



RESEARCH ARTICLE

Green human resource management and the enablers of green organisational culture: Enhancing a firm's environmental performance for sustainable development

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Abstract

Scholars have shown that green human resource management (GHRM) practices enhance a firm's environmental performance. However, existing studies fail to explain how GHRM initiatives can enable a green organisational culture or how such a culture affects the environmental performance and sustainable development of the firm. This paper examines the relationship between GHRM practices, the enablers of green organisational culture, and a firm's environmental performance. We conduct a large-scale survey of 204 employees at Chinese manufacturing firms. Our findings suggest that proenvironmental HRM practices including hiring, training, appraisal, and incentivisation support the development of the enablers of green organisational culture. We suggest the key enablers of green organisational culture include leadership emphasis, message credibility, peer involvement, and employee empowerment. Our paper contributes to HRM theory in terms of originality and utility of research by explaining that the enablers of green organisational culture positively mediate the relationship between GHRM practices and environmental performance. Managers are provided with a detailed understanding of the GHRM practices needed to enable an organisational culture of environmentally aware employees. Finally, we address potential implications of this work for teaching green organisational culture to future generations of responsible managers.

KEYWORDS

environmental performance, green human resource management, green organisational culture, sustainable development

1 | INTRODUCTION

Green human resource management (GHRM) practices offer a practical way for organisations to develop human capital that can enhance the environmental performance (EP) and sustainable development of the firm (Jaramillo, Sossa, & Mendoza, 2018; Siebenhüner & Arnold, 2007; Wolf, 2013; Wong, Wong, & Boon-itt, 2018). GHRM refers to the HRM aspects of environmental management (Renwick, Redman, & Maguire, 2013 p. 1) and is defined as HRM activities that have positive environmental outcomes (Kramar, 2014 p. 1075). GHRM practices can be categorised into three primary activities: developing

green employee abilities, motivating green employees, and providing green opportunities (Renwick et al., 2013).

Developing an employee's green abilities involves integrating positive environmental thinking into the firm using human resource (HR) activities such as recruitment, selection, training, and leadership development (Pellegrini, Rizzi, & Frey, 2018). Once recruited and trained, employees remain motivated through performance measurement and reward systems that are focused on providing opportunities for EP improvement (Attaianese, 2012; Renwick et al., 2013). Several scholars have investigated the relationships between GHRM practices and a firm's EP (Jabbour & de Sousa Jabbour, 2016; Jabbour & Santos,

2008; Renwick et al., 2013). These scholars find that GHRM practices positively influence a firm's EP through activities such as waste reduction and organisational efficiency (Jabbour, 2015). Overall, GHRM practices can enhance employees' green behaviour to voluntarily improve a firm's performance (Kim, Kim, Han, Jackson, & Ployhart, 2014; Pham, Tučková, & Jabbour, 2019).

Yet, although the link between GRHM practices and EP is well established, we suggest that any study of how environmentally conscious employees implement green initiatives, without a consideration of organisational culture, is incomplete. Indeed, recent studies have highlighted the lack of research on the relationship between organisational culture and a firm's EP (Dubey et al., 2017; Jackson, Renwick, Jabbour, & Muller-Carmen, 2011; Jackson, Schuler, & Jiang, 2014; Renwick et al., 2013). Daily, Bishop, and Massoud (2012) stress that the mediating role that organisational culture has on the relationship between GHRM and firm performance is underresearched (Daily et al., 2012). Aligned with this, Jackson et al. (2011) affirm that the interaction between GHRM and green organisational culture is one of the most relevant topics for investigation by today's scholars. To address these gaps, this paper aims to answer the following research question: How do GHRM practices and the enablers of green organisational culture (EGC) affect the EP of the firm?

We answer this question by first building a hypothetical model that proposes a relationship between GHRM practices, the EGC, and EP. To test our model, we gather data from a large-scale survey of Chinese manufacturing firms. China's manufacturing industry is well suited to a study of EP because this sector has a notoriously poor environmental record and is under increasing pressure from the Chinese government to lower harmful emissions (Li & Zhang, 2014). We then provide a justification for the research design and explain how the hypotheses were tested. Section 4 presents an analysis of the results, and Section 5 discusses the study's key findings. The paper concludes by outlining the study's contribution to theory and practices as well as some potentially fruitful avenues for future research.

This study extends our knowledge of GHRM and organisational culture because its findings have implications for both theory and practice. First, the paper fulfils the two necessary elements of theory contribution, originality and utility. According to Corley and Gioia (2011), research has theory contribution when it is considered original and useful for improving organisational issues. This research is original because it adds empirical evidence of the relation between GHRM and organisational culture. Previously published works have only addressed this relation in a conceptual fashion (Daily & Huang, 2001; Jabbour & Santos, 2008; Jackson et al., 2011), without an in-depth consideration of the key EGC. Finally, this research fulfils the second criteria for theory contribution (Corley & Gioia, 2011) due to its discovery of how managers can help improve their firm's green organisational culture by paying attention to four key EGC including leadership emphasis, message credibility, peer involvement, and employee empowerment. We believe that the originality and utility of this research can also be useful for teaching green organisational culture with a richer level of details and understanding on key EGC, which can contribute to teaching future generations of responsible managers (Marcus & Fremeth, 2009; Peoples, 2009).

2 | LITERATURE REVIEW AND HYPOTHETICAL MODEL

2.1 | GHRM and EP

Numerous studies have investigated how proenvironmental HRM activities improve the EP of the firm (Arda, Bayraktar, & Tatoglu, 2018; Daily et al., 2012; Jabbour & Santos, 2008). EP is defined as the commitment of firms to protect the environment and to demonstrate measurable operational parameters that are within the prescribed limits of environmental care (Paillé, Chen, Boiral, & Jin, 2014). A comprehensive measure of EP is provided by Montabon, Sroufe, and Narasimhan (2007), which includes incident reduction, continuous improvement, recycling performance, stakeholder perception, independent audits, waste reduction, resource consumption, and cost savings. HR managers play an essential role in achieving these EP objectives through the recruitment, training, appraisal, and incentivisation of an environmentally conscious workforce (Harvey, Williams, & Probert, 2013; Jabbour & Santos, 2008; Renwick et al., 2013).

