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Green Human Resource Management for organisational citizenship behaviour towards the environment and environmental performance on a university campus

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ABSTRACT

The slow and inefficient environmental performance of universities is drawing the attention of scholars towards behavioural change in employees rather than just relying on technological upgrades. Drawing upon the Ability-Motivation-Opportunity (AMO) theory, the purpose of this study is first to examine the influence of Green Human Resource Management (HRM) practices (green competence building practices, green motivation enhancing practices, and green employee involvement practices) on the organisational citizenship behaviour towards the environment (OCBE) of academic staff and, in turn, its impact on the environmental performance. Second, the mediating impact of OCBE between each of Green HRM practices and environmental performance is assessed. The data were collected from September until November 2017 on two campuses of a renowned public research university in Malaysia. Using quantitative research design, a structured questionnaire was used among the academic staff of the university. Convenience sampling was used to select the respondents from both campuses, and the Partial Least Squares (PLS) modelling technique was used to analyse the data, which comprised 122 respondents. Overall findings showed that three sets of Green HRM practices based on the Ability-Motivation-Opportunity framework had a significant impact on OCBE. Furthermore, OCBE had a significant relationship with environmental performance. For the mediation analysis, the results showed that OCBE exhibited by academic staff acted as a means through which the Green HRM practices of a university can positively influence the environmental performance of a university campus. The originality of this study rests in shedding light on Green HRM practices in the higher education sector and highlighting the critical role of academic staff's environmentally friendly behaviour for improving the environmental performance of a university.

1. Introduction

Globally, researchers and environmental policymakers have agreed upon the fact that the reasons for environmental deterioration like resource deficits, increasing pollution and the loss of biodiversity are deep-rooted into human behaviour (Mtutu and Thondhlana, 2016; Renwick et al., 2013). In response to this, many organisations are inclined towards ensuring that their daily operations are less harmful to the environment through the

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implementation of environmental management systems (EMS) or green initiatives. Hence, an emerging need exists for understanding and shaping employee behaviour to minimize the negative environmental impacts of their activities in organisations.

In response to these concerns, the role of Green Human Resource Management (HRM) in influencing green employee behaviour in the workplace has emerged as a topic of study (Dumont et al., 2016). Green HRM is the inclusion of environment consciousness within the whole HRM process of hiring, training, rewarding and developing a green workforce that understands and values environment-friendly values, practices, and initiatives. Besides, contemporary researchers supporting the role of human resources in environmental performance have concentrated on environment-friendly employee behaviour as a crucial factor in successfully implementing environmental policies at the workplace (Kim et al., 2017).

The pro-environmental behaviours of employees, which are termed Organisational Citizenship Behaviour towards Environment (OCBE), are individual voluntary actions that lead to effective environment performance in an organisation (Boiral and Paillé, 2012). The environment-friendly behaviour of employees is becoming essential for all organisations, no matter the sector, including the tertiary education sector (Rayner and Morgan, 2017). Currently, Green HRM studies have focused more on the corporate sector as compared to educational institutes (Tairu, 2018). To name only a few, Green HRM has been studied in the context of multinational companies (Haddock-Millar et al., 2016), healthcare (Pinzone et al., 2016), sports complexes (Gholami et al., 2016), and manufacturing firms (Nejati et al., 2017; Yong et al., 2019a, b; Yusliza et al., 2019a, b; Yusliza et al., 2017). However, a research gap in Green HRM research exists in the context of sustainable higher education institutes, which is an emerging area of research (Dyer and Dyer, 2017; Rath and Schmitt, 2017). Besides, less attention has been paid to environmental management in Asian countries that are more prone to pollution and environmental degradation. However, owing to economic and environmental sustainability issues in developing Asian countries, studies should be developed to fill in the literature gap (Renwick et al., 2013).

As an emerging economy, Malaysia has pressing environmental issues. For example, the country is experiencing a more than 6% average annual growth of CO^2 emissions that is close to China's 7.42% emissions annual growth rate. Nonetheless, few studies of Malaysia have explored the ways to create environmental sustainability through Green HRM (Yusliza et al., 2019a). In addition, Saadatian et al. (2009) have claimed that Malaysian research universities have already taken responsibility for environmental sustainability and are engaged in initiating eco-friendly practices in university campuses, few comprehensive studies have highlighted the current state of sustainability efforts in institutions of higher education in the country. Mohamed et al. (2020) posited that in the higher education sector, employee behaviour is crucial in reducing environmental degradation and ensuring a successful environmental performance, which has a ripple effect on society.

Although universities are relatively lower in emitting pollution than the corporate sector, they bear considerable responsibility for environmental awareness and research and educating current and future generations about the importance of pro-environmental behaviour (Rayner and Morgan, 2017). Additionally, the need for environmental sustainability on university campuses has gained attention because their activities and operations have direct and indirect environmental impacts in terms of material consumption, waste generation, excessive circulation of people and vehicles on campus and usage of electricity (Alshuwaikhat and Abubakar, 2008). Moreover, with the diversification of academic activities and the increased use of IT and sophisticated equipment, universities have become major consumers of resources like energy and paper (Altan, 2010). Increased environmental pressure and the rising costs of resource consumption have spurred universities to promote pro-environmental behaviour for the sustainable use of resources (Mtutu and Thondhlana, 2016).

Realizing their environmental responsibility, an increasing number of universities are incorporating environmental management aspects into their policies, educational curriculum, research projects, building design, technology and other campus activities (Mikulik and Babina, 2009) and have been engaged in environmental declarations. Nonetheless, their progress toward sustainability remains very slow (Lozano et al., 2013). Until recently, environmental initiatives in universities have placed a greater emphasis on technical dimensions of environmental performance like an assessment of Greenhouse Gas (GHG) emissions and energy usage but have paid little attention to the behavioural aspects of environmental performance management in universities (Levy and Marans, 2012). The study of Green HRM's role on employee behaviour remains in its infancy (Yong et al., 2019b) and needs to be studied in a different organisational context, such as the higher education institutions. Tairu (2018) has highlighted that the greening of a campus requires the greening of HRM practices in a university.

