiting the disposal of toxic waste or hazardous materials into these systems (Dumont *et al.*, 2017; Islam *et al.*, 2021).

However, extra-role green behaviours are mainly voluntary. Employees consent to the behaviour through their own motivation to enhance their environmental performance (Zhang *et al.*, 2019). Extra-role green behaviours are not listed in job descriptions and could be as simple as suggestions for protecting the environment. For example, employees might turn off fans, lights and computers when they leave the workplace or when these facilities are not in use (Dumont *et al.*, 2017; Islam *et al.*, 2021). Both types of green behaviours are essential for achieving organisational green missions (Dumont *et al.*, 2017).

Higher institutions and universities can be considered usual employers of highly educated professionals (Blok *et al.*, 2015). The operations and activities of higher education institutions impact the environment directly and indirectly in terms of waste generation, electricity usage, material consumption and carbon emissions due to the excessive circulation of large populations and vehicles around the campus. The use of facilities for academic activities, as well as teaching and learning services, in addition to the IT and sophisticated equipment found in higher education institutions, result in high levels of energy consumption by lighting and cooling equipment. Furthermore, waste, such as paper and plastic, is generated in large amounts at universities, and this would contaminate the environment if discarded improperly (Fawehinmi *et al.*, 2019; Anwar *et al.*, 2020). Therefore, it is very important to cultivate green and environment awareness in implementing GHRM practices which could influence employee green behaviour at the workplace towards the sustainability of Environment, Society and Governance (ESG).

Furthermore, higher education institutions play a major role in the transformation of society towards sustainability. They also hold the significant responsibilities of supporting the adoption of alternative approaches to tackle the current environmental issues and educating the present and future generations about the importance of being environmentally friendly (Aboramadan, 2022; Anwar *et al.*, 2020). The contributions of higher education institutions to sustainable society would be achieved by not only providing environmental awareness and

research, but also encouraging the performance of role model behaviour among lecturers and other staff members (Blok *et al.*, 2015; Anwar *et al.*, 2020). Employee behaviour in the higher education sector is decisive in assuring successful environmental performance and minimising environmental degradation, which would have a ripple effect on wider society (Anwar *et al.*, 2020).

The mechanisms and processes through which GHRM practices affect the green behaviour of employees remain largely unknown. So far, research has focused on only GHRM as a whole, while few studies debate the influence of various separate categories of practices such as green recruitment and selection (Zhang *et al.*, 2019). Besides, most literature related to green HRM has originated from Western scholars, so there is a major gap to be bridged in future studies, given the importance of Asian economic development (Yong *et al.*, 2019). Furthermore, research relating to GHRM in Malaysia is still lacking (Kamaruddin *et al.*, 2018) and must be conducted in a different organisational context, for example, higher education institutions (Anwar *et al.*, 2020). The studies regarding GHRM have concentrated more on the corporate sector than educational institutes (Anwar *et al.*, 2020). Therefore, this study attempted to bridge these gaps by investigating the impact of GHRM practices (which include green recruitment and selection; green training and development; green performance management and appraisal; green reward and compensation; and green empowerment) on the green behaviour of employees at a higher institution.

Literature Review

In the existing studies, it has been recognised that human resource management (HRM) is central to the establishment of better environmental performance in an organisation. Organisations can implement environmental management by applying green practices, such as performance evaluation and personnel selection, that are aligned with environmental goals (Zhang *et al.*, 2019). An organisation's sustainability would be enhanced by introducing green practices into all HRM functions, such as recruitment, selection, training, development, reward and compensation (Saeed *et al.*, 2018; Yong *et al.*, 2019). Green HRM can be regarded as an integration of HRM practices with green

concepts that would make a positive contribution to the environment (Tang *et al.*, 2018; Gilal *et al.*, 2019).