Many HR managers actively promote their company's environmental credentials to recruit job seekers that are in search of organisations that reflect their values and beliefs (Renwick et al., 2013). University students in particular are entering the job market in search of organisations with proenvironmental images (Backhaus, Stone, & Heiner, 2002). Some HR managers are embedding environmental awareness criteria in job descriptions and interview protocols to ensure future employees are willing to strive for the achievement of the company's environmental objectives (Renwick et al., 2013).

HR managers also play an important role in training employees on the environmental priorities of the firm (Bansal & Roth, 2000; Daily et al., 2012; Daily & Huang, 2001). Training staff about the ecological impact of organisational activities is said to heighten employee concern about environmental issues (Bansal & Roth, 2000). Often, the aim of training is to develop the green abilities of staff so they are focused on reducing activities that generate unnecessary pollution and waste (Simpson & Samson, 2010). As many employees will be working in operational positions, they are well placed to identify and eliminate the processes that generate waste and harmful effluents (Renwick et al., 2013). A training programme centred on environmental awareness increases employee skills in eradicating process and material waste and enhances their emotional involvement in improving the EP of the firm (Fernández, Junquera, & Ordiz, 2003).

HR managers not only train operational employees but also oversee management and leadership development programs. The HR function plays an important role in selecting and promoting environmentally aware candidates into leadership positions (Egri & Herman, 2000). Leaders in environmentally focused organisations frequently need to perform both transformational and transactional managerial roles (Egri & Herman, 2000). This means that HR managers need to recruit and retain leaders with the ability to quickly switch between strategic and operational decision-making activities (Egri & Herman, 2000). Once in positions of authority, leaders will champion

ecologically focused initiatives that are focused on enhancing the EP of the firm (Bansal & Roth, 2000).

HR managers also play a key role in evaluating employee performance based on the achievement of environmental objectives. HR managers can develop and implement companywide proenvironmental performance indicators and evaluation systems (Marcus & Fremeth, 2009). During performance appraisals, HR managers can discuss with employees whether they have achieved their environmental objectives and any ideas for waste reduction and performance improvements they may have (Renwick et al., 2013).

Although employees are often motivated by doing less environmental harm, their behaviour can be further influenced through pay and incentive systems (Cordeiro & Sarkis, 2008; Marshall, Cordano, & Silverman, 2005). Studies have shown a link between executive compensation and the EP of the firm (Berrone & Gomez-Meija, 2009; Cordeiro & Sarkis, 2008; Stanwick & Stanwick, 2001). In a study of 207 firms, Cordeiro and Sarkis (2008) found that companies with an explicit link between chief executive officer compensation levels and the achievement of environmental objectives had higher levels of EP than those without. Similarly, Fernández, Junquera, and Ordiz (2003) found that companies that had senior managers working with remuneration contingent upon delivering environmental objectives had higher EP compared with companies with fixed salaries.

A review of the GHRM literature makes it clear that activities such as recruitment, retention, appraisal, and incentivisation positively influence the EP of the firm. We therefore propose the following:

H1. GHRM activities positively influence a firm's EP.

Yet, although the connection between GHRM practices and EP is well known, we suggest that organisational culture is a key missing link in this relationship.

2.2 | GHRM and green organisational culture

Organisational culture encompasses the values, beliefs, and behaviours of organisational employees (Schein, 1992). Values correspond to what individuals think can be done and relate to moral and ethical codes (Holt & Stewart, 2000). Beliefs refer to individuals' perceptions that can be regarded as either true or false (ibid). Behaviours are the pattern of activities carried out by individuals based on their values and beliefs (Schein, 1992). Values, beliefs, and behaviours become embodied in an ideology or organisational philosophy, which serves as a guide to dealing with the uncertainty of uncontrollable or difficult events that occur in organisational life (Schein, 1992). The ideologies of the organisation manifest in the behaviours of individual employees and, over time, these behaviours form into habits that are embedded in the day-to-day running of the company, thereby shaping an organisation's culture (Schein, 1992).

An organisation's culture can be considered "green" when employees go beyond profit-seeking objectives to minimise the negative and maximise the positive impact of organisational activities on the environment (Sroufe, Liebowitz, & Sivasubramaniam, 2010). A

"green" organisational culture can therefore be defined as the values, beliefs, and behaviours of organisational members concerning the natural environment.

The HRM department plays a key role in enabling a green organisational culture because it shapes the values, beliefs, and behaviours of employees through the processes of hiring, training, appraisal, and incentivisation (Amini, Bienstock, & Narcum, 2018; Dyllick & Hockerts, 2002; Madsen & Ulhoi, 2001). In fact, a recent study by Pellegrini et al. (2018) identified the importance of designing HR practices to enhance employee commitment and behaviour in order to support organisational change for long-term sustainable development. An earlier study by Attaianesi (2012) found that employees trained and incentivised to engage in proenvironmental activities ultimately helped to develop and promote a green culture throughout the firm.

Srinivasan and Kurey (2014) found that four factors brought about a significant change in the culture of 60 U.S. multinational companies: leadership emphasis, message credibility, employee empowerment, and peer involvement. Although these factors prompted a shift towards a culture of quality management (Srinivasan & Kurey, 2014), we argue that they can also enable a green organisational culture. This argument is supported by Arda et al. (2018) who found that quality management and environmental management are two interdependent systems, that once integrated can positively affect firm performance. Importantly, we argue that GHRM activities play an essential role in the development of the four EGC.