According to Lozano (2006), a globally substantial proportion of university leaders and faculty member are unaware of sustainable development concepts and its implementation in universities and putting little effort in incorporating sustainability principles into courses, research and outreach programs. Furthermore, Lozano (2006) highlighted main stakeholders in universities, including academic directors, professors and students. Ideally, the concepts of sustainable development should be incorporated into the policies, procedures and learning of all members of these stakeholders; in practice, this is almost impossible in the early stages of incorporating environmental sustainability into the university's system. In addition, applying the multiplier effect can help in the early adoption of sustainability procedures; this can be achieved by identifying and encouraging some of the individuals involved in small projects to share their experiences and knowledge. The multiplier effect can also be achieved by educating educators to educate other educators and thus create a multiplier effect (Lozano, 2006). Identifying the factors that support sustainable development in universities, recently, Fichter and Tiemann (2018) emphasised that role of key persons in university management and faculty is of paramount importance as initiators, promoters and networkers.

In the emerging literature of campus environmental sustainability, some researchers have focused on top-down change from administrators, and others have emphasized bottom-up student-led green initiatives. However, these perspectives have neglected the consideration of an institution's middle-level participants, who are academic staff, and their roles in campus sustainability (Brinkhurst et al., 2011). Thompson and Green (2005) stated that the commitment and involvement of academic staff in university is an essential factor for institutionalizing environmental sustainability practices in universities. Environmental sustainability in higher education institutes requires adjustments in teaching courses and is also highly dependent on the capabilities of academic staff and their willingness to support such initiatives (Hegarty, 2008).

The role of academic staff is influential in the process of developing campus sustainability because of their knowledge, technical skills, and their direct relationships with the institution's top (management) and bottom (students). Being potential but oft unrecognized players in sustainability, a need exists to support and encourage the pro-environmental behaviour of academic staff for

achieving lasting progress towards campus environmental performance (Brinkhurst et al., 2011). Consequently, this current study focuses on Green HRM practices and academic staff behaviour for improving sustainability in higher education institutes.

The contributions of this current study are:

- No study, to the best of our knowledge, has so far explored the relationships herein considered;
- Examining the role of the tertiary education sector in environmental sustainability, which is a neglected sector;
- Examining the role of OCBE of academic staff in improving the environmental performance of a university;
- Examining the mediating influence of academic staff OCBE for implementing Green HRM practices to improve the environmental performance of a university; and
- Providing empirical evidence from Malaysia on the AMO framework and theoretical model in this study.

1.1. Research objective

The objective of this study was to examine the mediating effect of OCBE between Green HRM and environmental performance. To achieve this goal, a survey was conducted from September 2017 to up November 2017 among 122 academicians from two campuses of Universiti Teknologi Malaysia (UTM).

The remainder of this paper is organised as follows: Section 2 discusses the theoretical background and outlines the hypotheses. The details of the research methodology will be explained in Section 3, followed by a presentation of the results and analysis in Section 4. Section 5 will elaborate on the theoretical and practical implications, limitations, and possibilities for future research.

2. Theoretical background and hypotheses development

The greening of HRM and resulting environmental outcomes can be better comprehended in light of Ability-Motivation-Opportunity (AMO) theory, which is the most dominant theory in understanding the impact of HRM practices on organisational performance in empirical studies (Appelbaum, 2000; Boselie et al., 2005). AMO theory explains that High-Performance Work Practices (HPWS) are a set of distinct but interrelated HR practices that are grouped on based of three core aspects: ability, motivation, and opportunity (Appelbaum, 2000). Abilities are based on a set of practices including recruitment and selection, and training and development programs that ensure knowledge and skills required of employees to perform specific tasks. Similarly, motivation is based on practices such as performance appraisal and financial and non-financial incentives that are meant to boost the efforts of employees for accomplishing performance targets. Lastly, opportunity is a bundle of practices comprised of involvement, knowledge sharing and autonomy-enhancing practices that foster employee participation in activities (Marin-Garcia and Tomas, 2016).

The AMO framework that Appelbaum (2000) proposed explains that HRM practices that enhance employee's abilities, their motivation to do work and involvement in available opportunities lead to the organisational citizenship behaviour of employees, which further contribute to organisational performance. Hence, organisational citizenship behaviours of employees act as an underlying mechanism between HPWS and organisational performance (Appelbaum, 2000; Marin-Garcia and Tomas, 2016).

Using the lens of AMO theory, scholars have investigated Green HRM in various sectors (i.e., Cheema and Javed, 2017; Pham et al., 2019; Pinzone et al., 2016; Ragas et al., 2017, 2013; Singh et al., 2020; Yu et al., 2020). For instance, Fawehinmi et al. studied the role of GHRM, environmental knowledge and green behaviour of academics in public research universities. Cheema and Javed (2017) examined the effects of corporate social responsibility, Green HRM and sustainable environment in textile sector. Pinzone et al. (2016) studied Green HRM practices, collective affective commitment to environmental management change, and collective organisational citizenship behaviour toward the environment in the health care sector. Pham et al. (2019) investigated the relationship between green training, green employee involvement, green performance management, and OCBE in the hospitality industry. Yu et al. (2020) conducted a study in automobile industry on GHRM, internal green supply chain management, environmental cooperation with customers and suppliers. Ragas et al. (2017) examined the relationship between implementation of GHRM practices, green lifestyle, and job performance in various private industries. Singh et al. (2020) examined how Green HRM, interplays on to the linkages amongst green transformational leadership, green innovation, and environmental performance in manufacturing sector small and medium enterprises.

Although AMO theory is the most comprehensive in understanding Green HRM contribution towards environmental performance, scant studies have applied the complete AMO framework in their research models. The linking mechanism between Green HRM practices and environmental performance through organisational citizenship behaviour is often neglected. Harvey et al. (2013) and Ren et al. (2017) have highlighted the need for studying the mediating processes through which Green HRM can produce long-term performance outcomes. Thus, this study is addressing two literature gaps 1) extending Green HRM research to university context, and 2) examining the mediating role of the academic staff's OCBE between a set of Green HRM practices and environmental performance of university based on AMO framework.

2.1. The relationship of green competence building practices and OCBE

Green competence building practices refer to green recruitment and selection, and green training and development programs for improving the environmental awareness and skills of employees (Teixeira et al., 2012) so that employees become able to identify environmental problems and take necessary actions to reduce negative environmental impacts at workplace (Vidal-Salazar et al., 2012).

Tang et al. (2017) said that Green recruitment and selection comprise three aspects, including employee green awareness, green employer branding, and green criteria for candidate selection. Employee green awareness is a core aspect of a green recruitment process because if an employee's environmental values match with that of the organisation, then he/she is more likely to respond positively towards the environmental concerns of their organisation. According to Renwick et al. (2013), job seekers prefer to work in organisations that have a good environmental reputation. Similarly, recruiters prefer to hire a candidate with environmental knowledge and positive environmental attitude because he/she is more willing to engage in eco-initiatives (Jabbour et al., 2010).

