# Green human resource management and green organizational citizenship behavior: do green culture and green values matter?

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## Abstract

**Purpose** – Drawing on the Ability–Motivation–Opportunity (AMO) theory, this study aims to test the effect of green human resource management (G-HRM) on green organizational citizenship behavior (G-OCB) taking into consideration green culture as the mediator and green values as the moderator.

**Design/methodology/approach** – Valid data from 240 entities collected in Taiwan were analyzed to test the five hypotheses. The valid data were analyzed using confirmatory factor model, correlation analysis, structural equation modeling and bootstrapping analysis.

**Findings** – The results for all relationships show significant associations. G-HRM is significantly associated with G-OCB and green culture, while green culture is significantly related to G-OCB. The mediating effect of green culture on the G-HRM-G-OCB relationship is significant. The moderating effect of green values on the green culture–G-OCB relationship is significant.

**Originality/value** – The originality of this study lies in being one of the first study in an advanced emerging economy utilizing the AMO theory.

**Keywords** Green human resource management, Green organizational citizenship behavior, Green culture, Green values, Partial least square structural equation modeling, Taiwan

**Paper type** Research paper

## Introduction

The long-term ecological effect of environmental degradation is perhaps one of the largest threats in the world today. Ignoring these effects can possibly demolish the entire ecosystem – the destruction of the environment and the eradication of wildlife. The ongoing impact has led environmentalists and governments to work tirelessly to mitigate these environmental concerns. Despite enhanced environmental regulations and laws to create green awareness among organizations, the implementation of environmental management strategies in their daily operations remains ambiguous. Kim *et al.* (2019) assert that environmental protection practices are present in nearly every industry, but it cannot be ascertained if this applies to all economies, especially in emerging economies. Of interest is the role emerging economies play in contributing to environmental protection, where enforcement of green policies is typically more challenging than in developed countries (Harrison *et al.*, 2017). However, the need to embrace environmental protection practices is crucial. Undeniably, the success of an organization's environmental management efforts centers on the management of its human resources to be pro-environmental in their daily activities.

Integrating environmental management strategies with human resource management practices or green human resource management (G-HRM) and promoting green behaviors, such as green organizational citizenship behaviors (G-OCB) potentially contributes to

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environmental conservation and ecological sustainability (De Groot and Steg, 2010; Fawehinmi *et al.*, 2020; Pham *et al.*, 2020; Robertson and Barling, 2017). The term "green human resource management" defined as "human resource management activities, which enhance positive environmental outcomes (Kramar, 2014, p. 1,075) refers to the human resource management aspects of environmental management (Renwick *et al.*, 2008). While there are various aspects to gauge G-HRM practices, the focus of this study is on green recruitment, green reward and compensation, green training, and green performance management. These aspects of G-HRM have increasingly garnered the attention of researchers (Pham *et al.*, 2019) and fit the underpinning theory applied in this study. "Green organizational citizenship behaviors" can be defined as individual discretionary behaviors, not formally rewarded, and that collectively promote effective organizational environmental management. These green behaviors are extra environmental protection related service provided by employees on their own initiative (Raineri and Paillé, 2016) beyond expectations of the workplace.

Anchored in the Ability–Motivation–Opportunity (AMO) theory, this study aims to explore the effect of G-HRM on G-OCB and the mediating role of green culture in an advanced emerging economy, namely Taiwan. Additionally, the interactive effect of green culture and green values on G-OCB is investigated. AMO theory argues that strategic HRM practices enhance the ability of organizational members, motivate them and provide opportunities for them to engage in behaviors that contribute to organizational performance (Kim *et al.*, 2015), such as organizational citizenship behaviors (Snape and Redman, 2010). In the green context, green training (Jabbour *et al.*, 2013, 2019; Pinzone *et al.*, 2019) that emphasizes on green values for instance, enhance employees' ability to contribute to G-OCB (Daily and Huang, 2001) as it promotes voluntary green behaviors (Pham *et al.*, 2019). Moreover, it equips employees with green knowledge, skills and attitudes to creatively address environmental issues (Govindarajulu and Daily, 2004; Pinzone *et al.*, 2016), which in turn foster a proactive attitude toward environmental sustainability (Aragão and Jabbour, 2017).

Likewise, green performance management and green rewards possibly motivate employees to engage in G-OCB. As green performance management appraises employees' contribution to environmental performance (Pinzone *et al.*, 2016), it motivates employees to adopt proactive attitudes and behaviors (Daily and Huang, 2001) to contribute to their firms' environmental goals (Renwick *et al.*, 2013). Green performance management enhances employees' comprehension of their expected role in green management, and hence, potentially motivates them to proactively adopt green behaviors (Pham *et al.*, 2019; Pinzone *et al.*, 2016). Constructive feedbacks from superiors further enhance employees' green competences (Heba Masri and Jaaron, 2017; Pinzone *et al.*, 2016), which consequently encourage employees to contribute optimally to green initiatives (Govindarajulu and Daily, 2004; Pinzone *et al.*, 2016) and adopting green behaviors (Pinzone *et al.*, 2016). Jabbour *et al.* (2013) further argue that green rewards motivate employees to contribute to environmental goals. Apparently, both financial and nonfinancial rewards offered collectively (Saeed *et al.*, 2018) are more effective in motivating employees to contribute to organizational green goals (Jabbour and Santos, 2008; Renwick *et al.*, 2013). Nonetheless, scholars such as Jabbour and Santos (2008) and Jackson *et al.* (2011) opine that nonfinancial rewards (e.g. recognition and praise) supersede financial rewards in promoting G-OCB, while others (e.g. Saeed *et al.*, 2018) recommend green travel benefits, green tax and green recognition.

While organizations may provide opportunities for employees to engage in G-OCB through *ad hoc* involvement programs (Pinzone *et al.*, 2016), involvement is more intense if employees willingly participate in green activities (Renwick *et al.*, 2013). Therefore, a well-planned recruitment process that guides green candidate selection (Adjei-Bamfo *et al.*, 2020) likely enhances green involvement (Renwick *et al.*, 2013), as green recruitment plays a critical role in driving a positive environmental culture (Guerci *et al.*, 2015; Jackson *et al.*, 2011).

Employees with environmental knowledge, skills, behavior (Adjei-Bamfo *et al.*, 2020), values and beliefs, as well as motivation, feel a sense of pride (Saeed *et al.*, 2018) in carrying out green duties (Anwar *et al.*, 2020). In essence, "green recruits" not only favor organizations with good environmental reputation (Behrend *et al.*, 2009; Saeed *et al.*, 2018) but also are more likely to be involved in green efforts when given the opportunity. This is echoed in Wriston's argument that "[. . .] if you have the right person in the right place, you do not have to do anything else" (cited in Foulkes and Livernash, 1982, p. 43). Hence, a robust green recruitment and selection system is crucial to ensure that the right people are hired to drive organizational environmental strategies. Further, if upper management noted their voices on green issues and empowered these employees to make decisions concerning environmental problems, their willingness to display G-OCB would be more pronounced (Pinzone *et al.*, 2016). Moreover, having employees with green mindset likely fosters the formation of green teams that can creatively generate and implement "green ideas" (Daily *et al.*, 2012; Jabbour *et al.*, 2013). Govindarajulu and Daily (2004), for instance, affirm that members of green teams proactively contributed to pollution prevention efforts. Accordingly, while opportunities for employees to be involved in green activities are crucial in promoting G-OCB, green recruitment further enhances green involvement, which, in turn, encourages voluntary green behaviors (Alt and Spitzeck, 2016).

Thus far, few environmental management scholars have examined the effect of G-HRM on G-OCB. Empirical studies, such as Harvey *et al.* (2013), Paille *et al.* (2014), Pinzone *et al.* (2016), Dumont *et al.* (2017), Pham *et al.* (2019) and Kim *et al.* (2019), have demonstrated the direct effects of G-HRM on individual-level employee pro-environmental behaviors. However, Harvey *et al.* (2013) studied a small sample of airline pilots, while Paillé *et al.* (2014) focused on general HRM. Kim *et al.* (2019) and Dumont *et al.* (2017) conceptualized G-HRM as a unidimensional construct. Kim *et al.*'s (2019) findings revealed that G-HRM influenced employees' eco-friendly behavior in nongreen hotels but not in the green hotel setting, while Dumont *et al.* (2017) demonstrated the association between G-HRM and in-role and extra-role green behavior.

On stand-alone G-HRM practices, Pinzone *et al.* (2016) studied the effect of green competence building practices, green performance management practices and green employee involvement practices on collective voluntary behaviors toward the environment. Likewise, Pham *et al.* (2019) focused on green training, green performance management and green employee involvement in the hotel industry. Yong *et al.* (2020) examined manufacturing firms in Malaysia on the aspects of green analysis and job description, green recruitment, green selection, green rewards, green performance management and green training on sustainability. While these studies enlighten us on the nexus of G-HRM and green behaviors, a void remains in our understanding of bundles of G-HRM that foster green behaviors in employees. As certain human resource management practices work in concert (Hooi and Ngui, 2014) to improve organizational greening (Kim *et al.*, 2019), "the adoption of mutually reinforcing and synergistic bundles of human resource management practices is inevitable" (MacDuffie, 1995, cited in Hooi and Ngui, 2014, p. 976). Besides, the association between G-HRM and green behaviors may differ depending on the social and psychological processes (Jiang *et al.*, 2012). Furthermore, analysis of the "black box" linking G-HRM and green behaviors need to be undertaken to better understand the social and psychological processes in between (Dumont *et al.*, 2017; Roscoe *et al.*, 2019). This is a particularly salient issue as HRM may not directly affect employee behavior but through various underlying mechanisms (Boxall *et al.*, 2016).