Green HRM has been progressively identified as an indispensable tool for the implementation of green practices and strategies (Ren *et al.*, 2018). Green HRM is the merging of human resource management with corporate environmental management (Arulrajah *et al.*, 2015). It is also known as green practices for personnel management. It is a major component of a sustainable business management strategy (Jerónimo *et al.*, 2020). The main focus of GHRM is to achieve continuity between traditional HRM and the environmental goals of an organisation, drawing attention to the synergism between "green" concepts and the ecological functions of HRM (Zhang *et al.*, 2019). GHRM is unique as it emphasises HRM practices and policies to promote green behaviour in the employees of an organisation to develop a resource- and cost-efficient, environmentally sensitive and socially responsible company. Hence, GHRM is also considered a fundamental component of the corporate social responsibility (CSR) framework (Kamaruddin *et al.*, 2018; Cooke *et al.*, 2020). It is believed that GHRM is initiated by an organisation's motivation to synthesise sustainability in their daily operations and decision making (Ren *et al.*, 2018). It also involves embedding the spirit of environmentalism into organisations through their employees (Muisyo & Qin, 2021).

After recognising their environmental responsibilities, an increasing number of higher education institutions are integrating environmental management aspects and green practices as necessary elements of their campus operations. However, progress towards sustainability remains tardy (Aboramadan, 2022; Anwar *et al.*, 2020). Furthermore, the role of GHRM in a higher education institution - to focus on implementing environmental sustainability initiatives - has rarely been studied (Fawehinmi *et al.*, 2019). Besides, studies of employee green behaviour in a university setting are important because this not only concerns green behaviour in the workplace but also might impact the green behaviour of students in other educational settings (Blok *et al.*, 2015).

Employee Green Behaviour (In-role and Extra Role Green Behaviour)

Employee green behaviour can be referred to as a series of behaviours that can contribute to environmental sustainability (Zhang *et al.*, 2019). The aims of green behaviour are minimising harm to and protecting the natural environment (Islam *et al.*, 2021). There are two types of green behaviours: in-role green behaviour and extra-role green behaviour (Dumont *et al.*, 2017; Zhang *et al.*, 2019).

Studies have been conducted on in-role and extra-role green behaviours. Aboramadan (2022) identified the relationship between GHRM and green behaviour. The study focused on GHRM as a whole instead of discussing the practices separately. The technology acceptance model (TAM) was applied by Zhang *et al.* (2019) to determine the relationship between GHRM practices and in-role and extra-role green behaviours by using information need as a mediator. The GHRM practices investigated in that research were the labour employment cycle, reward, education and training, employee empowerment and manager involvement. Research conducted by Islam *et al.* (2021) applied GHRM as a mediator to identify the relationship between ethical leadership and in-role and extra-role green behaviours by using the supply-value fit theory. This study also focused on GHRM as a whole instead of discussing the practices separately.

In the present study, the influence of GHRM practices on in-role and extra-role green behaviours will be studied and identified separately. These practices are: green recruitment and selection; green training and development; green performance management and appraisal; green reward and compensation; and green empowerment. The Ability, Motivation and Opportunities (AMO) theory was applied to explain the relationship between GHRM practices and employees' green behaviour. Based on the AMO theory, HRM can contribute to organisational green performance by recruiting and growing highly qualified employees with green values; enhancing employees' motivation and commitment through green-based strategies, rewards and productive performance management; and offering opportunities for employee engagement in problem-solving and knowledge-sharing activities through employee involvement

programmes (Fawehinmi *et al.*, 2019). In addition, as suggested in the AMO theory, green behaviour in an individual can be improved with the contribution of HRM practices. These would cultivate the employee's ability to possess relevant skills and competencies; motivate the employee in order to encourage a positive attitude and the willingness to be involved in environment-related tasks; and provide opportunities for employees to participate in deciding on and developing green initiatives (Abadneh, 2021).

Green Recruitment and Selection

Green recruitment and selection are two criteria of GHRM practices (Saeed *et al.*, 2019). During green recruitment, job descriptions and person specifications with environmental aspects are used to trace a candidate's environmental knowledge, values and beliefs (Zibarrasa & Coan, 2015). According to Saeed *et al.* (2019), there are three aspects of green recruitment and selection, which are candidates' green awareness, green employer branding and the use of green criteria to attract candidates. Employees' green awareness has been found to positively enhance their environmental knowledge as part of the operational process, resulting in improvements to the firm's environmental performance. Organisations with a green image and reputation seem able to attract jobseekers as the latter perceive the pride of working in an organisation with a good environmental record. Green criteria should be emphasised in the employee evaluation and selection process, and those who perform better in this respect can be selected (Saeed *et al.*, 2019).