Proenvironmental leadership emphasis refers to making the environment a leadership priority, where leaders exemplify proenvironmental behaviours in their daily work and evaluate employees on the basis of EP (Bowen, 2000; Sharma & Vredenburg, 1998). HR managers are responsible for recruiting environmentally conscious employees and promoting these individuals into leadership positions (Egri & Herman, 2000). Moreover, HR can incentivise leaders to implement environmental initiatives through remuneration contingent upon EP improvement (Fernández, Junquera, & Ordiz, 2003). A proenvironmental incentive system targeted at organisational leaders then trickles down through the company as leaders set environmental priorities for each department and its employees (Cordeiro & Sarkis, 2008).

Message credibility refers to messages delivered by respected sources that are consistent, easy to understand, and appeal personally to workers (Srinivasan & Kurey, 2014). HR managers are well placed to shape proenvironmental messages that speak to employee concerns about reducing wasteful and environmentally harmful activities in their daily roles (Chow, 2012; Lin & Ho, 2011). Proenvironmental messages can be communicated by the HR department to employees during training sessions as well as performance appraisal meetings (Renwick et al., 2013).

Peer involvement relates to employee participation and mutual involvement in environmental initiatives (Jabbour, 2011; Srinivasan & Kurey, 2014). HR can nurture a culture of peer involvement in environmental activities through training and reward systems (Pellegrini et al., 2018). Specifically, HR can work with managers to develop key performance indicators (KPIs) for teams involved in the delivery of proenvironmental projects. The KPIs can be linked

to waste reduction activities, recycling improvements, and reductions in resource consumption (water, electricity, and raw materials; Jabbour, 2011). By tying financial rewards to the delivery of KPIs, HR managers can encourage employees to work with their peers to deliver environmental initiatives (Daily et al., 2012; Pellegrini et al., 2018).

Employee empowerment refers to the level of employee autonomy for making effective decisions involving situations and requirements that are beyond formative rules (Srinivasan & Kurey, 2014). Daily et al. (2012) suggest that environmental empowerment improves the environmental awareness of employees. Managers and employees become empowered through HR led initiatives including training and assessment (Daily et al., 2012). Empowered managers that lead by example are likely to have employees that can embrace environmental change and proactively reduce harmful organisational processes (Daily et al., 2012; Daily & Huang, 2001). Workers that go beyond what is expected can receive additional compensation during performance appraisals (Daily & Huang, 2001). Moreover, HR can encourage employees to address environmental problems through mechanisms such as green teams where team members play important roles in identifying and resolving issues through teamwork (Daily et al., 2012).

Here, we see how GHRM practices support the development of the EGC. The HRM department hires environmentally conscious employees and moulds proenvironmental values and beliefs using training, leadership, and incentive programmes. These values and beliefs manifest as proenvironmental behaviours in an employee's daily tasks. As employees interact and cooperate to tackle environmental challenges, over time, these behaviours become habits, and a proenvironmental culture emerges in the organisation. Based on this understanding, we suggest that GHRM practices positively influence the development of leadership emphasis, message credibility, peer involvement, and employee empowerment; the EGC. This leads us to hypothesise that:

H2. *GHRM practices are positively related to the EGC.*

2.3 | The EGC and EP

We go on to hypothesise that the EGC can lead to EP improvements at the firm. Specifically, we suggest that leadership emphasis, message credibility, employee empowerment, and peer involvement can positively influence Montabon, Sroufe, and Narasimhan (2007) criteria for EP improvement.

For example, a proactive stance on environmental issues (*leadership emphasis*) has been shown to help staff better understand environmental issues and gives employees the ability to implement positive environmental solutions, such as recycling and stakeholder engagement programs (Bowen, 2000; Sharma & Vredenburg, 1998). Pagell and Wu (2009) suggest that environmentally conscious management teams can proactively implement environmental initiatives by aligning environmental and financial goals. Proactive environmental initiatives are disseminated by senior leaders to operational employees and, over time, will become embedded in their day-to-day roles (Bowen, 2000). Therefore, making the environment a leadership

priority reflects in the proenvironmental behaviours of employees, allowing staff to focus on improvement initiatives such as removing wasteful activities from the production process (Simpson & Samson, 2010). In turn, reducing and reusing raw materials improve recycling performance, limits resource consumption, and cuts costs (Bansal & Roth, 2000).

Furthermore, credible proenvironmental messages (*message credibility*) from senior management encourage environmentally conscious employees to act in an environmentally responsible manner (Lin & Ho, 2011). Specifically, messaging that fits with an employee's desire to reduce environmental harm can shape how staff communicates proenvironmental performance to stakeholders (Madsen & Rodgers, 2014; Madsen & Ulhoi, 2001). Enhancing stakeholder perceptions of the firm's EP can assist with rankings in sustainability indices such as the Dow Jones Sustainability Index and attract further investment (Amini et al., 2018).

Peer involvement can shape teamwork efforts around the delivery of the environmental objectives of the firm (Daily & Huang, 2001). Environmentally conscious teamwork is said to substantially reduce waste and enhance the EP of a firm's operation (Daily et al., 2012). For example, Jabbour (2011) argue that only when teams incorporate proenvironmental thinking can organisations reach the proactive stage of environmental management. Similarly, Glover, Farris, Van Aken, and Doolen (2011) argue that peer involvement and environmentally conscious teamwork are vital elements for green integration. Teams can focus on continuous improvement initiatives aimed at reducing harmful emissions and unnecessary waste in the production process or programs that reduce the number of harmful environmental incidents in an operation (Simpson & Samson, 2010).

When employees are empowered (employee empowerment) to make their own decisions, they are given the autonomy to identify and quickly rectify harmful activities in a company's operation. For example, employees can be given the freedom to identify processes that are consuming excessive raw materials and proactively design recycling programmes to reduce overall usage rates (Simpson & Samson, 2010). Moreover, employees can be given the authority to carry out audits of their own processes and those of their peers to encourage a culture of continuous proenvironmental improvement. Indeed, Daily et al. (2012) has shown that employee empowerment improves the environmental awareness of employees and can positively influence the EP of the firm (Daily et al., 2012).