In response to Dumont *et al.*'s (2017) call for cross-cultural research, this study aims to address this gap by providing an insight of green practices in a collectivist and long-term pragmatic orientation culture such as Taiwan. Based on Hofstede's (2017) six national culture dimensions, the collectivist index for Taiwan is 17, while the long-term pragmatic orientation is 93. Pragmatic cultures generally sacrifice present needs to invest for a better future.

Among emerging economies, Taiwan is more advanced in many aspects, for instance, technology, mindset and green value chain. Would these make a difference in embracing G-OCB in organizations? Dumont *et al.* (2017) affirm that G-HRM and green management practices vary between organizations, sectors and economies. If indeed a difference is indicated, this provides an insight of what good practices can be emulated by less developed nations from more advanced nations among emerging economies in Asia. In doing so, this study intends to extend the body of knowledge on HRM behavioral and environmental management literature in the context of emerging economies.

First, this research extends the current theorizing of G-HRM, an emerging yet under researched topic, to offer a better understanding of the concept and its effects in emerging economies. Second, this study contributes to calls for a comprehensive understanding of the underlying mechanisms of G-HRM (Dumont *et al.*, 2017; Renwick *et al.*, 2013) by examining green culture, a black box that has not been previously investigated in behavioral research. Past workplace green behavior studies focused on other mediators, such as collective affective commitment to environmental management change (Pinzone *et al.*, 2016), psychological green climate (Dumont *et al.*, 2017), pro-environmental psychological capital (Saeed *et al.*, 2018) and green intellectual capital (Nisar *et al.*, 2021) when associating G-HRM with green behaviors. However, it is argued that for organizations to leverage G-HRM for G-OCB, green culture plays an important role. Third, this study extends current literature by analyzing the interactive effects of green culture and green values on G-OCB, a moderating path that has not been considered by earlier studies. Moreover, it provides valuable insights for practitioners to deliberate if indeed green values matter. Finally, this study contributes to the context of environmental management research. Most prior environmental management research has focused on a certain industry or nation (e.g. Kim *et al.*, 2019; Pham *et al.*, 2019; Yu *et al.*, 2020). Kim *et al.* (2019) and Pham *et al.*'s (2019) studies focused on the hotel industry and in less advanced emerging economies, namely, Thailand and Vietnam.

## Green human resource management and green organizational citizenship behaviors

Previous studies have established a positive association between G-HRM and environmental performance (Muisyo and Qin, 2021; Tang *et al.*, 2018) and organizations with higher levels of G-HRM performed better (Jabbour *et al.*, 2015; Ren *et al.*, 2018). Anwar *et al.* (2020) and Chaudhary (2019) further established a significant association between G-HRM and voluntary green behaviors. Organizations practice G-HRM to foster an environmental protection mindset, reinforce the organization's environmental protection goal and prompt employees to contribute to the attainment of that goal via proper incentives (Jackson *et al.*, 2011). Hence, G-HRM paves the way for a long-term investment perspective of human capital to promote desirable behaviors, highly recognizing employees' contribution and enhancing employees' career development (Robertson and Barling, 2017). Simultaneously, organizations strive to maximize return on investment in their people by encouraging continuous employee input into organization's output (Jabbour *et al.*, 2015). Indubitably, organizations seek to promote G-HRM through various measures. Of interest to this study are green recruitment, green rewards, green performance management and green training. We argue that selective recruitment of employees with pro-environmental awareness, pro-environmental incentives, pro-environmental performance management and pro-environmental training are deemed crucial for promoting employee green behaviors (Jackson *et al.*, 2011; Pham *et al.*, 2019; Pinzone *et al.*, 2016; Renwick *et al.*, 2013; Zibbaras and Coan, 2015).

The employee green behavior centered in this study is G-OCB. Specifically, it involves employees proactively communicating with the organization and peers by instructing peers or giving suggestions to help improve organization's environmental management.

With frequent communications among employees, it creates more opportunities for them to share opinions on environmental management, hence, promoting G-OCB (Robertson and Barling, 2017). Employees who display G-OCB are likely to take initiatives to improve the organization's environmental management performance, encourage colleagues to embrace environmental friendly behaviors and take part in the organization's environment-related programs or events, particularly in the presence of supervisory support (Paillé *et al.*, 2020) and leaders' motivation vision (Mi *et al.*, 2019). Further, Amrutha and Geetha (2021) assert that perceptions of supervisor and organizational support work in tandem to enhance commitment toward G-OCB. Employees strive to uphold the company's pro-environmental image and are cautious in handling environmental issues. G-HRM strengthens a cooperative aura among employees, prompting them to exhibit behaviors benefitting the organization on their own initiative, dubbed by scholars as G-OCB. In essence, G-HRM, encompassing recruitment, rewards, performance management and training, underscores organizational efforts to establish a long-term relationship of exchange with employees and fosters a positive green atmosphere (Pellegrini *et al.*, 2018).

As far as green recruitment is concerned, the emphasis is on enhancing the corporate's green image to entice environmentally conscious talents (Ahmand, 2015; Phillips, 2007; Renwick *et al.*, 2013). Prior studies (e.g. Guerci *et al.*, 2015; Shah, 2019) suggest that a corporate's green image attracts high-quality candidates who are committed to the environmental management of the organization. Through green selection criteria (Saeed *et al.*, 2018; Tang *et al.*, 2018), hiring new recruits that exhibit desirable green habits plausibly translate to G-OCB in the near future. Hence, it is critical that organizations scan job candidates for the desired environmental competences relevant to organizational efforts toward environmental management (Wehrmeyer, 2017). Inherently, such screening ensures that new green recruits ultimately contribute to achieving organizational environmental management goals (Saeed *et al.*, 2018). Nonetheless, to ensure effectiveness of such initiatives, recruiters must be trained on candidate environmental assessment to accurately map green selection criteria with candidates who are knowledgeable and committed about environmental management practices (Pinzone *et al.*, 2019).

Similarly, green rewards defined as "the implementation of a system of financial and nonfinancial rewards for employees with a distinct potential to contribute to environmental management" (Jabbour *et al.*, 2010, p. 1058), possibly cultivate G-OCB. In this, organizations incentivized individuals and teams in the form of extra leave, prize money and promotion (Stanwick and Stanwick, 2001) for environmental protection performance and acquisition of environmental protection skills. Both financial and nonfinancial rewards are powerful tools that motivate the best in employees. Rewards link organizational interests with employees' interest (Jackson *et al.*, 2011), further advancing G-OCB.

Likewise, green performance management, which concerns "the appraisal and registration of employees' environmental performance throughout their careers in a company and provides them with feedback about their performance to prevent undesirable attitudes or reinforce exemplary behavior" (Jabbour *et al.*, 2010, p. 1057) contributes to G-OCB. Effectively, organizations have to publicize upfront contributions to environmental management as one of the criterion in performance management assessment. As an aspect of performance management that might enhance opportunities for promotion, employees would be keen take on more responsibilities, becoming more loyal to the organization and more willing to stay, which, in turn, promotes G-OCB.

Additionally, green training "provides employees with the needed knowledge about the environmental policy of a company, its practices, and necessary attitudes" (Jabbour *et al.*, 2010, p. 1057). Jabbour (2011) asserts that it would affect employees' working attitude and performance as well as enhance their identity and loyalty to the organization. According to the AMO theory, Renwick *et al.* (2013) give precedence to green training as the most effective

G-HRM practices in promoting superior G-OCB. Apparently, green training enhances green abilities and motivates employees to seek opportunities to contribute to environmental management efforts. The awareness, knowledge, proficiencies, commitments, attitude and collaborations at the individual and organizational levels enhance green intellectual capital, which ultimately enables them to realize their environmental responsibilities for the successful implementation of green goals (Nisar *et al.*, 2021). Furthermore, green training and internal career growth that is aligned with employees' green interests augments commitment, which in turn promotes G-OCB (Cop *et al.*, 2020; Kim *et al.*, 2019; Pham *et al.*, 2019).

Nonetheless, organizations have to leverage bundles of G-HRM for effective G-OCB. In line with the interdependent principle of the AMO theory, G-HRM practices mutually reinforce each other for optimum results (Fawehinmi *et al.*, 2020). For instance, while green recruitment and green training enhance the ability of employees, green performance management is essential for constructive feedback and for identifying future green training needs. In short, green recruitment ensures that employees are ready to be trained, but green performance management assures that the right green training is received. However, sufficient green rewards are needed to entice green talents and motivate employees to exhibit G-OCB by getting involved in green opportunities (Ren *et al.*, 2018). Employees are psychologically inclined to exhibit G-OCB if they stand to benefit from the commitment. Based on these arguments, we hypothesize that:

*H1*. Green human resource management positively influences green organizational citizenship behavior.