To enforce its sustainability objectives, an organisation must hire employees with green behaviours, environmental sensitivity and the willingness to engage with pro-environmental activities (Jerónimo, *et al.*, 2020). Recruitment based on sustainable goals affects the employees' green considerations, encourages a greener workforce and illustrates an organisation's better green behaviour, thus attracting a larger number of high-quality candidates (Zibarrasa & Coan, 2015; Islam *et al.*, 2021). Based on these arguments, the following hypotheses were generated:

H1a. Green recruitment and selection have a positive effect on in-role green behaviour.

H1b. Green recruitment and selection have a positive effect on extra-role green behaviour.

Green Training and Development

Green training and development refers to a system of activities that can motivate and increase employees' awareness, knowledge and environmental protection skills to accomplish an organisation's environmental objectives (Saeed *et al.*, 2019). In green training, information about the organisation's green policies, procedures and visions/missions is provided to the employees. To generate their environmental awareness, employees engage with green "best practices", such as waste management, recycling, carbon footprint reduction, using resources properly and energy efficiency. Green training programs allow organisations to empower their employees by developing the latter's abilities to identify environmental problems and the corresponding solutions (Jerónimo, *et al.*, 2020).

Green training should be provided with education programs and involve job rotation practices among all the employees of the organisation (Likhitkar & Verma, 2017; Saeed *et al.*, 2019). Specific training such as power-saving management and safety should be delivered to increase employees' contributions to environmental sustainability (Likhitkar & Verma, 2017). Through education and green training programs, employees will become aware of pro-environmental activities and realise to a greater extent the importance of environmental protection. This would also encourage them to be more sensitive to environmental cases, empowered and motivated to participate in environmental initiatives (Zibarrasa & Coan, 2015; Saeed *et al.*, 2019). Hence, the following hypotheses were posited:

H2a. Green training and development have a positive effect on in-role green behaviour.

H2b. Green training and development have a positive effect on extra-role green behaviour.

Green Performance Management and Appraisal

Green performance management and appraisal is a system that evaluates employees' performance during the environmental management process (Saeed *et al.*, 2019).

Previous studies have stated that involving environmental factors in the employees' goals and responsibilities, as well as evaluating their performance aligned with these goals, would assist organisations to achieve their overall environmental goals. Performance evaluations in relation to green goals can cultivate the employees' motivation to achieve these goals (Likhitkar & Verma, 2017; Islam *et al.*, 2021).

However, green performance management may not be effective, as different organisations have different structural characteristics. Organisations must identify a comprehensive method for implementing green performance management. Green performance indicators include a series of green criteria, such as environmental events, environmental responsibilities, the reduction of carbon emissions and conveying environmental concerns and policies (Saeed *et al.*, 2019). To implement green performance goals, an organisation should include green behaviour in the range of investigation and allow the staff to become aware that green behaviour plays an important role in the decision-making process (Zhang *et al.*, 2019). Therefore, the following hypotheses were formulated for this study:

H3a. Green performance management and appraisal have a positive effect on in-role green behaviour.

H3b. Green performance management and appraisal have a positive effect on extra-role green behaviour.

Green Reward and Compensation

Green reward compensation can be defined as a system that aims to attract, retain and motivate employees to contribute to environmental goals by offering financial and non-financial rewards (Saeed *et al.*, 2019). According to Likhitkar and Verma (2017), a green reward scheme should operate among all levels of staff to motivate them to support organisational sustainability. The system design should reflect the management's commitment to pro-environmental performance while empowering and motivating employees' green behaviour. Monetary rewards can take the form of bonuses, tax exemptions and profit shares; meanwhile, green recognition, praise, awards and prizes can be given as non-monetary rewards, depending on the employees'

motivations (Zibarrasa & Coan, 2015; Arulrajah *et al.*, 2015).