Also, environmental training and development programs are essential for improving an employee's skills and attitudes towards environment management (Teixeira et al., 2012). Green training helps improve an employee's understanding about the importance of environmental protection, enhances his/her ability to adapt to change and helps him/her to learn basic ways of conserving energy and reducing waste at the workplace (Jabbour, 2015). Green training provides knowledge management that helps in linking

environmental knowledge with environmental behaviour by providing abilities to solve environmental problems.

Based on the above arguments, the following hypothesis is posited:

H1. Green competence building practices is positively related to OCBE.

2.2. The relationship of green motivation enhancing practices and OCBE

Green motivation enhancing practices, including performance appraisal and rewards, is aimed at motivating an employee to align his/her behaviours with an organisation's environmental goals (Harvey et al., 2013). Incorporating environmental responsibilities in a performance management system provides an employee with clear information about what he/she is expected to do in environment management. Providing regular feedback to an employee about environmental performance helps him/her in improving his/her knowledge, skills, and ability in environment management (Jackson et al., 2011). In addition, rewarding an employee for good environmental performance enhances his/her commitment towards environmental responsibility (Daily and Huang, 2001) and encourages him/her to engage in organisational citizenship behaviour towards the environment (Govindarajulu and Daily, 2004).

Green rewards for promoting environmental citizenship behaviour among employees may include financial and non-financial benefits such as incentives for recycling, allowing flexible work schedules and telecommuting to reduce travel cost, providing free bicycles or pollution-free vehicles or linking promotion opportunities with environmental performance (Jackson et al., 2011). Furthermore, a combination of both monetary and non-monetary rewards is seen as more effective in boosting employee engagement in environmental activities (Renwick et al., 2013). However, for those employees whose performance does not comply with the green objectives of an organisation, using disincentives as negative reinforcement can push an employee to become more responsible towards the environmental concerns of that organisation (Tang et al., 2017).

Thus, the following hypothesis is posited:

H2. Green motivation enhancing practices is positively related to OCBE.

2.3. The relationship of green employee involvement practices and OCBE

Green employee involvement practices refer to providing opportunities to foster an employee's voice in environment management and suggest a solution for environmental problems in an organisation (DuBois and Dubois, 2012). Researchers support that empowering employees in decision making for environment management enhances the self-control and problem-solving skills of an employee (Govindarajulu and Daily, 2004; Renwick et al., 2008). Involvement opportunities help in developing a pro-environmental culture in an organisation through open discussions, the exchanging of ideas and the sharing of various viewpoints on environmental aspects (Alt and Spitzeck, 2016).

Tang et al. (2017), has emphasized that articulating a clear environmental vision and disseminating information through various formal and informal communication channels guides employees to engage in environmental initiatives. In addition, the use of green teams is also an essential factor for organisations aiming at improving their environmental management practices. Teamwork provides an opportunity for employees to work together, share knowledge, and propose new solutions for complex problems (Daily et al., 2007).

So, the following hypothesis is posited:

H3. Green employee involvement practices is positively related to OCBE.

2.4. The relationship between OCBE and environmental performance

According to Roy et al. (2001), OCBE is an essential factor for the successful implementation of environmental management systems and integrating environment policies with workplace practices. Boiral and Paillé (2012) have described pro-environmental behaviours under three dimensions, i.e., eco-helping, eco-civic engagement, and eco-initiatives. First, eco-initiatives are personal level initiatives of employees for reducing negative environmental impacts at the workplace like recycling paper, putting rubbish in proper dustbins, and avoiding waste of resources. Second, eco-civic engagement comprises organisational level initiatives of employees like participating in green events and projects that an organisation has created, promoting the green reputation of an organisation and voluntary joining organisation's environmental activities. Finally, eco-helping includes encouraging co-workers to care about the environment. This type of behaviour is based on mutual assistance of employees for environmental problems of an organisation like the voluntary sharing of ideas and expertise with each other and teamwork for the identification of pollution sources and preventive solutions.

Researchers have studied the OCBE of employees in different sectors. For example, Boiral et al. (2015) studied the impact of managers' OCBE in manufacturing companies and found a significant relationship between a manager's engagement in OCBE and the environmental management practices of his/her organisation. Similarly, Paillé et al. (2014) examined the pro-environmental behaviours of frontline workers in a Chinese manufacturing organisation and empirically proved that OCBE positively influences the environmental performance of that organisation.

Although the studies mentioned above have examined the OCBE-Environmental performance relationship in the context of manufacturing organisations, this link has not been tested for academic staff's OCBE for the environmental performance of a university. According to Rayner and Morgan (2017), it is unknown whether employees in universities engage in either more or less environmental behaviours compared to employees working in the industrial sector. Thus, based on the aforementioned discussion, the following hypothesis is formulated for this study.

H4. OCBE is positively related to environmental performance.

2.5. The mediating role of OCBE

In previous literature, researches have argued that organisational performance does not result directly from applying HR practices, but rather from the discretionary efforts of employees (Morrison, 1996). The role of HR practices is to create a context that fosters organisation citizenship behaviour among employees such that, when employees go above their role requirements to put forth an extra effort, help their co-workers and support organisational activities, then the level of organisational performance should be high (Messersmith et al., 2011). Similar to the role of OCB between HR-performance relationship, OCBE is proposed as a linking

mechanism between HR-environmental performance relationship (Paillé et al., 2014).

Paillé et al. (2014) studied the relationship between strategic human resource management, OCBE, and environmental performance. The results of the study found that HRM at the strategic level contributes to the environmental performance of an organisation, while OCBE was found to mediate the relationship between strategic HRM and environmental performance. Furthermore, Alt and Spitzeck (2016) collected data from environmental managers in 170 cross-industry firms and found that high-performance HR practices such as employee involvement capabilities are translated into higher environmental performance through the manifestation of OCBE among employees. Moreover, Pinzone et al. (2016) proposed that Green HRM practices stimulated OCBE, while Daily et al. (2009) noted that OCBE leads to environmental performance. Hence, OCBE is advocated as a means to translate Green HRM practices to improvements in environmental performance.

The above-mentioned studies support the mediating role of OCBE. However, Paillé et al. (2014) tested mediation of OCBE between strategic HRM and environmental performance rather than Green HRM and environmental performance. Similarly, Alt and Spitzeck (2016) focused only on the involvement capabilities of employees and did not include other HR practices. OCBE has not been yet tested empirically in relationship between Green HRM and Environmental performance, specifically in a university context. Thus, the following hypotheses are posited.