## Green human resource management and green culture

Green culture in organizations is a culture where organizational members show great concern for the natural environment through their values, beliefs and behaviors (Roscoe *et al.*, 2019). In this, values relate to what organizational members consider moral and ethical for the environment (Harris and Crane, 2002; Holt and Stewart, 2000). Beliefs reflect organizational members' perception of what is right or wrong and what is acceptable and not acceptable concerning the environment (Roscoe *et al.*, 2019). Values and beliefs shape the behaviors of organizational members in their actions toward the environment (Chang, 2015). This green ideology where organizational members' values, beliefs and behaviors are pro-environmental develops into daily habits over time, ultimately shaping green culture. In terms of the triple bottom line, an organization that espouses green culture emphasizes on the "planet" aspect of the 3Ps without compromising on the people and profit aspects.

Previous studies have found a positive correlation between G-HRM and green culture (Amini *et al.*, 2018; Dyllick and Hockerts, 2002; Roscoe *et al.*, 2019), showing that enterprises with better G-HRM are capable of generating a better green culture (Pellegrini *et al.*, 2018). Indubitably, it is all about people management in the organization – how leaders in the organization pave the way for a green culture. In this, the HR department is the linchpin (Roscoe *et al.*, 2019) as it plays a key role in harmonizing organizational philosophy with the values and behaviors of employees. Essentially, the HR department has to promote environmental awareness and stimulate pro-environmental behaviors among its employees. HR can lead through the institutionalization of "green functions" that encourage employees to support pro-environmental efforts. For instance, green recruitment, rewards, performance management and training shape the values, beliefs and behaviors of employees (Amini *et al.*, 2018). Besides, such green HR practices foster employee commitment to pro-environmental activities advocated by the organization (Pellegrini *et al.*, 2018). Over time, green culture is likely to evolve as organizational members support each other in their environmental efforts and promote green culture at the workplace.

Srinivasan and Kurey (2014) assert that G-HRM play an essential role in developing four factors that could transform an organization's culture, that is, leadership emphasis, message credibility, peer involvement and employee empowerment. For instance, G-HRM nurtures leaders to display exemplary environmental management behaviors that tend to rub off on the employees. Making environment a leadership priority, leaders set environmental targets for each department and its employees, ultimately, cultivating green culture (Roscoe *et al.*, 2019). Likewise, pro-environmental messages conveyed by respected authorities that are credible, that is, messages that are relevant, pragmatic and appealing (Srinivasan and Kurey, 2014), are more likely to promote green culture. Peer involvement centers on teamwork where organizations leverage employees' collective pride (Srinivasan and Kurey, 2014) to encourage employees to participate in environmental initiatives together, inspiring a green culture (Glover *et al.*, 2011). In essence, G-HRM draws people of mutual environmental interest together, starting from green recruitment through green rewards, performance management and training. Additionally, green empowerment nurtured through green performance management and training enables employees to autonomously make environmental decisions that go beyond formative rules effectively (Srinivasan and Kurey, 2014). It seems axiomatic that G-HRM underpins the development of green culture. Accordingly, we hypothesize that:

*H2*. Green human resource management positively influences green culture.

## Green culture and green organizational citizenship behavior

Green culture is significantly associated with G-OCB and has higher influence on social and psychological satisfaction than on environmental performance (Temminck *et al.*, 2015). Temminck *et al.*'s (2015) study confirms the positive correlation between green culture and G-OCB, as the worthier the cognition organizational members harbor toward the organization, the higher the G-OCB (Dumont *et al.*, 2017). Further, Roscoe *et al.* (2019) argue that green culture can lead to environmental performance through leadership emphasis, message credibility, peer involvement and employee empowerment. Following this argument and that of Temminck *et al.* (2015), we believe that green culture similarly advances G-OCB. For instance, if leaders were exemplary pro-environmentalists, green mission and green systems would be in place to support employee green behaviors. Organizational support is vital in motivating employees (Roscoe *et al.*, 2019) to align self-interest with environmental goals and advocate pro-environmental initiatives. As mentioned earlier, constant involvement in green initiatives likely promote environmentally responsible behaviors.

Similarly, employees might embrace G-OCB if they accept the pro-environmental messages conveyed by higher management, particularly if the messages are aligned with their personal environmental interests or can impact their career. Moreover, to engender G-OCB, it is important that workers see the benefits of mutual collaboration and support on environmental efforts. Accordingly, peer involvement in environmental efforts that entail environmentally conscious teamwork (Daily and Huang, 2001; Daily *et al.*, 2012) and people who share the same pro-environmental mindset (Jabbour, 2011) increases the possibility of G-OCB. As employee empowerment enables employees to autonomously make decisions beyond formal procedures and reduces bureaucratic inconveniences in environmental management, it creates a culture of continuous pro-environmental improvement (Roscoe *et al.*, 2019), which can positively influence G-OCB. This leads us to hypothesize that:

*H3*. Green culture positively influences green organizational citizenship behaviors.

## The mediating role of green culture

It is anticipated that after establishing G-HRM, organizations would likely convey the organization's environmental protection concept and its concern to their employees. Once

members have had a common recognition of G-HRM, green culture becomes a significant mechanism (Roscoe *et al.*, 2019; Sroufe *et al.*, 2010) in driving environmental performance. Indeed, the strength of green culture hinges on similarity among employees in their interpretation of the scenario they are situated in (Pellegrini *et al.*, 2018). Thus, it can be inferred that a concrete green culture can come into being when organizational members share the values, beliefs and behaviors concerning the natural environment (Paillé *et al.*, 2013; Roscoe *et al.*, 2019). This leads to a shared mental model or common cognition of the environment. Teams then go beyond profit-seeking objectives and collaborate effectively to drive environmental performance, resulting in a solid organizational scenario, which influences G-OCB (Zientara and Zamojska, 2018).

This could be achieved through the greening of recruitment, rewards, performance management and training (Amini *et al.*, 2018). For instance, in an organization with green culture, managerial staff would encourage employees to acquire green knowledge and engage in a dialogue with them on environmental issues. Together, they address environmental protection issues and share a sense of responsibility to protect the environment, indirectly promoting green culture. Temminck *et al.* (2015) contend that an employee-centered green culture tends to induce green behaviors that lead to better environmental performance, as well as higher social and psychological satisfaction among employees. Hence, green culture is a key bridge between G-HRM and G-OCB. For instance, if pro-environmental incentive and promotion systems were in place, it is likely that employees would embrace green values, beliefs and behaviors (Attaianese, 2012) to leverage on the initiatives to progress in their career. Likewise, credible pro-environmental messages are more likely to promote green culture, which in turn stimulates G-OCB. Truly, the HR departments play a vital role in communicating these messages during training and performance appraisal sessions (Renwick *et al.*, 2013).

Additionally, environmental management performance that is rewarded as part of team efforts encourages employees to work with their peers to achieve or exceed the key environmental performance indicators set for the team and department (Pellegrini *et al.*, 2018). Peer involvement and empowering employees in the decision-making process (Daily *et al.*, 2012) increase environmental awareness of employees and encourage employees to embrace green behaviors to conserve the environment. Likewise, G-HRM initiatives that reward green individuals and teams promote a green culture (Attaianese, 2012), which over time induces green behaviors such as G-OCB. Intrinsically, G-HRM promotes pro-environmental values and beliefs, which in the long run fosters green habits, and ultimately, green behaviors such as G-OCB. Thus, we posit the following hypothesis:

*H4.* Green culture mediates the relationship between G-HRM and G-OCB.

### Moderating effect of green values

Because green values are imperative to corporate greening initiatives, contemporary values scholars have called for a more profound understanding on its role (Harris and Crane, 2002; Post and Altma, 1994; Roscoe *et al.*, 2019). In response, this study examines the moderating role of green values in the association between green culture and G-OCB (Kim *et al.*, 2019; Pham *et al.*, 2019). This analysis is relevant as green behaviors evolved largely from green culture and is strengthened by personal values (Harris and Crane, 2002). It is expected that organizations that promote green values that are congruent with employees' green values will achieve higher levels of G-OCB (Dumont *et al.*, 2017). Moreover, scholars have also emphasized that personal values influenced individual attitudes and behaviors (Bansal and Roth, 2000; Chun, 2009; Davidov *et al.*, 2008; Low, 2013). Fernandez *et al.* (2003) further underscore the importance of employees' eco-centric values for successful environmental management initiatives. A number of studies (e.g. Chou, 2014; Kim *et al.*, 2019) have

established a significant direct association between personal green values and green behaviors, but little is known about the moderating effect of green values. Dumont *et al.* (2017) studied the moderating effect of green values but on the association between G-HRM and psychological green climate on in-role and extra-role green behavior.