However, previous research studies show that it can be difficult to design an appropriate reward system based on environmental performance (Zibarrasa & Coan, 2015; Saeed *et al.*, 2019). People are motivated by various kinds of rewards. Therefore, green reward systems should be well designed and based on the individuals involved (Zibarrasa & Coan, 2015). Saeed *et al.* (2019) stated that in motivating employees, combining monetary and non-monetary rewards is more effective than using only one type of reward. Drawing on these arguments, this study proposed the following hypotheses:

H4a. Green reward and compensation have a positive effect on in-role green behaviour.

H4b. Green reward and compensation have a positive effect on extra-role green behaviour.

Green Empowerment

Green empowerment means that employees are provided with opportunities to involve themselves in environmental management, which encourages them to support the prevention of pollution and recognise environmental opportunities (Saeed *et al.*, 2019). Employees working in a green environment are likely to display more feelings of independence, support and empowerment

because of the company’s GHRM practices (Islam *et al.*, 2021). Management engagement and employee empowerment can increase the employees’ abilities and opportunities for green behaviour in the workplace (Zhang *et al.*, 2019).

To improve the performance of an environmental management system, employees’ green involvement is important; for example, it contributes to reducing waste and pollution from the office and making full use of the available resources. Encouraging employees’ green empowerment might include providing employees with opportunities to be involved in quality improvement and problem solving in relation to environmental issues (Saeed *et al.*, 2019). Managerial involvement in green empowerment can be considered the starting point of employee empowerment. For example, programs such as green teams and awareness-raising campaigns are conducted as they increase innovation when led by a transformational leadership (Zibarrasa & Coan, 2015). Thus, this study aims to investigate the following hypotheses:

H5a. Green empowerment has a positive effect on in-role green behaviour.

H5b. Green empowerment has a positive effect on extra-role green behaviour.

The hypotheses for this study are presented in the conceptual framework shown in Figure 1.

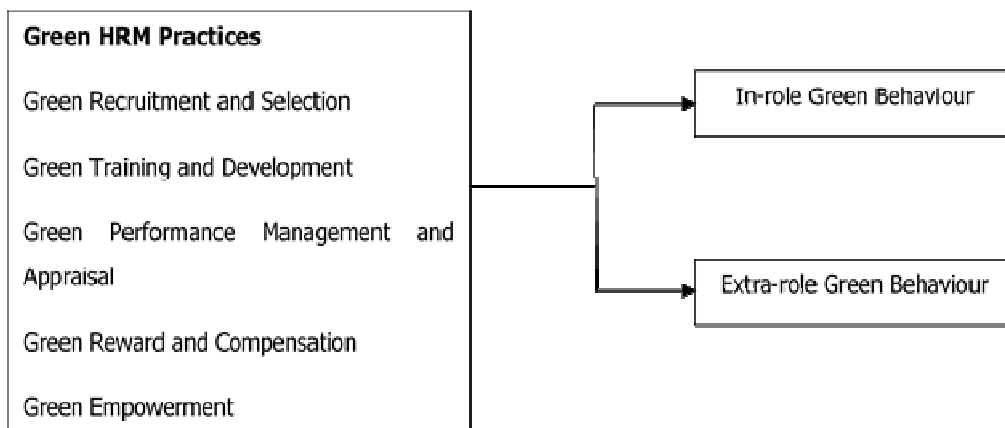


Fig 1. Conceptual Framework

(Source: Permission is granted from IBIMA as the authors’ original source)

Research Methodology

Sample Selection and Data Collection

In this study, the purposive sampling method was applied. The data were collected through an online questionnaire due to the COVID-19 pandemic. The study hypotheses were tested among the employees of a higher institution in the East Coast of Malaysian Peninsular. According to the university's registrar office, there are 11 academic responsibility centres which had a total of 992 active employees in 2021. According to Krejcie and Morgan (1970), the sample size for the given population of 992 should be 278. There were 992 surveys distributed through e-mail. The final effective sample volume was 126 and the response rate was 12.7%. This included 50 male (39.7%) and 76 female employees (60.3%). In terms of educational background, 63.5% of them were PhD holders.