H5. OCBE mediate the relationship between green competence building practices and environmental performance.

H6. OCBE mediate the relationship between green motivation enhancing practices and environmental performance.

H7. OCBE mediate the relationship between green employee involvement practices and environmental performance.

Guided by the AMO framework, the theoretical discussion, the empirical results of previous studies and the proposed hypotheses mentioned above, the conceptual model for this study is shown in Fig. 1 below.

3. Research methodology

3.1. Sample and data collection

The five largest research universities in Malaysia have implemented campus greening initiatives that the Institute for Environment and Development (LESTARI) manages, which were established for boosting sustainability in academia and bridging researchers with policymakers (Reza, 2016). Previous studies have highlighted the environmental initiatives of Universiti Malaya, Universiti Putra Malaysia, Universiti Sains Malaysia, and Universiti Kebangsaan Malaysia (Hussin and Kunjuraman, 2017; Saadatian et al., 2009, 2011) but neglected the green initiatives at UTM. However, UTM is also striving best to achieve campus sustainability goals. According to Zen et al. (2016), UTM is the first university in Malaysia that has introduced the concept of living laboratories that is meant to implement sustainability initiatives including green office, sustainable food arcade, and sustainable energy management.

A cross-sectional survey was conducted with the academic staff of UTM, and a convenience sampling technique was utilized. Academic staff members from different faculties who were readily accessible and willing to participate in this research comprised the sample for this study. Data were collected between September 2017 and November 2017.

To determine the sample size for structural equation modelling, power analysis is the most recommended approach in the PLS-SEM literature (Hair et al., 2017). According to Hair et al. (2016), the minimum sample requirement should be calculated using power analysis based on the constructs in a model with the greatest number of predictors. Hair et al. (2016) recommended the rule of thumb that Cohen (1992) developed for statistical power analysis of multiple regression models and the determination of sample size based on 80% statistical power, minimum R^2 value, significance level and complexity of path model. In PLS path model for this study, a minimum sample size of 103 was required to detect a minimum R^2 value of 0.10 at the suggested statistical power of 80% and 5% significance level.

Three hundred questionnaires were distributed personally to academic staff at their offices, of which 122 useable responses were collected. The effective response rate was 40.6% (122 useable responses). According to Mellahi and Harris (2016), no specific agreed-upon minimum response rate exists, and different academic views about the response rate. For example, Malhotra and Grover (1998) said that a response rate of less than 20% was undesirable for research, and Goudy (1976) suggested that an acceptable range for response rate could vary between 30% and 70%. In this current study, the 122 total responses fulfil the minimum sample size requirement for PLS-SEM analysis, as it is above the minimum threshold of 103, as Cohen (1992) suggested using power analysis.

3.2. Measures

The measurement items for all constructs were adapted from the literature. As the purpose of this study is to identify the relationship among Green HRM practices, OCBE, and Environmental performance based on academic staff's perception, the unit of analysis was at the individual level. Measurement items are provided in the Appendix.

The construct of Green competence building practices is formed by two dimensions, including green recruitment and green training. Similarly, the construct of Green motivation enhancing practices is based on two dimensions, including green performance and green rewards. All measurement items for green recruitment, green training, green performance, green rewards, and green employee involvement practices were adapted from Tang et al. (2017). A 5-point Likert scale ranging from 1 (not at all) to 5 (to a very great extent) was used. A total of 17 items were taken from Tang et al. (2017). An example of these items is: "My University provides environmental awareness programs or workshops to improve my environmental knowledge."

To measure organisational citizenship behaviours towards the environment, the 10-item scale that Boiral and Paillé (2012) developed was selected. These ten items cover three dimensions of OCBE, including eco-initiatives, eco civic engagement, and eco helping. The items were adapted to replace the word "organisation" with "university." An example of these items is, "I actively participate in environmental events organised by my university." Responses were rated on 5-point Likert scale ranging from 1 (Not at all) to 5 (To a very great extent).

Fourteen items were chosen from Larrán Jorge et al. (2016) to measure environmental performance on the university campus. Environmental performance dimensions included environmental policy and management, reducing energy consumption, reducing water consumption, waste management, reducing pollution, compliance with normative, biodiversity, and, environmental awareness, and research. An example of the items is "Energy conservation practices are promoted in my campus." A 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) was used to rate the responses.

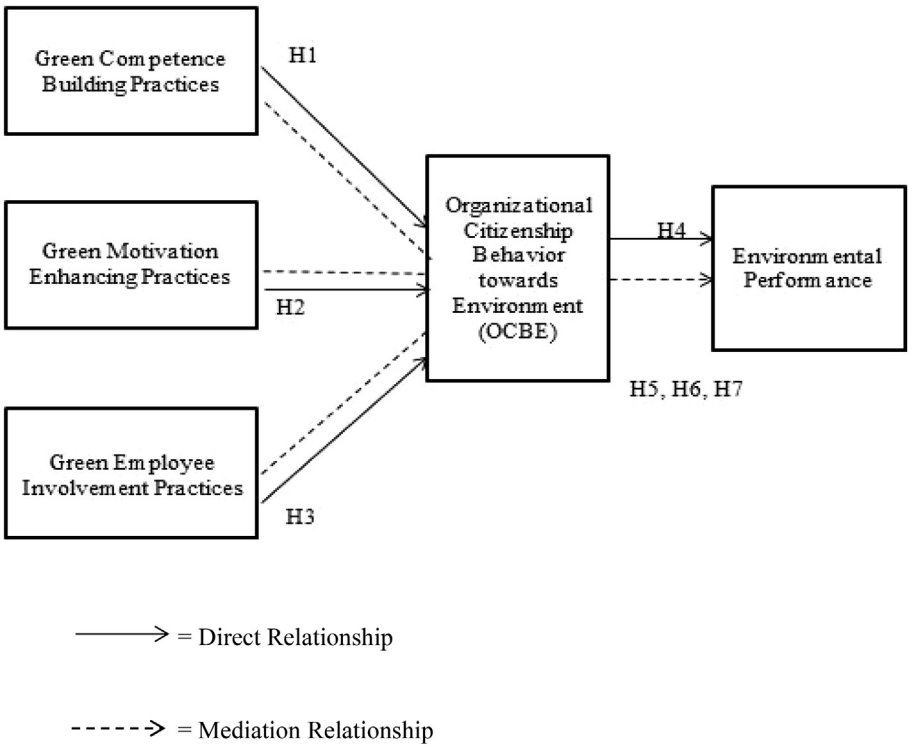

Fig. 1. Conceptual model.