Other scholars (e.g. Edwards and Cable, 2009) theorized that shared, congruent values likely result in optimal employee outcomes, as employees would commit to achieving organizational goals and objectives (Cohen and Liu, 2011). Hence, if organizations promote a green culture that corresponds to employees' values, beliefs and behaviors, the likelihood of employees exhibiting G-OCB will be higher. Green values, beliefs and behaviors that become embodied in an organizational philosophy will evolve over time into habits, ultimately shaping the culture of the organization (Schein, 1992). So, if organizations promote cultures that strongly emphasize on corporate greening, employees are likely to lean toward environmental friendly behaviors. Alongside green culture, this study hypothesized that the stronger the green values are, the greater the possibility that the employee would commit to displaying voluntary green behaviors. Following this reasoning, we hypothesize:

*H5.* Green values moderate the effect of green culture on green organizational citizenship behavior.

The theoretical framework for the study is as follows:

## Methodology

### *Sample and data collection*

The survey was mailed to all members of the EMBA alumni of a large private university in Taiwan. These members are from different industrial backgrounds and are appropriate to provide a wider perspective of environmental management in Taiwan. After six months of administrating the online survey, 249 questionnaires were returned, of which nine were discarded due to either incompleteness or the respondents were operating in another country. In essence, the responses represent the views of people working in 120 business entities in Taiwan. The demographic details of the respondents are shown in Table 1. Among the respondents, 131 were female employees (54.6%) and 109 were males (45.4%). The majority of the respondents were aged between 41 and 50 (26.3%), but all age groups were reasonably represented except for those below 20 or above 61. In terms of education, most of the respondents were well-educated and possessed professional skills. More than half of the respondents had graduate qualifications (Master's: 31.3%; Bachelor: 47.9%). For position and tenure, the majority of the respondents were senior managers, managers, professionals or executives (66.7%) and had more than five years of service with their organizations (52.5%).

### *Measures*

The study used a 46-item Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to measure the focal concepts of G-OCB, G-HRM, green culture and green values. All items were adapted from previous literature and modified to fit the current context based on feedback from three academicians and two HR practitioners. The questionnaire was pilot tested online on a sample of 30 before administering it to the respondents.

*Green organizational citizenship behavior.* G-OCB was measured with seven items adapted from Pham *et al.* (2019). Sample items include "I suggest new practices that could improve the organization's environmental performance" and "I encourage my colleagues to adopt more environmentally conscious behaviors". The scale's reliability (Cronbach's $\alpha$) was 0.908.

*Green human resource management.* Nineteen items from Saeed *et al.* (2018) and Pham *et al.* (2019) were employed to measure G-HRM – green recruitment (five items) and green rewards (four items) from Saeed *et al.* (2018), green performance management (five items) and

| Variables | Classification | Frequency | Percentage (%) |
|---|---|---|---|
| Gender | Male | 109 | 45.4 |
| | Female | 131 | 54.6 |
| Age | Below 20 | 6 | 2.5 |
| | 21–30 | 85 | 35.4 |
| | 31–40 | 36 | 15.0 |
| | 41–50 | 63 | 26.3 |
| | 51–60 | 44 | 18.3 |
| | Above 61 | 6 | 2.5 |
| Education | Doctoral | 8 | 3.3 |
| | Master | 75 | 31.3 |
| | Bachelor | 115 | 47.9 |
| | Associate | 20 | 8.3 |
| | High school or below | 20 | 8.3 |
| | Others | 2 | 0.8 |
| Tenure | Below 5 year | 114 | 47.5 |
| | 6–10 years | 32 | 13.3 |
| | 11–15 years | 25 | 10.4 |
| | 16–20 years | 15 | 6.3 |
| | Above 20 years | 54 | 22.5 |
| Position | Senior manager | 27 | 11.3 |
| | Manager | 25 | 10.4 |
| | Professional/Executive | 108 | 45.0 |
| | Others | 80 | 33.3 |

**Note(s):** $N = 240$

**Table 1.** Demographic data of the sample

green training (five items) from Pham *et al.* (2019). Sample items include "In my organization, job description specification includes environmental concerns", "My organization rewards environmental achievements (sabbatical, leave, gifts, bonuses, cash, premiums, promotion)", "Every employee has an opportunity to receive environmental training in my organization" and "My organization conveys key environmental performance indicators clearly." Cronbach's $\alpha$ for green recruitment, green rewards, green performance management and green training was 0.948, 0.842, 0.962 and 0.960, respectively.

*Green culture.* Green culture was measured using a 16-item scale adapted from Roscoe *et al.* (2019). Sample items include "Leaders encourage employees (me) to learn green information" and "It is easy to understand company's green operations". Cronbach's $\alpha$ for green culture was 0.961.

*Green values.* Green values were measured using a four-item scale adapted from Dumont *et al.* (2017) and Chou (2014). Sample items include "I feel obliged to do whatever I can to prevent environmental degradation" and "I feel obliged to bear the environment and nature in mind in my daily behavior". Cronbach's $\alpha$ of green values was 0.801.

## Results

### *The measurement model*

The model developed was tested to assess the adequacy of the scales measuring the multidimensional constructs. A first-order confirmatory model was assessed for their goodness-of-fit, using multiple adjunct fit indices to validate the theoretical dimensions of the constructs. Consistent with Roscoe *et al.*'s (2019) study, we conceptualized G-HRM and green culture as one-factor models. To evaluate the psychometric properties of the practices in G-HRM and the four factors of green culture, the goodness-of-fit of alternative measurement

models were analyzed. Specifically, four models, namely, a null, one-factor, two-factor and three-factor models were constructed and tested. Results of the analysis showed that the one-factor models achieved the best fit with the sampled population.

The standardized regression weights from the measurement models were assessed for construct validity. Reliability of the variables was assessed using Cronbach's $\alpha$. The psychometric properties of first-order confirmatory factor model of G-HRM, green culture, green values and G-OCB confirmed the validity and reliability of the constructs. As shown in Table 2, the standardized regression weights were all higher than 0.5 (Hair *et al.*, 2014), and Cronbach's $\alpha$ for all variables were more than 0.7. Table 3 illustrates Cronbach's α coefficients and the correlations between the focal constructs of this study. The results show significant relationships between all the variables ($p < 0.01$).

*Partial least squares structural equation modeling (PLS-SEM)*

Smart PLS is divided into PLS and Consistent PLS (PLSC). The former is a statistical method of PLS-SEM (partial least squares structural equation modeling), and the latter is a simulated CB-SEM (covariance based structural equation modeling). The two statistical methods are suitable for different research purposes. The former uses the maximum potential variable to explain the variance, and its research purpose is to predict important target variables and exploratory research. The latter uses the covariance of the potential variable and the theoretical model. Matrix (covariance matrix), its research purpose is theoretical testing, theoretical confirmation, theoretical substitution comparison, among which Amos, EQS, LISREL, Mplus statistical software are all CB-SEM statistical methods (Hair *et al.*, 2011). No matter what kind of statistical software is used, there will be restrictions. Only the most suitable statistical method can be selected according to the analysis objective. In this study, PLS-SEM will be the preferred statistical method for theoretical development and prediction. Based on the above, according to the needs and purpose of this research, this research uses PLS-SEM in Smart PLS as a statistical analysis tool.

As the next step, PLS-SEM was fitted to the data to test the proposed model. This study used PLS-SEM algorithm in the Smart PLS 3.0 software to test these five hypotheses. PLS-SEM is the preferred technique for this study due to the small sample size ($n = 240$). As all constructs of the study are reflective in nature, we adopted PLS Consistent as the technique of assessment. Figure 1 and Table 4 show the results of the five hypotheses tested using structural equation modeling analysis. The process involves analyzing the effects of G-HRM on G-OCB (Hypothesis 1) and green culture (Hypothesis 2); green culture on G-OCB (Hypothesis 3); the mediating role of green culture in the G-HRM-G-OCB relationship (Hypothesis 4) and the moderating effect of green values on the relationship (Hypothesis 5). The final path model yielded a test statistic of $\chi^2 = 38.506$, df = 24 ($p = 0.00$). The RMSEA index is 0.045 for this model, with a 90% confidence interval (CI) between 0.048 and 0.064, indicating acceptable fit of the model to the data. Model fit is confirmed through the root mean square residual (RSMR), as suggested by Crespo and Inacio (2018). According to Henseler *et al.* (2014), a model is of good fit if its value is less than 0.08. Other indices of fit were also found to be acceptable: NFI = 0.905 (Ringle *et al.*, 2020). Thus, all the hypotheses were substantiated. The final model is illustrated in Figure 1.