Measurement

The items in the questionnaire were adopted from the previous literature with a combination from several sources as in Table 1. Five GHRM practices and two green behaviours were measured using five-point Likert measurement scales, ranging from 1 for "strongly disagree" to 5 for "strongly agree". A total of six items were used to measure green behaviour, with three items used for in-role green behaviour and three items for extra-role green behaviour. The items were adopted from Islam *et al.* (2021). However, a total of 15 items were used to measure the five GHRM practices. Each practice was measured with three items. The items used to measure green recruitment and selection; green training and development; and green performance management and appraisal were adopted from Muisyo and Qin (2021). Green reward and compensation, as well as green empowerment, were measured using items adopted from Saeed *et al.* (2019). Table 1 presents the items adopted for each variable and their respective sources.

Table 1: Instrument Development

	Items	Sources
	<i>In-role Green Behaviour</i>	
1.	Today, I fully completed my assigned duties in environmentally-friendly ways.	Islam et al., 2021
2.	Today, I fulfilled the responsibilities specified in my job description in environmentally-friendly ways.	
3.	Today, I performed the tasks expected of me in environmentally-friendly ways.	
	<i>Extra-role Green Behaviour</i>	
1.	Today, I took a chance to be actively involved in environmental protection in the workplace.	Islam et al., 2021
2.	Today, I took the initiative to act in an environmentally-friendly way.	
3.	Today, I did more for the environment in the workplace than I was expected to.	
	<i>Green Recruitment and Selection</i>	
1.	Employees are attracted by the environmental information, activities and reputation of our organisation.	Muisyo & Qin, 2021
2.	Employees with environmental sustainability knowledge have a higher likelihood of being hired by my organisation.	
3.	The HR department selects employees who are willing to engage with the environmental management activities of our organisation.	
	<i>Green Training and Development</i>	

1.	Our organisation invests heavily in environmental training for employees.	Muisyo & Qin, 2021
2.	Training our staff about the ecological impact of organisational activities is a significant tool in our organisation.	
3.	The HR department provides continuous, relevant and effective environmental training programs.	
<i>Green Performance Management and Appraisal</i>		
1.	The HR department of our organisation establishes clear green practices objectives for each employee.	Muisyo & Qin, 2021
2.	Our organisation evaluates employee performance based on the achievement of environmental objectives.	
3.	Individual environmental performance is monitored by the HR manager in our organisation.	
<i>Green Reward and Compensation</i>		
1.	Non-monetary and monetary rewards (sabbatical, leave, gifts, bonuses, cash, premiums or promotion) based on environmental achievements are offered by our organisation.	Saeed <i>et al.</i> , 2019
2.	Environmental performance is recognised publicly (through awards, dinners and publicity) in our organisation.	
3.	Incentives to perform environmentally-friendly activities and behaviours (e.g., recycling and waste management) are provided in our organisation.	
<i>Green Empowerment</i>		
1.	Employees are recognised as key stakeholders in the environmental management of our organisation.	Saeed <i>et al.</i> , 2019
2.	Employees are given opportunities to negotiate with the management about green workplace agreements.	
3.	Workshops or forums are offered to employees so they can improve their environmental behaviour and exchange their tacit knowledge.	

Source: (Permission is granted from IBIMA as the authors' original source).

Pilot Test

A pilot test was conducted to check the reliability of the questionnaire using Cronbach's alpha. A total of 20 valid samples were collected for this pilot test. Table 1 presents the variables and the Cronbach's alpha of each variable. As

shown from Table 2, the Cronbach's alpha of Green Empowerment was 0.697, slightly below the acceptable value of 0.70. The Cronbach's alpha values of the other variables were above the acceptable value. Hence, a minor change was made in the items for this variable to improve the reliability.

Table 2: Reliability Statistics of the Pilot Test

Variable	Cronbach's Alpha
<i>IV</i>	
Green Recruitment and Selection	0.826
Green Training and Development	0.803
Green Performance Management and Appraisal	0.952
Green Reward and Compensation	0.913
Green Empowerment	0.697
<i>DV</i>	
In-role Green Behaviour	0.901
Extra-role Green Behaviour	0.897

Source: (Permission is granted from IBIMA as the authors' original source).