4. Results

4.1. Demographic profile of the respondents

The demographic profile shows that respondents possessed adequate experience, education, and the correct position to respond to this study. Among the respondents, both males and females had approximately equal representation, including 49.2% male and 50.9% female academic staff. About 27.9% of the respondents were above the age of 46 years; only 4.9% of respondents were within the age range of 26–30 years. Most of the respondents held a Ph.D. degree (92.5%), while only 9% of respondents had a master's degree. Comparing the working position of respondents, 65% of respondents were senior lecturers, while 17.5% were associate professors, 10% were professors and 7.5% were lecturers. The analysis also showed that the highest percentage of respondents (24.2%) had more than 20 years of working experience while a few respondents (4.2%) had working experience of less than one year.

4.2. Data analysis

Partial least squares (PLS) modeling using the SmartPLS 3.2.8 version (Ringle et al., 2015) was used as the statistical tool to examine the measurement and structural model as it does not require an assumption of normality and survey research is often not normally distributed (Chin et al., 2003). Because the study used a complex model with mediation, regression using SPSS was not suitable as the model could not be tested together. Thus, structural equation modeling was used. Two choices exist to do structural equation modeling, either the use of covariance-based (CB-SEM) modeling utilising software like AMOS, MPLUS, and LISREL or the use the variance-based modeling utilising software like WarpPLS and SmartPLS. CB-SEM. Recently, scholars are increasingly using SmartPLS for the analysis of Green HRM studies (Fernando et al., 2019; Pham et al., 2019; Yong et al., 2019a, b; Yong and Yusliza, 2016; Yusliza et al., 2019a, b; Yusliza et al., 2017).

Henseler et al. (2016) and Hair et al. (2019a; 2019b) highlighted the following advantages of using PLS-SEM:

- PLS-SEM can utilise a small sample size.
- Models with formatively specified constructs should be analysed with PLS-SEM.
- PLS-SEM is superior to regression analysis when assessing mediation.

Partial least squares modeling was adopted as the study had a complex model with 4 s-order constructs. The four second-order constructs were: 1) Green Competence Building Practices (2 dimensions), 2) Environmental Performance (8 dimensions), 3) Organisation Citizenship Behaviour towards Environment (3 dimensions), and 4) Green Motivation Enhancing Practices (2 dimensions). The study also had a mediation model. Hair et al. (2019b) and Urbach and Ahleman (2010) clearly stated that PLS-SEM is the most suitable for a complex model in which conditions relating to sample size, independence, or normal distribution are not met, and/or prediction is more critical than parameter estimation. Thus, the use of PLS-SEM in this study was justified.

Because the data were collected using a single source, the issue of Common Method Bias was addressed by testing the full collinearity following the suggestions of Kock and Lynn (2012), and Kock (2015). In this method, all the variables will be regressed against a common variable, and if the VIF is $\leq$ 3.3, then no bias from the single source data is present. The analysis yielded a VIF of less than 3.3; thus, single-source bias was not a serious issue with these data (Table 1).

4.2.1. Measurement model

Following the suggestions of Anderson and Gerbing (1988), the

Table 1
Full collinearity testing.

COM	EP	INV	MOT	OCBE
2.259	1.578	2.481	2.388	1.694

Note: COM = Green Competence Building Practices, EP = Environmental Performance, INV = Green Employee Involvement Practices, MOT = Green Motivation Enhancing Practices, and OCBE = Organisational Citizenship Behaviour towards Environment.

model developed was tested using a two-step approach. First, the measurement model was examined to test the validity and reliability of the instruments used following the guidelines of Hair et al. (2019) and Ramayah et al. (2018). Then, the structural model was run to test the hypothesis developed.

For the measurement model, the loadings, average variance extracted (AVE), and the composite reliability (CR) were assessed. The values of loadings should be ≥ 0.5, the AVE should be ≥ 0.5, and the CR should be ≥ 0.7. As shown in Table 2, the AVEs were all higher than 0.5, and the CRs were all higher than 0.7. The loadings were also acceptable, with only one or two loadings less than 0.708 (Hair et al., 2019). Because the study had 4 s-order constructs, namely, 1) Green Competence Building Practices, 2) Environmental Performance, 3) Organisation Citizenship Behaviour towards Environment, and 4) Green Motivation Enhancing Practices, the validity and reliability of the second-order constructs were assessed as shown in Table 3. The second-order measurements were also valid and reliable.

Then, in step 2, the discriminant validity using the HTMT criterion was assessed as Henseler et al. (2015) suggested and Franke and Sarstedt (2019) updated. The HTMT values should be ≤ 0.85 (the stricter criterion) or ≤ 0.90 (the mode lenient criterion). As shown in Table 4, the values of HTMT were all lower than the stricter criterion of ≤ 0.85. As such, the conclusion can be made that the respondents understood that the nine constructs were distinct. Taken together, these validity tests show that the measurement items were both valid and reliable (see Table 5).

Table 2
Measurement model for the first order constructs.

First Order Constructs	Items	Loadings	AVE	CR
Green Recruitment	GR1	0.799	0.665	0.856
	GR2	0.785		
	GR3	0.860		
Green Training	GT1	0.855	0.760	0.905
	GT2	0.884		
	GT3	0.876		
Green Performance	GP1	0.799	0.601	0.818
	GP2	0.738		
	GP3	0.787		
Green Rewards	GRW1	0.693	0.648	0.846
	GRW2	0.847		
	GRW3	0.864		
Green Employee Involvement Practices	GEIP2	0.847	0.685	0.897
	GEIP3	0.770		
	GEIP4	0.858		
	GEIP5	0.833		
Eco-initiatives	EI1	0.800	0.634	0.839
	EI2	0.819		
	EI3	0.769		
Eco-civic engagement	ECE1	0.845	0.691	0.899
	ECE2	0.853		
	ECE3	0.786		
	ECE4	0.840		
Eco-helping	EH1	0.902	0.846	0.943
	EH2	0.935		
	EH3	0.922		
Environmental policy and management	EPM1	0.948	0.881	0.937
	EPM2	0.930		
Reducing energy consumption	REC1	0.806	0.672	0.804
	REC2	0.833		
Waste management	WM1	0.859	0.715	0.834
	WM2	0.832		
Reducing pollution	RP1	0.810	0.633	0.837
	RP2	0.702		
	RP3	0.866		
Env. awareness & research	EAR1	0.901	0.793	0.885
	EAR2	0.880		
Biodiversity	BIOD	SIM	NA	NA
Compliance with normative	CAN	SIM	NA	NA
Reducing water consumption	RWC	SIM	NA	NA

Note: SIM = Single Item Measure; NA = Not Applicable.