The pattern of direct effects revealed by the path model provides evidence in support of the study's hypotheses. As shown in Figure 1 and Table 4, G-HRM has a significant positive effect on G-OCB (0.659***). Based on Hypothesis 2, we expected a significantly positive direct relationship between G-HRM and green culture, and that is what we observed (0.832***). Thus, Hypothesis 2 is supported. Likewise, for Hypothesis 3, we expected a significant positive effect of green culture on the G-OCB. The result from the path model (0.801***) supports Hypothesis 3.

| First-order constructs | Standard factor loading | Cronbach's $\alpha$ |
|---|---|---|
| *Green HRM* | | |
| *Green recruitment* | | 0.948 |
| GHRM1 | 0.762 | |
| GHRM2 | 0.846 | |
| GHRM3 | 0.886 | |
| GHRM4 | 0.860 | |
| GHRM5 | 0.873 | |
| *Green rewards* | | 0.842 |
| GHRM6 | 0.814 | |
| GHRM7 | 0.674 | |
| GHRM8 | 0.744 | |
| GHRM9 | 0.881 | |
| *Green training* | | 0.962 |
| GHRM10 | 0.883 | |
| GHRM11 | 0.916 | |
| GHRM12 | 0.899 | |
| GHRM13 | 0.905 | |
| GHRM14 | 0.876 | |
| *Green performance management* | | 0.960 |
| GHRM15 | 0.857 | |
| GHRM16 | 0.927 | |
| GHRM17 | 0.906 | |
| GHRM18 | 0.909 | |
| GHRM19 | 0.896 | |
| *Green culture* | | 0.961 |
| *Leadership emphasis* | | 0.944 |
| GC1 | 0.867 | |
| GC2 | 0.852 | |
| GC3 | 0.834 | |
| GC4 | 0.862 | |
| *Message credibility* | | 0.871 |
| GC5 | 0.688 | |
| GC6 | 0.687 | |
| GC7 | 0.761 | |
| GC8 | 0.747 | |
| *Peer involvement* | | 0.896 |
| GC9 | 0.760 | |
| GC10 | 0.763 | |
| GC11 | 0.798 | |
| GC12 | 0.717 | |
| *Employee empowerment* | | 0.841 |
| GC13 | 0.736 | |
| GC14 | 0.682 | |
| GC15 | 0.711 | |
| GC16 | 0.786 | |
| *Green OCB* | | 0.908 |
| GOCB1 | 0.757 | |
| GOCB2 | 0.776 | |
| GOCB3 | 0.798 | |
| GOCB4 | 0.868 | |
| GOCB5 | 0.855 | |
| GOCB6 | 0.808 | |
| GOCB7 | 0.758 | |
| *Green values* | | 0.801 |
| GV1 | 0.849 | |
| GV2 | 0.841 | |
| GV3 | 0.721 | |
| GV4 | 0.795 | |

**Table 2.** Psychometric properties of first-order confirmatory factor model

*The mediating effect – bootstrapping*

To assess the mediating effect of green culture on the relationship between G-HRM and G-OCB, a mediated bootstrapping analysis was performed. Based on Hypotheses 4, we expected green culture to mediate the relationship between G-HRM and G-OCB. Results from the bootstrapping analysis support Hypothesis 4. As shown in Table 4, indirect effect measures according to Preacher and Kelley (2011) indicated a mediation effect of green culture on the relationship between G-HRM and G-OCB, 97.5% CI [0.734, 0.852]. CI did not contain 0 and confidence intervals showed no overlap. Hence, the mediation through green culture was significant on the relationship between G-HRM and G-OCB.

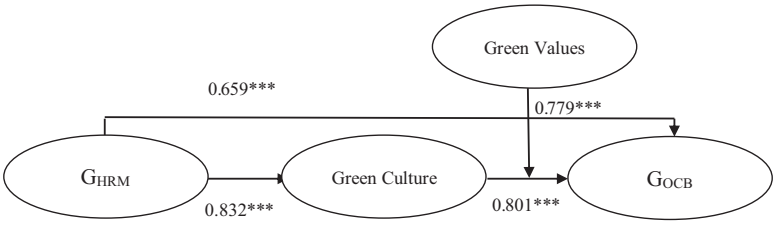
*The moderating effect*

To assess the moderating effect of green values on the relationship between green culture and G-OCB, a moderated multiple regression analysis was performed. The results in

| Variable | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Green HRM | 0.928 | | | |
| Green culture | 0.817** | 0.961 | | |
| Green OCB | 0.488** | 0.452** | 0.801 | |
| Green values | 0.368** | 0.380** | 0.638** | 0.908 |

**Note(s):** $N = 240$. Internal consistency estimates (coefficient alpha) are presented in the diagonal
**$p < 0.01$

**Table 3.** Correlations and Cronbach's $\alpha$ of the construct-related variables




**Note(s):** Path coefficients are standardized partial regression coefficients estimated by maximum likelihood. Ellipses represent latent variables. Unidirectional arrows express direct effects. ***$p < 0.001$

**Figure 1.** Path model for relations among the latent variables

| Path | Estimates | *T* statistics | Sig | Standard error | VIF | Confidence interval 2.5% | Confidence interval 97.5% |
|---|---|---|---|---|---|---|---|
| Green HRM → Green culture | 0.832*** | 41.652 | 0.000 | 0.022 | 4.592 | 0.854 | 0.936 |
| Green culture → Green OCB | 0.801*** | 36.186 | 0.000 | 0.025 | 2.960 | 0.837 | 0.936 |
| Green HRM → Green OCB | 0.659*** | 26.629 | 0.000 | 0.030 | 2.430 | 0.734 | 0.852 |
| Green value_ moderating effect | 0.779*** | 3.217 | 0.000 | 0.040 | – | – | – |

**Note(s):** ***$p < 0.001$
*R*-square: Green culture = 0.678***; green OCB = 0.641***; green value = 0.751***

**Table 4.** Path analysis using PLS-SEM (bootstrapping)

Table 4 showed that adding the interaction terms of green culture and green values to the regression increase explained variance significantly. Specifically, the interactive effect of green culture and green values on G-OCB was significant ($\beta = 0.779$, $p < 0.001$). Thus, Hypothesis 5 was substantiated, indicating that green values moderated the effect of green culture on G-OCB.

The multiplicative effect may result in high levels of multicollinearity. However, Tabachnick and Fidell (2007) demonstrated when the correlation between independent variables reaches 0.85 or more, there is an obvious threat of collinearity (Dillon and Goldstein, 1984; Tabachnick and Fidell, 2007). The more commonly used method of determination is through the Tolerance or Variance Inflation Factor (VIF) (Cohen *et al.*, 2003), as shown in the equation.

$$\text{VIF} = \frac{1}{\text{Tolerance}} = \left(\frac{1}{1 - R_i^2}\right)$$

The tolerance value of the respective variable IV itself as the DV, and the regression residuals after the regression of other IVs other than itself, namely $1–R_i^2$, and VIF is the reciprocal of the tolerance value: When the tolerance value is higher, the VIF is smaller, which means the higher the independence of IV, the more the collinearity problem is alleviated. Some scholars believe that when VIF is greater than 10, it is considered to be collinearity (Cohen *et al.*, 2003; Hair *et al.*, 1995; Johnston *et al.*, 2018; Salmerón Gómez *et al.*, 2016). Based on the above, the correlation values (0.817) and VIF (4.59) between G-HRM and green culture in Tables 3 and 4 are acceptable.

## Discussion

The proposed study considering the role of green culture and green values on the G-HRM and G-OCB linkage represents an attempt made toward understanding the human behavioral side of environmental management in organizations today. While extant literature on G-HRM has looked at various antecedents and outcomes, limited studies have focused on an integrated model encompassing the soft side of organizations on environmental management. However, for the sustainability of environmental initiatives, G-OCB is central. Organizations through their HR departments need to institute the human side of the green value chain. Appropriate G-HRM policies in tandem with green culture and green values potentially help build a sustainable planet and society. While the aim of most organizations is profit-oriented, it is imperative that organizations do not sideline the other two aspects of the triple bottom line, namely the planet and the people.

G-HRM can indeed enhance G-OCB via green culture and green values. This perspective provides new insights for strategic human resource management, environmental management and employee behavior. The findings and recommendations of this study thus are as follows: First, this study's finding is an enrichment of strategic human resource management from the environmental perspective. We verified that G-HRM could enhance G-OCB via green culture. The main pathway is to use G-HRM to induce employees' behavior via green culture. In accordance with the AMO theory, G-HRM practices enhance the ability of organizational members, motivate them and provide opportunities (green culture) for them to engage in green behaviors that contribute to environmental protection. Second, this study's next finding is the proposal that green culture (mediator) and green values (moderator) generate a moderated mediation model in the association between G-HRM and G-OCB. In research, the field of G-HRM lacked a study of moderated mediation mechanisms or processes, and no research had focused on factors influencing G-HRM and G-OCB. We propose that the green culture and green values may be the other factors to consider. This

study verifies that G-HRM does affect G-OCB via green culture, and this mediating relationship is stronger for individuals with higher green values. This moderated mediation process indeed will facilitate new insights into the nature of G-HRM.

*Implications for theory, practice and policy*

This research proposal has a number of implications for theory, practice and policy. First, it contributes to human resource management literature, expounding the significance of G-HRM in advancing employee green behaviors such as G-OCB. Although G-HRM directly influences G-OCB, this study highlights the crucial role of green culture in fostering G-OCB. Second, this study adds an integrated framework through which G-HRM affects G-OCB by introducing green culture as the black box and the interactive effect of green values. The study affirms the relative importance of green culture and green values in nurturing G-OCB. Third, contextually this study provides some insight on green practices in the more advanced emerging economies. Prior research has focused predominantly in the Western context or less advanced emerging economies.