Data Analysis

The findings from the questionnaire were analysed using statistical software, IBM SPSS Statistics 26. Descriptive analysis and multiple regression analysis were conducted to measure the effect on, and relationship between, the

independent variables and employee green behaviour (Kamaruddin *et al.*, 2018). The reliability of the variables was also tested using Cronbach's alpha to ensure each item had good internal correlation. As shown in Table 3, the Cronbach's alpha for each variable was higher than 0.70, the acceptable value.

Table 3: Reliability Statistics of Actual Test

Variable	Cronbach's Alpha
<i>IV</i>	
Green Recruitment and Selection	0.818
Green Training and Development	0.863
Green Performance Management and Appraisal	0.944
Green Reward and Compensation	0.882
Green Empowerment	0.854
<i>DV</i>	
In-role Green Behaviour	0.945
Extra-role Green Behaviour	0.936

Source: (Permission is granted from IBIMA as the authors' original source).

Results and Discussion

Descriptive Statistics

This analysis was conducted to discover more features of the data. Table 4 shows the means, standard deviations and correlations of all the variables. Correlation analysis showed that all the GHRM practices correlated positively and significantly with in-role green behaviour as follows: green recruitment and selection ($r = 0.427$, $p < 0.01$), green training and development ($r = 0.507$, $p < 0.01$), green

performance management and appraisal ($r = 0.481$, $p < 0.01$), green reward and compensation ($r = 0.525$, $p < 0.01$) and green empowerment ($r = 0.590$, $p < 0.01$). The results also revealed significant positive relationships between all the GHRM practices and extra-role green behaviour, which were as follows: green recruitment and selection ($r = 0.351$, $p < 0.01$), green training and development ($r = 0.423$, $p < 0.01$), green performance management and appraisal ($r = 0.323$, $p < 0.01$), green reward and compensation ($r = 0.406$, $p < 0.01$) and green empowerment ($r = 0.504$, $p < 0.01$).

Table 4: Descriptive Statistics

	Variable	Mean	SD	1	2	3	4	5	6	7
1	GRS	11.21	2.50	1						
2	GTD	10.46	2.80	.720**	1					
3	GPA	9.17	3.38	.714**	.836**	1				
4	GRC	8.84	3.44	.657**	.729**	.823**	1			
5	GE	10.27	3.07	.605**	.741**	.719**	.753**	1		
6	IGB	10.89	2.47	.427**	.507**	.481**	.525**	.590**	1	
7	EGB	10.85	2.69	.351**	.423**	.323**	.406**	.504**	.675**	1

** $p < 0.01$ (two-tailed test), SD = Standard Deviation

GRS = Green Recruitment and Selection, GTD = Green Training and Development,

GPA = Green Performance Management and Appraisal, GRC = Green Reward and Compensation, GE = Green Empowerment

IGB = In-role Green Behaviour, EGB = Extra-role Green Behaviour

Source: (Permission is granted from IBIMA as the authors' original source).

Hypothesis Testing

Tables 5 and 6 present the multiple regression analysis results of in-role and extra-role green behaviour respectively. As shown in Table 5 below, about 34% of the variability in in-role green behaviour can be illustrated by the independent variables used in this study. On the other hand, about 26% of the variability in extra-role green behaviour can be explained by the independent variables, as shown in Table 6. Based on Table 5, the regression results show that green empowerment ($\beta = 0.406$, $p = 0.001$) had a significant effect on in-role green behaviour as $p < 0.05$. Hence, H5a was verified while H1a, H2a, H3a and H4a were not verified.