Based on this argument, we hypothesise that leadership emphasis, message credibility, peer involvement, and employee empowerment act as the key EGC. In addition, we propose that the EGC mediate the relationship between GHRM practices and EP. This leads us to hypothesise the following:

H3. *The EGC can positively influence a firm's EP.*

H4. *The EGC mediate the relationship between GHRM practices and a firm's EP.*

We now advance a hypothetical model of the relationships between GHRM practices, the EGC, and a firm's EP (see Figure 1).

The next section provides a justification for our research design, data collection, and analysis methods.

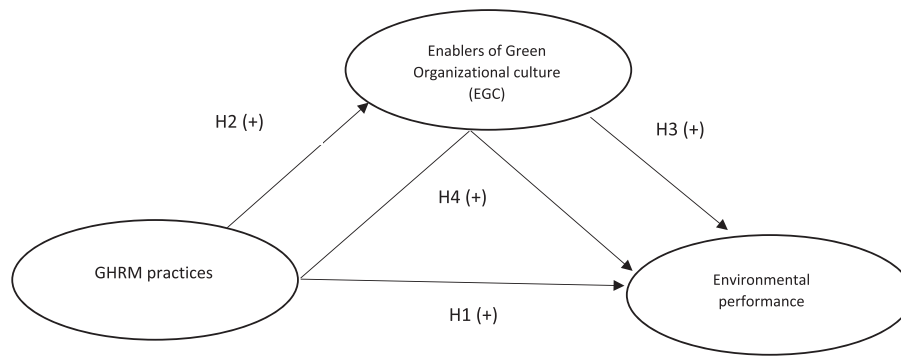


FIGURE 1 Hypothetical model

3 | RESEARCH DESIGN

3.1 | Sample selection

Our sample population included employees of China's manufacturing sector. Our sample is composed of employees from manufacturing firms that employ more than 20 staff members and are located in various geographic regions of China, specifically, Shanghai, Zhejiang Province, Jiangsu Province, and Anhui Province. The majority of survey respondents was from the Yangtze River Delta region (Shanghai, Zhejiang, and Jiangsu Province), which is a highly developed economic zone in east China and an area known for high levels of pollution emissions (Li & Zhang, 2014).

We selected China's manufacturing industry as the context of study because this sector has a notoriously poor environmental record (Li & Zhang, 2014). Less than 1% of China's major cities meet the air-quality standards recommended by the World Health Organization, and seven of China's cities are among the 10 most polluted cities in the world (Asian Development Bank, 2016). These environmental challenges are due to China's rapid industrialisation over the last three decades, which has resulted in high growth in the manufacturing sector and a dramatic increase in pollution (Li & Zhang, 2014). In response to public concern, the Chinese government enacted stringent regulation to reduce the level of inhalable particulate matter to less than 10% by 2017 and has called for manufacturing firms to limit coal use, enforce green practices, and eliminate major sources of pollution (Li & Zhang, 2014).

3.2 | Survey instrument

The survey instrument was designed to capture the three major constructs of our study, namely, the EGC, GHRM practices, and EP. We received 204 valid responses to 500 questionnaires, representing a response rate of 40.8%. An advantage of the survey method is its versatility in covering a large geographic area (Cooper & Schindler, 2006). Forty-eight percent of the respondents were senior and midlevel managers, and 52% were operational employees. This sample fits our study well as it captures the perspectives of both managers and operational employees across a range of organisational departments.

For greater credibility and validity, we employed a 7-point Likert scale to measure each item in the three major constructs, with scores

ranging from 1 (*strongly disagree*) to 7 (*strongly agree*; Preston & Colman, 2000). As per Renwick et al. (2013) and Jabbour (2011), we identified six factors that comprise GHRM practices including job description, recruitment, selection, training, performance assessment, and reward (see Table 1).

The survey instrument comprised standard, validated statistical scales for measuring the EGC (Preston & Colman, 2000). The items (leadership emphasis, message credibility, peer involvement, and employee empowerment) are based on the work by Srinivasan and Kurey (2014), and the measures are informed from multiple literature sources, as shown in Table 2.

The measures of EP are based on the study of Montabon, Sroufe, and Narasimhan (2007) and include recycling, waste reduction, cost savings, resource consumption, environmental certification, incident reduction, and continual improvement (see Table 3). Due to the nascent stage of green practices in China and the various degrees to which green actions are applied, the present study explored EP according to how the respondents perceived their work conditions (see Table 3).

(Source: Montabon, Sroufe, & Narasimhan, 2007)

Because our respondents were Chinese, we used a Chinese version of the questionnaire. We translated the scales into Chinese by using a double translation method. We piloted the Chinese versions of our survey instrument by recruiting 10 employees from Chinese firms to obtain feedback on the questionnaire design. All of the scales were validated in a pilot study. After the pilot trial, some sentences in the initial questionnaire were revised to ensure that Chinese employees could understand them. For example, using "if" statements in Chinese can cause ambiguity; therefore, questions of this type were changed to suit Chinese expressions. The pilot study helped to verify the instrument and ensured the appropriate usage of wording, clarity of instruction, and face validity of the measurement items.