4.2.2. Structural model

Following Hair et al. (2019) the path coefficients, the standard errors, t-values and p-values for the structural model using a 5,000-sample re-sample bootstrapping procedure were reported (Ramayah et al., 2018). Also, based on the criticism of Hahn and Ang (2017) that p-values are not a good criterion for testing the significance of hypothesis a combination of criteria including p-values, confidence intervals, and effect sizes were used. Table 2 shows a summary of the criteria used to test the hypotheses developed.

First, the effect of the three predictors on OCBE was tested. The R^2 was 0.409 ($Q^2 = 0.201$), which shows that all the three predictors explained 40.9% of the variance in OCBE. Green Competence ($\beta = 0.243$, $p < 0.01$), Green Motivation ($\beta = 0.273$, $p < 0.01$) and Green Employee Involvement ($\beta = 0.206$, $p < 0.01$) were all positively related to OCBE, thus H1, H2 and H3 were supported. Next, the effect on OCBE on Environmental Performance was examined. This had an R^2 of 0.169 ($Q^2 = 0.073$), which indicates that OCBE explains 16.9% of the variance in Environmental Performance which gives support for H4.

To test the mediation hypotheses, bootstrapping the indirect effect was conducted following the suggestions of Preacher and Hayes (2004, 2008). If the confidence interval does not straddle a 0, then the conclusion can be made that significant mediation exists. As shown in Table 6, Competence → OCBE → EP ($\beta = 0.100$, $p < 0.05$), Motivation → OCBE → EP ($\beta = 0.112$, $p < 0.05$) and Involvement → OCBE → EP ($\beta = 0.085$, $p < 0.1$) were all significant. The confidence intervals bias-corrected 95% also did not show any intervals straddling a 0, thus confirming the findings. Thus, H5, H6, and H7 were also supported.

5. Discussion

This study provided insights into Green HRM, which is a new area of research in the field of human resource management. Although much existing literature deals with the implementation of Green HRM in the corporate sector, a research gap exists in the study of Green HRM in the context of higher education, especially in Malaysia. In addition to human resource management literature, this study contributes to the literature of sustainable higher education by shedding light on what green initiatives have been taken in a university setting to improve environmental behaviour by focusing on human resource practices, which is a relatively unexplored area from a relational perspective. The findings of the study are of interest for both academicians and practitioners. The following presents the theoretical and managerial implications of this study.

5.1. Theoretical implications

From a theoretical perspective, this study contributes to the literature by advancing knowledge in green management that has emerged as a contemporary global concern. A growing number of

Table 3
Measurement model for the second-order constructs.

Second-Order Constructs	Indicator	Loadings	AVE	CR
Environmental Performance	EAR	0.835	0.607	0.925
	BIOD	0.795		
	CN	0.720		
	REC	0.769		
	EPM	0.728		
	RP	0.868		
	WM	0.754		
	RWC	0.750		
Green Motivation Enhancing Practices	GP	0.893	0.803	0.891
	GRW	0.899		
Green Competence Building Practices	GR	0.860	0.775	0.873
	GT	0.900		
Organisation Citizenship Behaviour towards Environment (OCBE)	ECE	0.929	0.733	0.890
	EH	0.901		
	EI	0.723		

Table 4
Discriminant validity (HTMT).

	1	2b	3	4	5
1 Green Competence					
2 Environmental Performance	0.521				
3 Green Employee Involvement	0.677	0.549			
4 Green Motivation	0.655	0.533	0.693		
5 OCBE	0.561	0.411	0.560	0.575	

scholars have advocated the implementation of Green HRM policies for the achievement of environmental goals of an organisation, but little has been explored for the linking mechanism between Green HRM practices and environmental performance. This current study extends research on the conceptualization of Green HRM practices from the lens of the AMO theoretical framework and provides answers for how Green HRM can be linked to environmental performance via organisational citizenship behaviour towards the environment (OCBE).

In terms of the relationship between Green competence building practices and OCBE, the results found a significant relationship between these two variables. The findings suggest that environmentally conscious employees are more likely to behave in an environment-friendly manner at workplace voluntarily. Yong et al. (2019a) also emphasized that Green recruitment and selection processes strongly exhibit a firm's preference for potential candidates who are committed to the environment. Consequently, selecting employees who possess this concern is more likely to reduce environmental risks to the organisation and the general public. Similarly, when employees are adequately trained for implementing environmental initiatives, they are more motivated to voluntarily participate in an organisation's environmental effort going beyond their prescribed job duties. The findings align with Alnajdawi et al. (2017) who found the positive influence of green recruitment and green training and development programs on OCBE. Green training and development programs equip employees with the necessary skills and expertise for environment management and increase their willingness to participate in environmental initiatives at the workplace.

The findings of the current study also revealed a significant relationship between Green motivation enhancing practices and organisational citizenship behaviour towards the environment. This finding suggests that sharing specific environmental targets with academic staff creates a sense of direction and enforcement towards environmental objectives of the university and increases their motivation to put extra effort into achieving those objectives. This finding is in alignment with Pinzone et al. (2016), which affirms that including environmental aspects in performance management tends to increase the willingness of employees to make discretionary environmental efforts (Saeed et al., 2019). The findings also suggested that employees are more motivated to take an environmental initiative when they are offered a reward for it. This suggests that when organisations support employees by providing them with clear guidelines for environmental actions and recognize their positive behaviours, then this will lead to employee engagement in prescribed environmental activities as well as informal and

Table 5
Hypothesis testing direct effects.

Hypothesis	Relationship	Std Beta	Std Error	t-values	p-values	BCI LL	BCI UL	f^2	VIF
H1	Competence → OCBE	0.243	0.085	2.868	0.002	0.093	0.377	0.047	2.102
H2	Motivation → OCBE	0.273	0.097	2.819	0.003	0.111	0.428	0.057	2.192
H3	Involvement → OCBE	0.206	0.105	1.957	0.025	0.016	0.372	0.031	2.311
H4	OCBE → EP	0.411	0.071	5.748	p < .001	0.295	0.527	0.203	1.000

Note: A 95% confidence interval with a bootstrapping of 5,000 was used.

Table 6
Hypothesis testing indirect effects.