According to Table 6, the regression results show that green performance management and appraisal ($\beta = 0.393$, $p = 0.025$) and green empowerment ($\beta = 0.414$, $p = 0.002$) had a significant impact on extra-role green behaviour

as $p < 0.05$. Hence, H3b and H5b were supported, while H1b, H2b and H4b were not supported. The results demonstrate that green recruitment and selection, green training and development, and green reward and appraisal do not significantly influence either in-role or extra-role green behaviour. Meanwhile, green performance management and appraisal do not significantly influence in-role green behaviour. This might be plausible reasons that the higher institution does not adopt environmental knowledge as a critical indicator during the recruitment and selection of new employees. Other than that, perhaps the higher institution should invest heavily in or provide a relevant environmental training program. Besides, the higher institution's employees might not be offered monetary or non-monetary rewards for their green behaviour, either voluntary or non-voluntary.

Table 5: Multiple Regression Analysis for In-role Green Behaviour

Variable	Standardized Coefficient Beta (β)	t	Significance
Green Recruitment and Selection	.039	.352	.725
Green Training and Development	.120	.812	.419
Green Performance Management and Appraisal	-.080	-.492	.623
Green Reward and Compensation	.172	1.220	.225
Green Empowerment	.406	3.329	.001
R ² = .369 Adjusted R ² = .343 F-value = 14.030			

Source: (Permission is granted from IBIMA as the authors' original source).

Table 6: Multiple Regression Analysis for Extra-role Green Behaviour

Variable	Standardized Coefficient Beta (β)	t	Significance
Green Recruitment and Selection	.077	.658	.512
Green Training and Development	.260	1.659	.100
Green Performance Management and Appraisal	-.393	-2.277	.025
Green Reward and Compensation	.177	1.184	.239

Green Empowerment	.414	3.203	.002
R ² = .291			
Adjusted R ² = .261			
F-value = 9.850			

Source: (Permission is granted from IBIMA as the authors' original source).

The results of this study are aligned with the research by Zhang *et al.* (2019), which also revealed that employee empowerment contributed significantly to both in-role and extra-role green workplace behaviour. In addition, the results found by Saeed *et al.* (2018) also suggested that green performance management and appraisal and green empowerment positively affected employees' pro-environmental behaviour. However, they did not distinguish between in-role and extra-role green behaviour. In the study by Aboramadan (2022), GHRM was studied as a whole to investigate the effect of green behaviour in higher education through the mediating role of green work engagement. The results indicated that green work engagement positively affected in-role and extra-role green behaviour. It also indicated that employees with higher levels of engagement are more likely to display positive green outcomes and conduct trustful exchanges with their organisation.

On the other hand, Dumont *et al.* (2017) discovered that GHRM as a whole had an insignificant direct association with an individual's extra-role green behaviours. A study by Fawehinmi *et al.* (2019) also concluded that GHRM had no significant direct association with employee green behaviour. Furthermore, Kim *et al.* (2019) found that the relationship between GHRM and employee green behaviour was insignificant. These findings imply that employees are not necessarily willing to practise green behaviour even when GHRM practices are implemented in the organisation. Hence, certain underlying variables are needed for GHRM practices to positively affect employee green behaviour (Fawehinmi *et al.*, 2019).

Contributions and Implications

The findings of this study make several theoretical contributions to the literature. Firstly, this study explores the effects of different GHRM practices on differentiated green behaviour, which are in-role green behaviour and extra-role green behaviour. Most previous literature explored GHRM as a whole instead of examining the practices separately.

Hence, this study extends the limited literature on the relationships between each GHRM practice by separating in-role and extra-role green behaviour. This approach offers researchers an in-depth look at GHRM. For instance, employee empowerment was shown to have positive effects on both in-role and extra-role green behaviour, while green performance management and appraisal only showed a significant effect on extra-role green behaviour.

Secondly, the current study contributes to the conceptualisation of GHRM practices through the extension of the AMO theory. This theory has been applied in predicting employee green behaviour (Fawehinmi *et al.*, 2019) and environmental performance (Anwar *et al.*; 2020, Muisyo & Qin, 2021) in the GHRM context. However, it has been seldom used in predicting in-role and extra-role green behaviour involving the influence of various GHRM practices, such as green performance management and appraisal and green empowerment.