Practically, this study enlightens practitioners on the significance of advocating a green culture if it were to leverage G-OCB for improved environmental management. Understanding what it takes to enhance green culture facilitates HR department's efforts to promote G-OCB. It provides ground for managers entrusted with pro-environmental goals to strategize on how to unlock the black box given its importance in cultivating G-OCB. Likewise, green values seem significant in promoting G-OCB. This opens doors for practitioners to further debate on the relative importance of green culture and green values. Practitioners need to carefully consider whether to focus on enhancing green culture or green values or both simultaneously in promoting G-OCB. For policy makers in sustainability-focused entities, this study highlights a top-down approach and the importance of a green mission to promote employee green behaviors. Green systems and practices that incentivize and develop employees are essential for G-OCB. To engender green behaviors, perhaps policy makers could consider introducing green education to inculcate a green mindset even before the young enter the workforce.

## Research limitations and prospects

This study provides an overarching theoretical framework and sets an underpinning for additional theory building and empirical work by integrating two complementary fields on people management, namely, human resource management and organizational behavior, specifically G-HRM and the G-OCB. Nonetheless, this study is not without its limitations. First, is the relatively small sample size collected at a single point in time. Future studies should consider a larger sample to truly understand these linkages better. Second, the study only considered the moderating role of green values. Future studies should provide a better insight of the moderating components in the association between G-HRM and G-OCB. Third, the generalizability of this study's findings is only limited to Taiwan. Future work should cover a broader cross-section of emerging economies and different contexts to better understand the effects. Fourth, the black box in-between needs to be further explore to identify other potential mediators in the association between G-HRM and G-OCB. Future studies may also choose to include a mediated moderated or moderated mediated framework in the relationship. Fifth, this study only focused on G-OCB. Future research may consider other employee green behaviors other than G-OCB. Sixth, the integrative model of this study is limited to four single dimension variables. Future research could enrich our framework by considering multidimensional variables and investigating more complex interactions

between them. A multilevel perspective on the relationship between G-HRM and G-OCB for further exploration is recommended.

## Conclusion

Considering the devastating effects of climate change and environmental destruction, green management has been leveraged by organizations for business sustainability. Hence, instituting green practices to augment green behaviors has emerged as one of the most promising approach to corporate social responsibility. However, there is a dearth of research on green management practices that focused on the human behavioral side. This study affirmed that for environmental sustainability, organizations have to promote employee green behaviors such as G-OCB through G-HRM. Hence, the HR departments play a crucial role in motivating employees to acknowledge green values and collectively strive toward creating a green culture in the organization. Accordingly, an integrative framework was proposed to capture the complexity of developing G-OCB in contemporary organizations. This framework opens the black box in-between and proposes potential interactions that warrant further understanding. The purpose of this study's integrative framework is to instigate debate on how best organizations can partake in creating a sustainable environment. It is hoped that new perspectives on environmental management will evolve to build stronger theoretical foundations for G-HRM and G-OCB.

## References

Adjei-Bamfo, P., Bempong, B., Osei, J. and Kusi-Sarpong, S. (2020), "Green candidate selection for organizational environmental management", *International Journal of Manpower*, Vol. 41 No. 7, pp. 1081-1096.

Ahmand, S. (2015), "Green human resource management: policies and practices", *Cogent Business and Management*, Vol. 2 No. 1, pp. 1-13.

Alt, E. and Spitzeck, H. (2016), "Improving environmental performance through unit-level organizational citizenship behaviors for the environment: a capability perspective", *Journal of Environmental Management*, Vol. 182 No. 1, pp. 48-58.

Amini, M., Bienstock, C.C. and Narcum, J.A. (2018), "Status of corporate sustainability: a content analysis of Fortune 500 companies", *Business Strategy and the Environment*, Vol. 27 No. 8, pp. 1450-1461.

Amrutha, V.N. and Geetha, S.N. (2021), "Linking organizational green training and voluntary workplace green behavior: mediating role of green supporting climate and employees' green satisfaction", *Journal of Cleaner Production*, Vol. 290 No. 50, p. 12587.

Anwar, N., Mahmood, N.H.N., Yusliza, M.Y., Ramayah, T., Faezah, J.N. and Khalid, W. (2020), "Green human resource management for organisational citizenship behaviour towards the environment and environmental performance on a university campus", *Journal of Cleaner Production*, Vol. 256, pp. 1-13.

Aragão, C.G. and Jabbour, C.J.C. (2017), "Green training for sustainable procurement? Insights from the Brazilian public sector", *Industrial and Commercial Training*, Vol. 49 No. 1, pp. 48-54.

Attaianese, E. (2012), "A broader consideration of human factor to enhance sustainable building design", *Work*, Vol. 41 No. 1, pp. 2155-2159.

Bansal, P. and Roth, K. (2000), "Why companies go green: a model of ecological responsiveness", *Academy of Management Journal*, Vol. 43 No. 4, pp. 717-736.

Behrend, T.S., Baker, B.A. and Thompson, L.F. (2009), "Effects of pro-environmental recruiting messages: the role of organizational reputation", *Journal of Business Psychology*, Vol. 24 No. 3, pp. 341-350.

Boxall, P., Guthrie, J.P. and Paauwe, J. (2016), "Editorial introduction: progressing our understanding of the mediating variables linking HRM, employee well-being and organizational performance", *Human Resource Management Journal*, Vol. 26 No. 2, pp. 103-111.

Chang, C.H. (2015), "Proactive and reactive corporate social responsibility: antecedent and consequence", *Management Decision*, Vol. 53 No. 2, pp. 451-468.

Chaudhary, R. (2019), "Green human resource management and employee green behavior: an empirical analysis", *Corporate Social Responsibility and Environmental Management*, Vol. 27 No. 2, pp. 630-641.

Chou, C.J. (2014), "Hotels' environmental policies and employee personal environmental beliefs: interactions and outcomes", *Tourism Management*, Vol. 40, pp. 436-446.

Chun, R. (2009), "Ethical values and environmentalism in China: comparing employees from state-owned and private firms", *Journal of Business Ethics*, Vol. 84 No. 3, pp. 341-348.

Cohen, A. and Liu, Y. (2011), "Relationships between in-role performance and individual values, commitment, and organizational citizenship behavior among Israeli teachers", *International Journal of Psychology*, Vol. 46 No. 4, pp. 271-287.

Cohen, J., Cohen, P., West, S.G. and Aiken, L.S. (2003), *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, 3rd ed., Lawrence Erlbaum, Hillsdale, NJ.

Cop, S., Alola, U.V. and Alola, A.A. (2020), "Perceived behavioral control as a mediator of hotels' green training, environmental commitment, and organizational citizenship behavior: a sustainable environmental practice", *Business Strategy and the Environment*, Vol. 29 No. 8, pp. 3495-3508.

Crespo, C.F. and Inacio, N. (2018), "The influence of corporate social responsibility associations on consumers' perceptions towards global brands", *Journal of Strategic Marketing*, Vol. 27 No. 8, pp. 1-17.

Daily, B.F. and Huang, S. (2001), "Achieving sustainability through attention to human resource factors in environmental management", *International Journal of Operations and Production Management*, Vol. 21 No. 12, pp. 1539-1552.

Daily, B.F., Bishop, J.W. and Massoud, J.A. (2012), "The role of training and empowerment in environmental performance: a study of the Mexican maquiladora industry", *International Journal of Operations and Production Management*, Vol. 32 No. 5, pp. 631-647.

Davidov, E., Schmidt, P. and Schwartz, S.H. (2008), "Bringing values back in—the adequacy of the European social survey to measure values in 20 countries", *Public Opinion Quarterly*, Vol. 72 No. 3, pp. 420-445.

De Groot, J.I.M. and Steg, L. (2010), "Relationships between value orientations, self-determined motivational types and pro-environmental behavioural intentions", *Journal of Environmental Psychology*, Vol. 30 No. 4, pp. 368-378.

Dillon, W.R. and Goldstein, M. (1984), *Multivariate Analysis: Methods and Applications*, Wiley, New York, NY.

Dumont, J., Shen, J. and Deng, X. (2017), "Effects of green HRM practices on employee workplace green behavior: the role of psychological green climate and employee green values", *Human Resource Management*, Vol. 56 No. 4, pp. 613-627.

Dyllick, T. and Hockerts, K. (2002), "Beyond the business case for corporate sustainability", *Business Strategy and the Environment*, Vol. 11 No. 2, pp. 130-141.

Edwards, J.R. and Cable, D.M. (2009), "The value of value congruence", *Journal of Applied Psychology*, Vol. 94, pp. 654-677.

Fawehinmi, O., Yusliza, M.Y., Mohamad, Z., Noor Faezah, J. and Muhammad, Z. (2020), "Assessing the green behaviour of academics: the role of green human resource management and environmental knowledge", *International Journal of Manpower*, Vol. 41 No. 7, pp. 879-900.

Fernandez, E., Junquera, B. and Ordiz, M. (2003), "Organizational culture and human resources in the environmental issue", *International Journal of Human Resource Management*, Vol. 14 No. 4, pp. 634-656.

