M. Y. Yusliza
D. W. S. Renwick *Editors*

Green Human Resource Management

A View from Global South Countries

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Editors
M. Y. Yusliza
Faculty of Business, Economics and Social Development
Universiti Malaysia Terengganu
Kuala Nerus, Terengganu, Malaysia

D. W. S. Renwick
Nottingham Business School
Nottingham Trent University
Nottingham, UK

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About the Editors

Dr. M. Y. Yusliza is a Professor in Human Resource Management at the Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu. She received her Ph.D. in administrative science from Universiti Teknologi MARA. She has presented papers at various international and national conferences and published more than 100 articles in peer-reviewed international journals, with an H-index of Scopus = 20 and H-Index of Web of Science = 16. Her research interests are organizational and behavioural studies, green human resource management (GHRM), international HRM (international students' adjustment), electronic HRM, line managers' involvement in HRM, employees' empowerment, human resource roles and competencies. Her top publications appeared in the *Journal of Cleaner Production, Corporate Social Responsibility and Environmental Management, Business Strategy and the Environment, International Journal of Manpower, Benchmarking: An International Journal, Journal of Management Development, Sustainability (Switzerland), and Industrial and Commercial Training.*

Dr. D. W. S. Renwick is an Associate Professor in Sustainable Work and HRM Department Research Co-ordinator at Nottingham Business School, U.K., where he undertakes research in green HRM, sustainable work and green employment. Doug has published over 30 articles in leading international peer-reviewed journals, and his edited research text on green HRM was published by Routledge in 2020. Dr. Renwick is an Editorial Board Member of *Employee Relations: The International Journal, the German Journal of HRM, The International Journal of HRM* and HRM Section Editor for *Sustainability Letters* (Maastricht University, EU). Doug is a Senior Research Fellow at the Centre for Unframed Thinking, Rennes School of Business, France, and Director of Samara HR Consulting, a non-profit sustainability consultancy. He disseminates his work via: http://www.sustainable-workforces.co.uk/ Twitter: @DrDougRenwick and LinkedIn. Work address: Room 705, HRM Department, Nottingham Business School, Nottingham Trent University, UK, NG1 4FQ. Work telephone: 0115 848 6429 E-mail: doug.renwick@ntu.ac.uk.

Theoretical/Conceptual Developments

The Limitations of Individual Analysis and Alternative Framing of Employee Green Behaviour

D. W. S. Renwick, Ian Clark, and Rohan Crichton

Abstract This chapter responds to the extensive overview of research on employee green behaviour (EGB) by Tang et al. (Int J Manag Rev 1–21, 2023), which using a North-Western perspective, emphasises the individual employee as the primary unit of analysis in organisational greening. Our case is that their emphasis is incomplete, as it downplays the roles of several other internal and external stakeholders involved. To extend their work, we argue for a more nuanced approach and use critical theory to frame EGB research, which focuses on new and informal forms of work organisation, boundaryless communities and wider society.

Introduction

Tang et al. (2023) provide a comprehensive overview of employee green behaviour (EGB). Their review seems appropriate due to the conceptual ambiguity surrounding EGB which means their case to clarify its nature and inconsistencies appears justified. Indeed, the literature they use in terms of conceptualizations and theoretical approaches contains useful sources to explain contemporary developments in EGB research. Here, their focus on the role of human resource management (HRM) systems to stimulate spill-overs across different behaviours and their Fig. 2 integrating macro, organisational- and team/leader-level factors are both insightful literature contributions. They add new knowledge on the inconsistent relations found for other personality variables and raise novel questions regarding how organisational-level factors impact EGB. Moreover, their future research directions offer new insight,

D. W. S. Renwick (✉) · I. Clark
Nottingham Trent University, Nottingham, UK
e-mail: douglas.renwick@ntu.ac.uk

I. Clark
e-mail: ian.clark@ntu.ac.uk

R. Crichton
Clarkson University, Potsdam, USA
e-mail: rcrichto@clarkson.edu

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as their stress on the factors influencing green goal setting at the between-person and dyadic levels reveal potentially negative impacts which are an under-researched area in green HRM and one that needs developing (Renwick 2020). Additionally, their focus on the leadership, group and colleague-related factors involved in EGB offers a nuanced interpretation of the current state of play which other researchers could usefully adopt. Further, their comments on employee emotional states offer original thinking forward, especially regarding emerging methodologies, interactions, changes, value-context fit, and boundary conditions, which are all less-researched EGB areas (Jiang et al. 2022). Ergo, the Tang et al. article seems an expertly crafted, precisely argued and sophisticated piece.

However, we are puzzled about some aspects within Tang et al. as much remains unexplained in it which could be extended by a focus on EGB as an informal work practice, other internal EGB sources and external EGBs outside formal organisation boundaries. We first turn our attention to detailing some aspects within the Tang et al.'s review and how they relate to the relevant literature. We classify these aspects into three groups: concerns emerging, wider issues arising in the EGB literature and alternative ways of framing EGB. We then conclude with our view of the implications for scholars arising.