Thirdly, this study also contributes to the literature on GHRM practices and green behaviour by focusing on employees at public universities in Malaysia. As mentioned above, universities or higher education institutions are considered usual employers of highly educated professionals. They play a significant role in addressing the current environmental issues and transforming society towards sustainability. Hence, this study should help to increase the understanding of the ways and approaches to enhance the green behaviours of employees in higher education institutions and in society (Fawehinmi *et al.*, 2019).

This study has significant implications for public universities in Malaysia in terms of promoting employee green behaviour. The findings of this paper reveal that higher education institutions should integrate GHRM practices efficiently to support green behaviour and cultivate a green culture atmosphere. It is important that higher education institutions implement suitable and relevant GHRM practices to develop their employees' awareness and environmental

knowledge. Therefore, this research strongly recommends that through their HR operations, higher education institutions in Malaysia should strengthen their green performance management and appraisal, as well as their green empowerment.

The GHRM practices of higher education institutions should include a system of evaluating and appraising the green performance of employees that is linked to their environmental activities and performance. Organisational environmental management objectives should be incorporated into the performance evaluation system to provide employees with regular feedback, which would encourage them to improve their environmental performance. A performance management system can be also improved by including environmental performance in the evaluation process. Furthermore, employees should be regularly involved in environmental management activities and encouraged to provide feedback to ensure the development of the employees' environmental behaviour and knowledge. Green opportunities can be further provided to engage the employees in green planning and decision making, as well as allow them to adopt basic leadership roles.

Limitation and Future Research

There are some limitations to this current study, which provide opportunities for future research. First, only 126 responses were collected for the valid sample used in this paper, with a response rate of only 12.7%. This was considerably below the targeted sample size. As the study was conducted during the COVID-19 pandemic and lockdown, physical contact was not allowed. Hence, only the online questionnaire could be distributed. There was a lack of quantity in the sample size, which was the key restriction in terms of its generalisability. It is suggested that this study should be conducted again after the pandemic to acquire more representative and objective results.

A mediator or moderator was not included in this study to investigate the relationship between the GHRM practices and employee green behaviour. Based on the current results, only three hypotheses were accepted: H3b, H5a and H5b. GHRM practices affect employee green behaviours through certain underlying mechanisms. Hence, future research should integrate a mediator or moderator (such as

environmental knowledge, psychological green climate, environmental passion or ethical leadership) to further explain how GHRM practices affect employee green behaviour.

The current study focused only on the population of one higher institution. The data collected could not represent other universities as they have different proportions, such as culture, size, policies and regulations. In addition, other universities in Malaysia are also making considerable efforts to transform their settings into sustainable green campuses. Hence, future research should also include other higher education institutions to obtain more generalised findings.

Conclusion

This paper investigated the impact of GHRM practices on both in-role and extra-role green behaviour by extending the AMO Theory. The results indicated that all the variables were strongly correlated. The results also showed that green performance management and appraisal had a positive effect on extra-role green behaviour, while green empowerment had a positive effect on both in-role and extra-role green behaviour. These study findings facilitate a deeper understanding of how higher education institutions can promote green behaviour among their employees. This is consistent with the effort of promoting environment awareness in employee behavior to enhance environment, society and governance (ESG) concept in achieving sustainability development goals (SDG) by the year 2030. Employees and their green behaviours are valuable resources for creating a responsible society towards positive impacts on the environment, economic development and sustainability. By having good GHRM practices and governance in higher institutions, these could also cultivate organisational culture that concerns the environment and sustainability among its employees and their students. It is hoped that not only in-role behaviour is flourished as it is formally developed at the workplace, but also similar to extra-role of green behaviour which is voluntary and can be instilled outside the working environment. Both types of green behaviour are essential for achieving organisational green missions and culture. Furthermore, employees in higher institutions have to set a good example of green behaviour to their family, society and community, in order to encourage all parties to

get involved for a better future by 2030. The United Nation's missions in SDG are to fight zero hunger, protect the planet from waste and climate change, and all developments of economics and social impact should be balanced and considered together with the environment impact. The higher institutions surely can make active roles in cultivating the green behaviour and innovation practices among their employees, students and stakeholders by having the right attitude, abilities, motivation and opportunities which contribute to greater success in way forward of the year 2030 and the world in 2050 (TWI2050).

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