3.3 | Data collection

The questionnaire was published online for approximately 1 month in May 2014. Hyperlinks to the online survey instrument were distributed to the employees of the manufacturing firms. We sent 500 invitations to various levels of employees including senior and midlevel managers and operational employees of 60 firms. We received 249 responses, out of which, 45 responses were incomplete answers,

TABLE 1 Green human resource management (GHRM) measures

Constructs with measures	Source
Job description	
JDv1—Job positions in our company enable involvement in environmental management activities.	Renwick et al. (2013), Jabbour (2011), Jabbour (2011)
JDv2—Job positions in our company enable the acquisition of knowledge about environmental management.	
JDv3—Job positions in our company demand knowledge about environmental management.	
Recruitment	
Rv1—Environmental performance of the company attracts employees.	
Rv2—HR department of our company prefers to hire employees that have environmental knowledge.	
Selection	
Sv1—HR department selects employees considering environmental motivation in our company.	
Sv2—All selection steps consider environmental questions in our company.	
Training	
Tv1—Environmental training is considered as an important investment in our company.	
Tv2—Environmental training is a priority in our company.	
Tv3—HR department provides continuous, relevant, and effective environmental training programs.	
Performance Assessment	
PAv1—HR department of our company establishes a clear and special objective of green practice for each employee.	
PAv2—Our company assesses employees' contributions to environmental management.	
PAv3—Individual performance assessment results are recorded in our company.	
Reward	
Rewardv1—Public recognition rewards are established in our company for environmental performance.	
Rewardv2—Monetary rewards are provided for environmental performance.	

Note. HR: human resource.

yielding a survey return rate of approximately 40.8% (204 responses). We did not receive responses to the remaining 251 invitations. Initially, we controlled the number of responses from each firm by sending a maximum of 10 invitations to the employees of one company to avoid potential bias from a single firm.

To avoid respondent bias, we randomly collected secondary data from annual reports and corporate sustainability reports regarding environmental initiatives, such as reductions in carbon dioxide emissions, energy use, and waste generation. Secondary data were used to corroborate the primary data, and we found that the documents supported the survey data in each instance. We restricted our sample to Chinese manufacturing firms engaged in pollution prevention activities, in accordance with information provided on their corporate websites and annual reports.

TABLE 2 Enablers of green organisational culture (EGC) measures

Constructs with variables	Source
Leadership emphasis	
LEv1—Leaders encourage employees to learn green information.	(F. E. Bowen, Cousins, Lamming, & Faruk, 2001; Pagell & Wu, 2009; Sharma & Vredenburg, 1998; Srinivasan & Kurey, 2014)
LEv2—Managers communicate the green and environmental policy with employees.	
LEv3—Leaders can help me when face green problems.	
LEv4—Manager's "walk the talk" on environmental issues and will review the green operations for progress.	
LEv5—When evaluating employees, managers emphasise the importance of green.	
Message credibility	
MCv1—The information about environmental knowledge is delivered by respected sources.	Lin and Ho (2011); Lin and Ho (2011); Srinivasan and Kurey (2014)
MCv2—It is easy to understand how to apply those green operations.	
MCv3—It is unnecessary to have too many experiences of using green practices.	
MCv4—Communications about that green practice appeal to employees personally.	
MCv5—Company has already applied some related green knowledge.	
Peer involvement	
Plv1—It is easy to share green knowledge with my colleagues.	Daily et al. (2012); Glover et al. (2011); Jabbour (2011); Srinivasan and Kurey (2014)
Plv2—Most employees have a strong network of peers for guidance.	
Plv3—We have a group discussion about green topic routinely.	
Plv4—Employees are encouraged to exchange environmental issues with other department.	
Plv5—Like members of a sports team, peers hold one another accountable.	
Employee empowerment	
EEv1—I clearly know how green operations fit with my job.	Daily et al. (2012); Glover et al. (2011); Srinivasan and Kurey (2014)
EEv2—I feel a shared sense of responsibility for the work I do.	
EEv3—I am free to make decisions regarding environmental issues.	
EEv4—I have significant autonomy in deciding how to handle green issues in practices.	
EEv5—I have a voice for green violations.	

3.4 | Data description

Table 4 shows the respondents' demographic details. Our sample is heterogeneous, comprising respondents who varied in age, level of work experience, education, job role, and organisational department (see Table 4). Even though our data contain age and gender as the demographic variables, we did not use this information because the aim of our study is to understand the relationship between EGC and

TABLE 3 Environmental performance measures

Measure	Detail
EPv1 significant reduction in environmental incidents	Reduction in the number of environmentally harmful accidents
EPv2 continuous improvement	Continuously achieve and/or exceed environmental targets
EPv3 recycling performance	Significant % improvement in the recycling of materials (solid, liquid, and gas)
EPv4 stakeholder perception	Use of feedback of environmental performance from the surrounding community and interest groups
EPv5 independent audits	Use of independent assessment and report of environmental performance
EPv6 waste reduction	Significant % reduction of waste (solids, liquids, gaseous ...)
EPv7 resource consumption	Significant % reduction in resource consumption (water, energy, steam, solids, and fuel)
EPv8 cost savings	Significant % reduction in costs due to environmental projects and activities

green HR practices on EP irrespective of the gender and age or respondents.

Education background reflects the respondent's awareness of green operational improvement programmes and their ability to adopt new practices. Almost half of the respondents had graduated from University, and these individuals worked in different departments at various levels. In the department category, "others" refer to individuals

TABLE 4 Respondents' information

Attribute	Classification	Percentage
Gender	Male	56.90
	Female	43.10
Age (year)	Under 20	2.50
	20–30	51.50
	30–40	28.90
	Over 40	17.20
Work experience (year)	0–3	27.50
	3–5	17.20
	6–10	16.70
	10–15	15.70
	16–20	7.80
	More than 20	15.20
Department	HR	16
	Sales	16
	Marketing	7
	Production	25
	Sourcing	2
	Customer service	4
	Others (research and development, logistics department, IT and technology department, and finance and accounting department)	30
Position	Operational level employees	53
	Basic level leaders	21
	Middle level manager	17
	Senior manager	2
	CEO	1
	Others (employees in research and development, logistics, IT and technology, and finance and accounting)	6
Education	High school	11
	Junior college	40
	Undergraduate	40
	Graduate	6
	MBA	2
	PhD	1
	Others (people progressed through experience without formal qualifications)	1

Note. HR: human resource; CEO: chief executive officer; MBA: Master of Business Administration; PHD: doctor of philosophy; IT: information technology.

working in research and development, logistics, information technology (IT), and finance and accounting departments (see Table 4). In the position category, "others" refer to the job roles of employees working in each department.