Hypothesis	Relationship	Std Beta	Std Error	t-values	p-values	BCI LL	BCI UL
H5	Competence → OCBE → EP	0.100	0.041	2.454	0.014	0.028	0.189
H6	Motivation → OCBE → EP	0.112	0.044	2.568	0.011	0.036	0.202
H7	Involvement → OCBE → EP	0.085	0.046	1.829	0.068	0.006	0.197

Note: A 95% confidence interval with a bootstrapping of 5,000 was used.

voluntary environmental behaviour. This is because when employees are valued for their contributions, then they are more likely to return the gesture by engaging in OCBE (Raineri and Paillé, 2016).

Green employee involvement practices were found to influence OCBE significantly. This result is aligned with previous studies that have found a positive relationship between green involvement practices and OCBE (Alt and Spitzeck, 2016; Pinzone et al., 2016). This finding shows that employees are more likely to adopt discretionary environmental behaviour if organisations provide them with opportunities to participate in environmental initiatives and encourage them to share suggestions for solving environmental issues (Boiral, 2009). Employees feel more empowered and supported when an organisation provides them with information about environmental activities and solicits their ideas for solving environmental issues. Ofstad et al. (2017) studied the intention for recycling behaviour of students and employees in a university setting and revealed that a sense of empowerment and opportunities for sustainability initiatives leads to the perseverance of pro-environmental behaviour at work.

This current study applied the AMO theoretical framework in the context of a university setting as compared to previous AMO-based studies in healthcare centre (Pinzone et al., 2016) and manufacturing organisations (Alnajdawi et al., 2017). In previous literature, the role of Green HRM was limited to corporate sector; thus, this study extends the Green HRM research in higher education in Malaysia. It contributes to campus greening literature from the behavioural perspective by shedding new light on the role of Green HRM practises as an enabler of pro-environmental behaviour of academic staff in the university. The findings of the study contribute to the literature that greening the three elements of AMO framework in the context of a university (ability, motivation and opportunity), Green competency, Green motivation, and Green opportunity were significant in influencing the OCBE of academic staff and the environmental performance of a university.

Next, this study showed that the OCBE of academic staff has a significant influence on the environmental performance of a university. The findings are consistent with previous studies that also reported strong ties between OCBE and environmental performance (Alt and Spitzeck, 2016; Paillé et al., 2014; Pinzone et al., 2016). Furthermore, this finding also supported the theoretical stance of Daily et al. (2009), who first proposed the potentially positive role of OCBE in environmental performance. Employees who voluntarily embrace environmentally friendly behaviour in accomplishing their tasks such as recycling and conserving energy will help achieve the environmental objectives of an organisation. Accordingly, employees who assist their colleagues for engaging in pro-environmental behaviour will surely accelerate environmental performance efficiencies. Therefore, discretionary environmental behaviour of academic staff should be considered essential for achieving superior environmental performance in university.

Thus, this study also responded to the call of Ren et al. (2017) for further research on the mediating process through which Green HRM influences environmental outcomes. It adds to the literature by highlighting the less-researched mediating role of OCBE acting as a bridge between Green HRM practices and environmental performance. H5, H6, and H7 were tested for mediation analysis of OCBE. The results demonstrated a significant mediation of the academic staff's OCBE between all three sets of Green HRM practices and environmental performance of the university. The finding supported the theoretical perspective of Ramus (2002), who stated that employees feel more prepared for eco-initiatives when organisations share environmental responsibility with them and make environmental responsibility part of their performance evaluation. Similarly, when they are recognised and rewarded for fulfilling their environmental responsibilities, employees feel more motivated to go beyond prescribed and repetitive behaviour and lead to better environmental performance.

The finding is also in line with Alt and Spitzeck (2016) who also empirically proved that OCBEs acted as mechanisms of the relationship between strategic HRM and environmental performance. Providing green involvement opportunities signals employees that an organisation supports and values their contribution to environmental initiatives, hence stimulating their behaviour to go above the job description. This extra effort of employees leads to superior environmental performance (Raineri and Paillé, 2016).

5.2. Practical implications

The findings of the study provide evidence-based implications to university stakeholders about the relative importance and contributions of different Green HRM practices towards OCBE. The results will guide policymakers with HRM practices in the university that help in shaping the pro-environmental behaviour of academic staff. Green recruitment policies can accentuate the environmental stance of a university to attract candidates with an environmental mindset. In addition, training programs for increasing environmental awareness and knowledge is essential because employees with environmental abilities are more likely to engage in pro-environmental behaviour. However, other findings suggest that enhancing the motivation of academic staff by sharing environmental responsibilities with them and rewarding them for positive environmental gestures will stimulate them to put extra effort in favor of environmental initiatives of campus. Similarly, Green involvement opportunities can help policymakers to take advantage of the skills and expertise of academic staff in providing solutions for environmental issues on campus. Involvement activities such as recycling day, cleaning campaign, or a car-free day will provide a platform to academic staff for engaging in pro-environmental behaviours and encourage them to participate voluntarily in such activities in the future that will be beneficial for improving the environmental performance of the university.

Environmental issues are complex, and human interactions with the system and natural environment are complex and diverse. Formal practices to reduce emissions waste and energy usage cannot cover all the behaviours that would be desirable to enhance a university's environmental performance. The significant finding for the relationship between OCBE and environmental performance demonstrates to policymakers. When employees voluntarily carry out environmental actions in their daily official activities, actively participate in environmental events that the university has organised, stay informed about the environmental initiatives of the university, and also encourage their colleagues to adopt environment-friendly behaviour than such voluntary, informal and extra-role behaviour will lead to the improved environmental performance of the university.

5.3. Limitations and future research

Due to the methodological and theoretical limitations of this study, opportunities exist for future research work. First, this study is cross-sectional and obtained data at one point in time. Green HRM interventions may take time to maximize the influence on behavioural change. For a more in-depth understanding, future research may adopt a longitudinal research method by examining the changes to employee environmental citizenship behaviour and environmental performance over time from the implementation of Green HRM practices.

Second, other universities in Malaysia are also making substantial efforts to transition to a sustainable green campus, and future study should also consider other universities for generalising

results. Furthermore, replicating this study across boundaries in a cross-cultural setting will help develop globally relevant measures of Green HRM in higher education.

Future studies may focus on a mixed-method approach to investigate Green HRM and environmental outcome relationship. Because relying only on quantitative data based on close-ended questions provides limited information about the perceptions of respondents. A mixed-method approach could be used in future studies to provide a more in-depth analysis.