Foulkes, F.K. and Livernash, E.R. (1982), *Human Resources Management: Text and Cases*, Prentice-Hall, Englewood Cliffs, NJ.

Glover, W.J., Farris, J.A., Van Aken, E.M. and Doolen, T.L. (2011), "Critical success factors for the sustainability of Kaizen event human resource outcomes: an empirical study", *International Journal of Production Economics*, Vol. 132 No. 2, pp. 197-213.

Govindarajulu, N. and Daily, B.F. (2004), "Motivating employees for environmental improvement", *Industrial Management and Data Systems*, Vol. 104 No. 3, pp. 364-372.

Guerci, M., Montanari, F., Scapolan, A. and Epifanio, A. (2015), "Green and non-green recruitment practices for attracting job applicants: exploring independent and interactive effects", *The International Journal of Human Resource Management*, Vol. 27 No. 2, pp. 129-150.

Hair, J.F. Jr, Anderson, R.E., Tatham, R.L. and Black, W.C. (1995), *Multivariate Data Analysis*, 3rd ed., Macmillan, New York.

Hair, J., Ringle, C. and Sarstedt, M. (2011), "PLS-SEM: indeed a silver bullet", *The Journal of Marketing Theory and Practice*, Vol. 19 No. 2, pp. 139-151.

Hair, J., Black, W., Babin, B. and Anderson, R. (2014), *Multivariate Data Analysis*, Pearson New International Edition, Pearson Higher Education, Upper Saddle River, NJ.

Harris, L.C. and Crane, A. (2002), "The greening of organizational culture: management views on the depth, degree and diffusion of change", *Journal of Organizational Change Management*, Vol. 15 No. 3, pp. 214-234.

Harrison, A., Martin, L.A. and Nataraj, S. (2017), "Green industrial policy in emerging markets", *Annual Review of Resource Economics*, Vol. 9 No. 1, pp. 253-274.

Harvey, G., Williams, K. and Probert, J. (2013), "Greening the airline pilot: HRM and the green performance of airlines in the UK", *International Journal of Human Resource Management*, Vol. 24 No. 1, pp. 152-166.

Heba Masri, H. and Jaaron, A.A.M. (2017), "Assessing green human resources management practices in Palestinian manufacturing context: an empirical study", *Journal of Cleaner Production*, Vol. 143 No. C, pp. 474-489.

Henseler, J., Dijkstra, T.K., Sarstedt, M., Ringle, C.M., Diamantopoulos, A., Straub, D.W., Ketchen, D.J., Hair, J.F., Hult, G.T.M. and Calantone, J.R. (2014), "Common beliefs and reality about PLS: MRR comments on Rönkkö and Evermann (2013)", *Organizational Research Methods*, Vol. 17 No. 2, pp. 182-209.

Hofstede, G. (2017), *Taiwan in Comparison with Malaysia*, available at: https://geert-hofstede.com/taiwan.html (accessed 20 May 2020).

Holt, D. and Stewart, A. (2000), "Exploring green culture in Nortel and Middlesex university", *Eco-Management and Auditing*, Vol. 7 No. 3, pp. 143-154.

Hooi, L.W. and Ngui, K.S. (2014), "Enhancing organizational performance of Malaysian SMEs", *International Journal of Manpower*, Vol. 35 No. 7, pp. 973-995.

Jabbour, C.J.C. (2011), "How green are HRM practices, organizational culture, learning and team work? A Brazilian study", *Industrial and Commercial Training*, Vol. 43 No. 2, pp. 98-105.

Jabbour, C.J.C. and Santos, F.C.A. (2008), "The central role of human resource management in the search for sustainable organizations", *International Journal of Human Resource Management*, Vol. 19 No. 12, pp. 2133-2154.

Jabbour, C.J.C., Santos, F.C.A. and Nagano, M.S. (2010), "Contributions of HRM throughout the stages of environmental management: methodological triangulation applied to companies in Brazil", *The International Journal of Human Resource Management*, Vol. 21 No. 7, pp. 1049-1089.

Jabbour, C.J.C., de Sousa Jabbour, A.B.L., Govindan, K., Teixeira, A.A. and de Souza Freitas, W.R. (2013), "Environmental management and operational performance in automotive companies in Brazil: the role of human resource management and lean manufacturing", *Journal of Cleaner Production*, Vol. 47, pp. 129-140.

Jabbour, C.J.C., Jugend, D., Jabbour, A.B.L., Gunasekaran, A. and Latan, H. (2015), "Green product development and performance of Brazilian firms: measuring the role of human and technical aspects", *Journal of Cleaner Production*, Vol. 87 No. 15, pp. 442-451.

Jabbour, C.J.C., Sarkis, J., de Sousa Jabbour, A.B.L., Renwick, D.W.S., Singh, S.K., Grebinevych, O., Kruglianskas, I. and Filho, M.G. (2019), "Who is in charge? A review and a research agenda on the 'human side' of the circular economy", *Journal of Cleaner Production*, Vol. 222, pp. 793-801, ISSN 0959-6526.

Jackson, S.E., Renwick, D.W.S., Jabbour, C.J.C. and Muller-Camen, M. (2011), "State-of-the-art and future directions for green human resource management: introduction to the special issue", *German Journal of Research in Human Resource Management*, Vol. 25 No. 2, pp. 99-116.

Jiang, K., Lepak, D.P., Hu, J. and Baer, J.C. (2012), "How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms", *Academy of Management Journal*, Vol. 55 No. 6, pp. 1264-1294.

Johnston, R., Jones, K. and Manley, D. (2018), "Confounding and collinearity in regression analysis: a cautionary tale and an alternative procedure, illustrated by studies of British voting behaviour", *Quality and Quantity*, Vol. 52 No. 4, pp. 1957-1976.

Kim, K.Y., Pathak, S. and Werner, S. (2015), "When do international human capital enhancing practices benefit the bottom line: an ability, motivation, and opportunity perspective", *Journal of International Business Studies*, Vol. 46 No. 7, pp. 784-805.

Kim, Y.J., Kim, W.G., Choi, H.M. and Phetvaroon, K. (2019), "The effect of green human resource management on hotel employees' ecofriendly behavior and environmental performance", *International Journal of Hospitality Management*, Vol. 76, pp. 83-93.

Kramar, R. (2014), "Beyond strategic human resource management: is sustainable human resource management the next approach?", *International Journal of Human Resource Management*, Vol. 25 No. 8, pp. 1069-1089.

Low, K.C.P. (2013), "Value matters or do values really make a difference!", *Educational Research*, Vol. 4 No. 4, pp. 330-339.

MacDuffie, J.P. (1995), "Human resource bundles and manufacturing performance: organizational logic and flexible production systems in the world auto industry", *Industrial and Labor Relations Review*, Vol. 48 No. 2, pp. 197-221.

Mi, L., Gan, X., Xu, T., Long, R., Qiao, L. and Zhu, H. (2019), "A new perspective to promote organizational citizenship behavior for the environment: the role of transformational leadership", *Journal of Cleaner Production*, Vol. 239, pp. 1-11.

Muisyo, P.K. and Qin, S. (2021), "Enhancing the FIRM'S green performance through green HRM: the moderating role of green innovation culture", *Journal of Cleaner Production*, Vol. 289, pp. 1-12.

Nisar, Q.A., Haider, S., Ali, F., Jamshed, S., Ryu, K. and Gill, S.S. (2021), "Green human resource management practices and environmental performance in Malaysian green hotels: the role of green intellectual capital and pro-environmental behavior", *Journal of Cleaner Production*, Vol. 311, pp. 1-11.

Paillé, P., Boiral, O. and Chen, Y. (2013), "Linking environmental management practices and organizational citizenship behaviour for the environment: a social exchange perspective", *International Journal of Human Resource Management*, Vol. 24 No. 18, pp. 3552-3575.

Paillé, P., Chen, Y., Boiral, O. and Jin, J.F. (2014), "The impact of human resource management on environmental performance: an employee-level study", *Journal of Business Ethics*, Vol. 121 No. 3, pp. 451-466.

Paillé, P., Mejía-Morelos, J.H., Amara, N. and Norrin, H. (2020), "Greening the workplace through supervisory behaviors: assessing what really matters to employees", *The International Journal of Human Resource Management*. doi: 10.1080/09585192.2020.1819857.

Pellegrini, C., Rizzi, F. and Frey, M. (2018), "The role of sustainable human resource practices in influencing employee behavior for corporate sustainability", *Business Strategy and the Environment*, Vol. 27 No. 8, pp. 1221-1232.

Pham, N.T., Tučkova, Z. and Jabbour, C.J.C. (2019), "Greening the hospitality industry: how do green human resource management practices influence organizational citizenship behavior in hotels? A mixed-methods study", *Tourism Management*, Vol. 72, pp. 386-399.

Pham, N.T., Hoang, H.T. and Phan, Q.P.T. (2020), "Green human resource management: a comprehensive review and future research agenda", *International Journal of Manpower*, Vol. 41 No. 7, pp. 845-878.

Phillips, L. (2007), "Go green to gain the edge over rivals", *People Management*, Vol. 13 No. 17, p. 9.