As pollution in China's manufacturing sector is a significant issue that affects all levels and types of employees, heterogeneous representation allowed us to capture a variety of views across the firm. Moreover, this approach allowed us to examine the cross disciplinary culture of teamwork in many Chinese manufacturing companies where people share their views about environmental issues and solutions in teams and using social media platforms such as Wechat. EP construct had both subjective and objective variables. We have noticed that the difference in responses within a firm is minimal, and also, we triangulated a few objective measures such as reduction in environmental incidents, independent audits, and waste reduction using secondary data from the company annual reports. Because the difference is marginal among the subject of employees, we took their views as it is.

4 | DATA ANALYSIS

A covariance-based structural equation modelling (CB-SEM) approach was used to examine the multiconstruct conceptual model. Compared with variance-based structural equation modelling, CB-SEM is a robust method in terms of parameter accuracy if the data have a normal

distribution and reasonable sample size (Reinartz, Haenlein, & Henseler, 2009). As our data satisfied both these requirements, we have adopted CB-SEM for our analysis. The present study employed an online survey tool (sojump.com) to avoid respondent bias and ensure confidentiality, diversity, convenience, and effectiveness (Pres-ton & Colman, 2000). We used SPSS version 22 to test the reliability of the model and conducted an exploratory factor analysis to identify the factors corresponding to EGC, GHRM practices, and EP. All the three constructs are first order constructs. Table 5 shows a summary of the reliability analysis results. The Cronbach's α values were higher than 0.7 for all constructs, indicating adequate reliability and consistency in the data (see Table 5).

We performed Bartlett's test of sphericity to determine whether the correlation matrix showed significant relationships among

variables. We also used the Kaiser–Meyer–Olkin (KMO) test to measure the sampling adequacy. The results passed our test with a p value of less than 0.05 and a KMO value higher than 0.6 ($KMO > 0.7$, $p < 0.05$). The exploratory factor analysis revealed three factors that explained 72.5% of the total variance; these were labelled EGC, GHRM practices, and EP. Confirmatory factor analysis (CFA) was then conducted to test the relationships among the observed and unobserved variables (Schreiber, Nora, Stage, Barlow, & King, 2006).

We used a Harman one-factor test to check the dominance of the single factor and whether it accounts for all or most of the common variance that exists in the data (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Unrotated factor analysis with an eigenvalue greater than one suggested the existence of three different factors, and they are 27.3%, 23.5%, and 21.7%, respectively. This is a standard procedure to ensure the nondominance of single factors, and it should not account for the majority of the variance. In addition, we used scales to capture the perception of the company's EP based on the employees' experience and perceptions. Table 6 shows the CFA estimates and model fit values.

From Table 6, you can see many learning related variables in both GHRM and green culture enablers construct. As per the previous

TABLE 5 Reliability analysis results

Item	Cronbach's α
Enablers of green culture	0.975
Green human resource management practices	0.966
Operational environmental performance	0.944

TABLE 6 CFA estimates and fit indices

			Standardised estimate	S.E.	C.R.	P	Label	SCM
EEv3	<---	EGC	0.824					0.679
Plv2	<---	EGC	0.84	0.066	17.138	***	par_1	0.705
Plv1	<---	EGC	0.847	0.06	17.46	***	par_2	0.718
MCv5	<---	EGC	0.842	0.06	17.218	***	par_3	0.708
MCv4	<---	EGC	0.82	0.067	16.3	***	par_4	0.672
MCv3	<---	EGC	0.742	0.074	13.555	***	par_5	0.55
MCv1	<---	EGC	0.816					0.667
LEv4	<---	EGC	0.823	0.065	16.418	***	par_6	0.677
LEv3	<---	EGC	0.764	0.072	13.214	***	par_7	0.583
LEv1	<---	EGC	0.738	0.061	15.758	***	par_8	0.545
Rv2	<---	GHRM	0.816	0.061	15.65	***	par_9	0.666
Sv2	<---	GHRM	0.717	0.073	12.487	***	par_10	0.513
Tv1	<---	GHRM	0.805	0.059	15.239	***	par_11	0.647
Tv2	<---	GHRM	0.818	0.051	18.495	***	par_12	0.67
Tv3	<---	GHRM	0.884					0.782
PAv1	<---	GHRM	0.887	0.051	18.578	***	par_13	0.787
PAv2	<---	GHRM	0.853	0.055	17.052	***	par_14	0.727
PAv3	<---	GHRM	0.843	0.054	16.655	***	par_15	0.71
EPv1	<---	EP	0.838					0.702
EPv2	<---	EP	0.775	0.07	13.222	***	par_17	0.601
EPv3	<---	EP	0.827	0.073	14.622	***	par_18	0.683
EPv4	<---	EP	0.842	0.069	15.068	***	par_19	0.709
EPv5	<---	EP	0.845	0.065	15.165	***	par_23	0.714
EPv6	<---	EP	0.876	0.067	16.124	***	par_24	0.768
EEv5	<---	EGC	0.844	0.057	17.315	***	par_25	0.712
EPv7	<---	EP	0.852	0.062	15.368	***	par_35	0.726
Chi²/df = 2.460			CFI = 0.919		IFI = 0.919		RMSEA = 0.085	

Note. CFI: comparative fit index; IFI: incremental fit index; RMSEA: root mean square error; EGC: enablers of green organisational culture; EP: environmental performance; GHRM: green human resource management.