In this study, based on AMO framework, OCBE was tested as a mediating variable between Green HRM practices and environmental performance. However, OCBE is not the only mediating variable of value. Future studies should consider other mediating variables such as organisational culture (Levy and Marans, 2012), management support (Ramus, 2002) and employee attitude (Harvey et al., 2013). Furthermore, only five basic Green HRM practices, including green recruitment, green training, green performance management, green reward, and green involvement were examined in this study. Other Green HRM practices, including green work-life balance (Muster and Schrader, 2011) might also be considered in future studies of Green HRM.

The target population of this study was only academic staff in a university. However, universities involve a large population with complex activities that can influence the environmental performance of the campus. Transdisciplinary involvement of top management, faculty, students and other staff is essential for improving the overall environmental performance of the university. Future research should also consider non-academic staff, including administrative, technical and operational staff because of the variations in the perceptions of different employees. Furthermore, students are also essential stakeholders of a university as they are the future leaders and possess energy and motivation to learn and implement pro-environmental activities in campus and societal functions. This can provide an overall picture of coherent Green HRM system in the university.

6. Conclusion

With the recognition of increasing environmental responsibility, higher education institutions have realised the fact that not considering human or behavioural factors in their environmental initiatives will lead to inefficient environmental performance. However, limited research is available to guide the effective implementation of environmental measures in universities through behavioural interventions. Overall, this current study was an effort to join the nodes of Green HRM literature with university campus greening literature with a focus on academic staff OCBE. Universities, being leaders of knowledge creation, should not be judged only by the amount of environmental awareness they create but how much they are committed to promoting environmental citizenship behaviour at their doorsteps.

This study has spotlighted the burgeoning concept of “Green HRM” as a set of ability building, motivation enhancing, and opportunity providing practices that have the potential to influence environmental citizenship behaviours of employees. The findings of the study were able to demonstrate the positive consequences of Green HRM practices and OCBE for environmental performance. The findings provide food for thought to policymakers to consider environmental citizenship behaviour of academic staff and what triggers them to demonstrate such behaviour.

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CRediT authorship contribution statement

Nosheen Anwar: Writing - original draft. **Nik Hasnaa Nik Mahmood:** Supervision. **Mohd Yusoff Yusliza:** Conceptualization, Supervision, Project administration. **T. Ramayah:** Formal analysis, Validation. **Juhari Noor Faezah:** Writing - review & editing. **Waqas Khalid:** Project administration.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jclepro.2020.120401.

Appendix

Green competence building practices

1. I am attracted by the environmental sustainability initiatives of my university.
2. My university prefers to hire employees who have environmental awareness.
3. I prefer to work at this university because of its environmental performance.
4. My university provides environmental awareness programs or workshops to improve my environmental knowledge.
5. In my university, integrated training to create the emotional involvement of employees in environmental management is provided (How to recycle; manage waste, sustainability programs or workshops arranged by UTM campus sustainability, etc.).
6. My university has green knowledge sharing to guide me about environmental behaviour (such as environmental K-sharing programs (Minda Lestari Kelas Pertama) by UTM campus sustainability, energy saving and water saving posters, etc.).

Green motivation enhancing practices

1. I have green performance indicators in my performance management system and appraisals.
2. My university sets environmental responsibilities for me (e.g., minimize the use of printed paper; set air conditioner at 24°C–26 °C, etc.).
3. In my university, non-compliance or not meeting environment management goals can bring dis-benefits for me (e.g., fine for smoking at campus).
4. In my university, I am offered green travel benefits (e.g., online meeting systems; on car-free day buggies, shuttle service or bicycles are available to commute within campus).
5. In my university, there are financial incentives for me to promote my environmental behaviour).

6. In my university, recognition-based rewards are offered to encourage my participation in environment management (e.g., public recognition, awards, gift or certificates).

Green employee involvement practices

1. My university has a clear developmental vision to guide my actions in environmental management.
2. In my university, I am involved in a mutual learning climate among employees for green behaviour and awareness (e.g., cleaning campaigns, environmental-based community projects).
3. In my university, I have observed a number of formal or informal communication channels to spread green culture (e.g., via email, posters, etc.).
4. In my university, I am encouraged to involve in quality improvement and problem solving on green issues.
5. In my university, I have opportunities to participate in environmental management such as suggestion schemes, community programs for environmental awareness, green initiatives).

Organisational citizenship behaviour towards the environment

1. In my work, I weigh the consequences of my actions before doing something that could affect the environment (e.g., turn off light when leaving office, put recycle material in proper bins).
2. I voluntarily carry out environmental actions and initiatives in my daily activities at work.
3. I make suggestions to my colleagues about ways to protect the environment more effectively, even when it is not my direct responsibility.
4. I spontaneously give my time to help my colleagues take the environment into account in everything they do at work.
5. I encourage my colleagues to adopt more environmentally conscious behaviour.
6. I encourage my colleagues to express their ideas and opinions on environmental issues.
7. I actively participate in environmental events organized by my university.
8. I stay informed about my university's environmental initiatives.
9. I undertake environmental actions that contribute positively to my university's image.
10. I volunteer for projects, endeavours or events that address environmental issues in my university.

Environmental performance

1. In my university, initiatives are taken to implement long-term environmental policies (e.g., UTM sustainability campus policy).
2. In my university, initiatives are taken to implement environmental management systems (such as ISO 14001 or other types of environmental management systems).
3. Energy conservation practices are promoted in my campus (including reminders for energy savings, turning off computers and lights when not using.)
4. In my university, initiatives are taken to provide alternative energy (such as solar energy panels).
5. In my university, practices related to reducing water consumption is implemented (Including efficient showerheads and irrigation systems or rainwater harvesting systems).
6. In my university, recycled products consumptions classified by type (such as using three types of dustbins, i.e., paper, glass, and plastic).
7. In my university, waste from canteens is collected in food waste collector and properly disposed of (e.g., sustainable arcade campaign, composting program, etc.).
8. In my university, practices related to reducing the use of private vehicles are implemented (such as bicycling or car-free day, etc.).
9. In my university, practices related to reducing noise for each building are implemented (e.g., no use of vehicle horn on campus).
10. In my university, initiatives are taken to reduce pollution from greenhouse gas emissions (such as green initiatives by UTM campus sustainability).
11. In my university, non-compliance with environmental laws cause sanctions (e.g., fine on smoking or vaping on campus).
12. In my university, biodiversity is protected from degradation (such as maintaining gardens, protecting animal species, avoid waste discharge in water bodies, etc.).
13. In my university, activities to promote environmental awareness are arranged (for example energy saving campaigns, conferences, and community programs).
14. In my university, research projects on environmental topics are conducted (environmental ethics, sustainable energy management, climate change, etc.).

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