Pinzone, M., Guerci, M., Lettieri, E. and Redman, T. (2016), "Progressing in the change journey towards sustainability in healthcare: the role of 'Green' HRM", *Journal of Cleaner Production*, Vol. 122, pp. 201-211.

Pinzone, M., Guerci, M., Lettieri, E. and Huisingh, D. (2019), "Effects of 'green' training on pro-environmental behaviors and job satisfaction: evidence from the Italian healthcare sector", *Journal of Cleaner Production*, Vol. 226, pp. 221-232.

Post, J.E. and Altma, B.W. (1994), "Managing the environmental change process: barriers and opportunities", *Journal of Organizational Change Management*, Vol. 7 No. 4, pp. 64-81.

Preacher, K.J. and Kelley, K. (2011), "Effect size measures for mediation models: quantitative strategies for communicating indirect effects", *Psychological Methods*, Vol. 16 No. 2, pp. 93-115.

Raineri, N. and Paillé, P. (2016), "Linking corporate policy and supervisory support with environmental citizenship behaviors: the role of employee environmental beliefs and commitment", *Journal of Business Ethics*, Vol. 137 No. 1, pp. 129-148.

Ren, S., Tang, G. and Jackson, E.S. (2018), "Green human resource management research in emergence: a review and future directions", *Asia Pacific Journal of Management*, Vol. 35 No. 3, pp. 769-803.

Renwick, D., Redman, T. and Maguire, S. (2008), *Green HRM: A Review, Process Model, and Research Agenda*, discussion paper, University of Sheffield Management School, pp. 1-46.

Renwick, D.W.S., Redman, T. and Maguire, S. (2013), "Green human resource management: a review and research agenda", *International Journal of Management Reviews*, Vol. 15 No. 1, pp. 1-14.

Ringle, C.M., Sarstedt, M., Mitchell, R. and Gudergan, S.P. (2020), "Partial least squares structural equation modeling in HRM research", *The International Journal of Human Resource Management*, Vol. 31 No. 12, pp. 1617-1643.

Robertson, J.L. and Barling, J. (2017), "Toward a new measure of organizational environmental citizenship behavior", *Journal of Business Research*, Vol. 75 No. C, pp. 57-66.

Roscoe, S., Subramanian, N., Jabbour, C.J.C. and Chong, T. (2019), "Green human resource management and the enablers of green organisational culture: enhancing a firm's environmental performance for sustainable development", *Business Strategy and the Environment*, Vol. 28 No. 5, pp. 737-749.

Saeed, B.B., Afsar, B., Hafeez, S., Khan, I., Tahir, M. and Afridi, M.A. (2018), "Promoting employee's proenvironmental behavior through green human resource management practices", *Corporate Social Responsibility and Environmental Management*, Vol. 26 No. 2, pp. 424-438.

Salmerón Gómez, R., García Pérez, J., López Martín, M.D.M. and García, C.G. (2016), "Collinearity diagnostic applied in ridge estimation through the variance inflation factor", *Journal of Applied Statistics*, Vol. 43 No. 10, pp. 1831-1849.

Schein, E.H. (1992), *Organizational Culture and Leadership*, Jossey-Bass, San Francisco,CA.

Shah, M. (2019), "Green human resource management: development of a valid measurement scale", *Business Strategy and the Environment*, Vol. 28, pp. 771-785.

Snape, E. and Redman, T. (2010), "HRM practices, organizational citizenship behaviour, and performance: a multi-level analysis", *Journal of Management Studies*, Vol. 47 No. 7, pp. 1219-1247.

Srinivasan, A. and Kurey, B. (2014), "Creating a culture of quality", *Harvard Business Review*, Vol. 92 No. 4, pp. 23-25.

Sroufe, R.P., Liebowitz, J. and Sivasubramaniam, N. (2010), "Are you a leader or a laggard? HR's role in creating a sustainability culture", *People and Strategy*, Vol. 33 No. 1, pp. 34-42.

Stanwick, P.A. and Stanwick, S.D. (2001), "CEO compensation: does it pay to be green?", *Business Strategy and the Environment*, Vol. 10 No. 3, pp. 176-182.

Tabachnick, B.G. and Fidell, L.S. (2007), *Using Multivariate Statistics*, 5th ed., Allyn & Bacon, New York.

Tang, G., Chen, Y., Jiang, Y., Paille, P. and Jia, J. (2018), "Green human resource management practices: scale development and validity", *Asia Pacific Journal of Human Resources*, Vol. 56 No. 1, pp. 31-55.

Temminck, E., Mearns, K. and Fruhen, L. (2015), "Motivating employees towards sustainable behaviour", *Business Strategy and the Environment*, Vol. 24 No. 6, pp. 402-412.

Wehrmeyer, W. (2017), *Greening People: Human Resources and Environmental Management*, Routledge, London.

Yong, J.Y., Yusliza, M., Ramayah, T., Jabbour, C.J.C., Sehnem, S. and Mani, V. (2020), "Pathway towards sustainability in manufacturing organizations: empirical evidence on the role of green human resource management", *Business Strategy and the Environment*, Vol. 29 No. 1, pp. 212-228.

Yu, W., Chavez, R., Feng, M., Wong, C.Y. and Fynes, B. (2020), "Green human resource management and environmental cooperation: an ability-motivation-opportunity and contingency perspective", *International Journal of Production Economics*, Vol. 219, pp. 224-235.

Zibbaras, L.D. and Coan, P. (2015), "HRM practices used to promote pro-environmental behavior: a UK survey", *International Journal of Human Resource Management*, Vol. 26 No. 16, pp. 2121-2142.

Zientara, P. and Zamojska, A. (2018), "Green organizational climates and employee pro-environmental behaviour in the hotel industry", *Journal of Sustainable Tourism*, Vol. 26 No. 7, pp. 1142-1159.

## Further reading

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modeling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, pp. 411-423.

Becker, B.E. and Huselid, M.A. (2006), "Strategic human resources management: where do we go from here?", *Journal of Management*, Vol. 32 No. 6, pp. 898-925.

Sweeney, D.J., Anderson, D.R. and Williams, T.A. (2011), *Fundamentals of Business Statistics*, South-Western, Mason, Ohio.

## Appendix

### Green HRM

(1) In my organization, job description specification includes environmental concerns.

(2) My organization selects applicants who are sufficiently aware of greening to fill job vacancies.

(3) My organization includes environmental criteria in the recruitment messages.

(4) My organization considers candidates' environmental concern and interest as selection criteria.

(5) When interviewing candidates or evaluating them for selection, my organization asks environment-related questions.

(6) My organization rewards environmental achievements (sabbatical, leave, gifts, bonuses, cash, premiums, promotion.)

(7) My organization recognizes green initiatives publicly.

(8) My organization provides incentives to encourage environmentally friendly activities and behaviors (e.g. recycling and waste management).

(9) My organization rewards green skills acquisition.

(10) Every employee has an opportunity to receive environmental training in my organization.

(11) My organization provides environmental training frequently.

(12) My organization offers appropriate environmental training programs.

(13) My organization evaluates employees' performance after environmental training.

(14) My organization incorporates environmental training programs in the yearly training calendar.

(15) My organization conveys key environmental performance indicators clearly.

(16) My organization assesses employees' environmental contributions to the organization's environmental performance.

(17) My organization provides regular feedback on environmental performance to employees.

(18) Environmental performance is one of the criteria in employee performance appraisal.

(19) Roles of managers in achieving environmental outcomes are included in performance appraisals.

### Green organizational citizenship behavior

(1) I suggest new practices that could improve the organization's environmental performance.

(2) I encourage my colleagues to adopt more environmentally conscious behaviors.

(3) I stay informed of the organization's environmental efforts.

(4) I make suggestions about ways to protect the environment more effectively.

(5) I volunteer for projects or activities that address the organization's environmental issues.

(6) I spontaneously give my time to help my colleagues take the environment into account.

(7) I undertake environmental actions that contribute positively to the organization's image.

**Green culture**

(1) Leaders encourage employees (me) to learn green information.

(2) Leaders communicate the green and environmental policy with employees (me).

(3) Leaders can help me when faced with green problems.

(4) Leaders "walk the talk" on environmental issues and will review the green operations for progress.

(5) The information about environmental knowledge is delivered by respected sources.

(6) It is easy to understand company's green operations.

(7) Communications about green practices appeal to employees personally.

(8) Company has already applied some related green knowledge.

(9) It is easy to share green knowledge with my colleagues.

(10) We have group discussions about green topics routinely.

(11) Employees are encouraged to solve green issues together.

(12) Like members of a sports team, peers hold one another accountable for green issues.

(13) I clearly know how green operations fit with my daily job.

(14) I feel a shared sense of responsibility for the green issues at work.

(15) I have significant autonomy to make decisions regarding green issues.

(16) I have a voice for green violations.

**Green value**

(1) I feel obliged to do whatever I can to prevent environmental degradation.

(2) I feel obliged to bear the environment and nature in mind in my daily behavior.

(3) My organization promotes environmental protection measures in the workplace.

(4) Employees in my organization generally support environmentally-friendly practices.

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