***Significant at 0.001.

studies for any environmental initiative, to be successful learning is vital that overcomes resistance to change. The importance of learning is justified in many previous studies such as Amini et al. (2018), Arda et al. (2018), Jaramillo et al. (2018), and Siebenhüner and Arnold (2007). It is obvious to retain learning-related variables for GHRM and green culture enablers. We used a maximum likelihood algorithm to determine whether the measurement model and the GoF criteria, such as the χ^2 to degree-of-freedom ratio, comparative fit index, incremental fit index, and root mean square error of approximation, met the criteria indicating acceptability (Fornell & Larcker, 1981). Before testing the structural model, we confirmed convergent validity using composite reliability (CR) and the average variance extracted (AVE; Jenatabadi & Ismail, 2014). The AVE and CR results are shown in Table 7.

The AVE values are higher than 0.4, and the CR values are higher than 0.7 meaning that, according to Jenatabadi and Ismail (2014), both results are over the prescribed values. In addition, we checked the discriminant validity using AVE for each construct that was greater than the squared correlation between that construct and the other constructs and found that the squared correlation value was not higher than 0.4. We also assessed the degree of multicollinearity in the data set using variance inflation factor (VIF) for the 27 measured variables, and results indicate that VIF values range from 1.26 to 2.78. Applying the Hair, Black, Babin, and Anderson (2010) rule of thumb stating that a VIF above three indicates a potential problem of multicollinearity, we can conclude that there is no major issue of multicollinearity in the sample of data collected. The GoF indices of the structural model are shown in Table 8. All values are higher than the acceptable values, and our model passed the test.

TABLE 7 Convergent validity results

Construct	Variable	Factor loading	AVE	CR			
EGC	LEv1	0.708	0.460	0.903			
	LEv3	0.615					
	LEv4	0.740					
	MCv1	0.747					
	MCv3	0.657					
	MCv4	0.636					
	MCv5	0.665					
	Plv1	0.710					
	Plv2	0.614					
	EEv3	0.718					
	EEv5	0.631					
	GHRMP	Rv2			0.689	0.464	0.885
		Sv2			0.813		
Tv1		0.728					
Tv2		0.742					
Tv3		0.656					
PAv1		0.600					
PAv2		0.631					
PAv3		0.651					
EP		EPv1	0.725	0.500	0.860		
	EPv2	0.699					
	EPv3	0.748					
	EPv4	0.679					
	EPv5	0.722					
	EPv6	0.672					
	EPv7	0.701					

Note. AVE: average variance extracted; CR: composite reliability; EGC: enablers of green organisational culture; EP: environmental performance; GHRM: green human resource management.

TABLE 8 Structural model goodness of fit indices

Fit index	Value	Critical (acceptable) value (Schreiber et al., 2006)	Acceptability
χ^2/df	2.46	0.002–4.80	Yes
CFI (comparative fit index)	0.92	≥ 0.9	Yes
IFI (incremental fit index)	0.92	≥ 0.9	Yes
RMSEA (root means square error of approximation)	0.08	≤ 0.08	Yes

To check the robustness of the model, we compared the hypothetical model that relates GHRM with EP mediated by EGC, with two direct models (GHRM on EP and EGC on EP) and one reverse model (EGC-GHRM-EP) as shown in Table 9. Both the direct models influence on EP is substantial. However, the influence of EGC on GHRM and EP is lower than the proposed model (see Table 9).

Additionally, based on the structural model, which includes indirect effects, it is necessary to consider the mediation effect (Jenatabadi & Ismail, 2014). For mediation, we used the Sobel test/three-step standard procedure prescribed by Deng and Poole (2010). In examining the mediation effect, we found that all factors are significant, indicating a full mediating effect of the EGC on the relationship between GHRM and EP. Because the effect of all factors is significant, the direct, indirect, and total effect can be estimated using AMOS software (see results in Table 10),

5 | RESULTS AND DISCUSSION

Our study tested an original model that examines the relationship between GHRM practices, the EGC, and EP using empirical data

TABLE 9 Comparison of models

Alternate models	Path	Standardised coefficient	p
Direct model (GHRM on EP)	GHRM → EP	0.75	***
Direct model (EGC on EP)	EGC → EP	0.85	***
Reverse model (EGC-GHRM-EP)	EGC → EP	0.54	***
	EGC → GHRM → EP	0.98–0.31	***

Note. EGC: enablers of green organisational culture; EP: environmental performance; GHRM: green human resource management.

***Significant at 0.001.

TABLE 10 Direct, indirect, and total effect of model

Outcome	Input	Standardised estimate		
		Direct	Indirect	Total
EGC	GHRM	0.82	0	0.82
EP	GHRM	0.525	0.350	0.875
	EGC	0.389	0	0.389

Note. EGC: enablers of green organisational culture; EP: environmental performance; GHRM: green human resource management.

gathered from employees of Chinese manufacturing firms. The tested model has not been explored by any previously published work on the relation of GHRM and green organisational culture (for instance, Daily & Huang, 2001; Jabbour & Santos, 2008; Daily et al., 2012). The parameter estimates in Table 11 show that all path coefficients are significant ($p < 0.05$). The results reveal a significantly positive relationship between GHRM practices and EP (H1), as well as a similarly positive relationship between GHRM practices and the EGC (H2). Specifically, the results suggest that the GHRM practices of recruitment, selection, training, performance assessment, and reward play a positive role in the development of the EGC.

Moreover, we found a positive relationship between the EGC and EP (H3). Therefore, our findings reinforce Harris and Crane's (2002) assertion that the EGC can positively influence the performance of firms pursuing environmental objectives (Harris & Crane, 2002; see Table 11).

Importantly, our data indicate that there is a full mediation effect for the EGC on the relationship between GHRM and EP. In a recent study by Arda et al. (2018), the authors determined that quality performance and environmental proactivity mediate the relationship between environmental management and firm performance. Our findings build on this work by indicating that companies implementing environmental management programs need to consider the critical role of proenvironmental leadership emphasis, credible environmental messaging, peer involvement, and employee empowerment. Without a consideration of these factors, firms may find they have robust environmental management systems, without an environmentally conscious workforce to support its implementation. We therefore suggest that scholars, examining the relationship between GHRM and EP, consider the EGC in their analysis.

6 | CONTRIBUTION, LIMITATIONS, AND FUTURE DIRECTIONS

6.1 | Theoretical contribution

According to Corley and Gioia (2011), theory contribution requires a particular type of research result that is able to provide original insights into a phenomenon that is considered useful for improving organisations. In this context, our research provides original insights based on empirical data on the relation of GHRM and the EGC. GHRM scholars have yet to identify the EGC from an empirical perspective, and our study therefore makes an important contribution in this area.

To be specific, our research contributes to both classic HRM theory and the body of knowledge surrounding GHRM. In terms of HRM theory, our findings are aligned with classic HRM assumptions that HRs can improve firm performance (Becker & Gerhart, 1996; Bowen & Ostroff, 2004; Ferris, Hochwarter, Buckley, Harrell-Cook, & Frink, 1999; Guest, 2011), particularly when the focus of analysis is industrial and manufacturing sectors (Santos, 2000).

Additionally, our research suggests that a "green" organisational culture—here assessed through four enablers—plays an important role in the relationship between HRs and a firm's EP. Specifically, we have found that enhancing a firm's EP requires proenvironmental HRM practices (Jackson et al., 2014), and that the EGC positively mediate the GHRM–EP relationship. The proenvironmental HRM practices of recruitment, training, assessment, and incentivisation were found to support the development of the EGC (leadership emphasis, message credibility, peer involvement, and employee empowerment). Our data suggest that these enablers encourage employees to proactively reduce waste, consume fewer resources, develop recycling programs and, in doing so, improve the firm's EP.

To our knowledge, our paper is the first to consider green organisational culture as mediating the relationship between GHRM practices and EP. Consequently, our research, even though focused on green issues, is aligned to broader assumptions in HRM theory, which affirms that enablers of organisational culture can impact the relationship between HRM practices and firm performance (see Chow, 2012; Ngo & Loi, 2008; Wei, Liu, & Herndon, 2011).

6.2 | Managerial implications and implications for teaching green organisational culture

Our study has significant implications for both managers as well as scholars responsible for teaching green organisational culture to the next generation of responsible managers. In terms of managerial implications, this research can aid managers in their efforts to motivate employees to implement proenvironmental initiatives in their daily roles. Our findings indicate that HR managers can use proenvironmental recruitment, training, assessment, and incentivisation to develop the EGC. Hiring environmentally conscious employees and then establishing a consistent, effective training and measurement system promote environmental awareness across the various functions of the firm. These activities ensure that environmental awareness is embedded in the behaviours and habits of employees. And, over time, these behaviours become habits that can shape a proenvironmental organisational culture (Schein, 1992). In turn, this

TABLE 11 Hypotheses results

Hypotheses	Path	Standardised coefficient	p	Result
H1	GHRM → EP	0.31	***	Supported
H2	GHRM → EGC	0.82	***	Supported
H3	EGC → EP	0.54	***	Supported
H4	GHRM → EGC → EP	0.82–0.54	***	Supported

Note. EGC: enablers of green organisational culture; EP: environmental performance; GHRM: green human resource management.

***Significant at 0.001.

culture reinforces employee efforts to implement environmentally responsible initiatives to improve their company's EP. We therefore suggest that managers should not only consider GHRM initiatives in driving EP improvements but also the significant role that organisational culture plays in the sustainable development of their company.

Within the subject of green management, teaching green organisational culture to the next generation of responsible managers can be a challenge, as there is a lack of empirical evidence, best practices, and must-know guidelines that students can use. This is because most of the literature on GHRM portrays green organisational culture as an important topic, without offering a wide range of empirical evidence (such as survey research results and case studies). In this context, our paper can be useful for advancing the scholarship on green organisational management within business schools, as we offer and test a unique model based on empirical data collected from one of the most relevant economies of the contemporary world: China. We add details on the relation of GHRM and green culture, by unveiling EGC. Scholars will be able to teach that key EGC include leadership emphasis, message credibility, peer involvement, and employee empowerment. It will be possible to debate that these key enablers mediate the relation of GHRM and green organisational culture. This in-depth discussion can enrich teaching and learning on the topic. Consequently, academicians in charge of teaching green organisational culture can find in this work a rich source to be included in module outlines on green management, which is aligned with the education of next generations of more responsible managers (Marcus & Fremeth, 2009; Peoples, 2009).

6.3 | Limitations and future directions

Admittedly, our study is not without its limitations. Although the research sample comprises more than 200 respondents, this sample remains limited when compared with the entire population of the Chinese manufacturing industry; the generalisability of the results may be limited to some extent because of the sample size.

Moreover, we recognise that our research measured green organisational culture through its enablers, rather than focusing on the constituents of organisational culture as per Schein (1992) and Jabbour and Santos (2008). Specifically, our study includes four behavioural attributes (leadership emphasis, message credibility, peer involvement, and employee empowerment) as the EGC. As argued by Harris and Crane (2002), future studies would need to consider proenvironmental values and beliefs, as well as behaviours, to have a comprehensive picture of green organisational culture. Some values and beliefs worth considering in future studies are managerial perceptions of environmental initiatives (Harris & Crane, 2002); the institutionalisation of green values (Post & Altma, 1994); and the congruence of managerial and employee beliefs concerning environmentalism (Hoffman, 1999; Welford, 1995). Also, the role played by green organisational culture in promoting voluntary green workplace behaviour (Kim et al., 2014; Pham et al., 2019) can be further explored. The challenge of studying organisational culture in sustainable development research has already been outlined in the

literature (Dubey et al., 2017) and we call for further study in needed in this important area.

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