Concerns Emerging

Our initial concern with Tang et al.'s review lies in them not providing a clear answer on the means by which particular organisational-level factors affect EGB processes—because the related literature strongly argues for more understanding on how such processes work (e.g. Jackson 2022). Their lack of detailed information on how organisational activities impact the natural environment, why EGB is research is largely fragmented, which scalable actions and behaviours can be termed EGB, plus only two references to support their case of non-work domain influence, all seem disparate points compared to the more coherent EGB-related works by Jiang et al. (2022) and Kim et al. (2017). Indeed, their focus on ambiguity in how EGB is perceived suggests a degree of insularity and self-focus that some in the wider green HRM literature generally caution against (Paulet et al. 2021; Renwick 2020). Further, their lack of existing or new theory to frame EGB may become a missed opportunity, especially as others in the related literature advocate using institutional theory, social norms or planned behaviour (Jackson 2022), or ability, motivation and opportunity (AMO) theory (Fawehinmi et al. 2022; Obereder et al. 2022; Renwick et al. 2013; Rizvi and Garg 2021; Yu et al. 2020).

Moreover, Tang et al.'s review procedure appear to increase their narrow focus, as it reduces the scope to 'look outside' organisations and embrace the wider external context to surface examples of EGB. Here, their use of the individual as the unit of analysis in seeing EGB as part of job performance and in the work domain seems to downplay the role of workers practising EGBs outside formal organisations. This understanding is further enhanced by them; providing few details on where and when

their claimed interplay and intersection between person, context and the environment occurs. Thus, notions of fragmented organisational boundaries are less recognised by them, which others see as an important, longstanding issue in HRM research (Marchington et al. 2005). This situation is compounded by a lack of information in Tang et al. on how EGB antecedents and relevant actors interact at the meso and macro levels too.

While their Fig. 2 EGB ecosystem focuses on team leader factors and group-level behaviour, beliefs and climate, plus organisation-level factors as vital contextual enablers, it only occurs in the context of leader supportive behaviours, and where leader behaviours provide feedback, which appears quite a unitarist perspective and one lacking a critical approach (cf. Collings et al. 2019). Indeed, their non-critical understanding seems extended as their EGB consequences do not mention any negative consequences, and their case that situation cues potentially alter habits conducive to green behaviour appears to lack criticality too. Further, Tang et al.'s proposed conclusion ecosystem EGB model needs more detail on the group, organisational and institutional aspects involved, to fill the gap in their article having few practitioner implications—an increasing development itself in HRM studies (see Kougiannou and Ridgway 2021). Here, their less practical focus appears a missed opportunity, as EGB seems very well-aligned to practice (Jackson 2022).

Additionally, the references Tang et al. use to frame their review appear to reveal some level of cultural bias, which seems to occur in two ways. Firstly, although they include and mention some studies outside the global North-Western countries, e.g. Graves et al., Kim et al. (2017), Lee and De Young, Liobikiene and Juknys and Schwartz, in China, South Korea, Taiwan, Lithuania and 20 countries (in Schwartz), respectively, many of their other sources are drawn from global North-West countries, e.g. Boiral, Cairns et al., Zibarras and Coan, Flannery and May, Lee and Ha-Brookshire and Rothenberg (2003), in Canada, UK and the USA, respectively. Secondly, as most of their references are drawn from/within mainstream North-Western outlets (e.g. journals, books and chapters), a question arises on why Tang et al. either sourced so few or did not find so many outputs from outlets in the Global South countries. As per the University of Maryland, have all authors representing various backgrounds, ethnicities and genders been fully included in their review? Or has a lack of 'citation justice' occurred here?

A final concern of ours regarding the Tang et al.'s review is that their work seems partly derivative of other classic works in the EGB-related literature of workplace pro-environmental behaviour (PEB), employee green behaviour (EGB), employee workplace behaviour (EGB), organisational citizenship behaviour towards the environment (OCBE), ecological behaviour, employee eco-friendly behaviour, and employee eco-initiatives (Fawehinmi et al. 2022). Here, why their review omits Jiang et al.'s (2022) work is also puzzling, as it has: (i) long been available on ResearchGate and as a prior Academy of Management (AOM) 2019 Boston conference paper, and (ii) as this study includes three 'BRIC' countries so is arguably at the leading-edge of EGB work—thus, who else has undertaken and published more comparative work?

Further, some parts of Tang et al. also feel familiar, e.g. those regarding relevant variables useful for future research studies, because Tang et al.'s own specific literature contributions appear mainly incremental ones. Ergo, does the Tang et al. review really say what needs to be said on EGB now any better than the seemingly all-encompassing wider literature(s) from which it is drawn (above) already do? We ask this question because Google Scholar reveals 1.4 million and 601,000 results (respectively) regarding the different UK/USA spellings of employee green 'behaviour' and 'behavior', so their initial search strategy of 584 and 626 articles (respectively) may not be as comprehensive as it first appears. We now present some wider issues arising in the EGB literature, which while not part of Tang et al.'s original brief or thesis, are ones that we feel appropriate to debate. This section is followed by an alternative framing of EGBs and then our conclusions.

Wider Issues

Functionalism, Unitarism and Pro-business/Profit

An initial wider issue within the EGB literature lies in the changes apparent when or if we see the organisation's purpose as improving its own performance/sustainability goals, and associated linked troubles occurring when and where EGB becomes an instrument of organisational control over employees, i.e. organisations 'go green' and expect employees to do the same. This is because such objectives may appear less tenable in implying that the employee role is to obey organisational and managerial diktat, that employees lack agency and ability to express their own voice(s) and free will and provide reduced scope for employees to be involved in EGB workplace decision-making. Such an emphasis seems to ignore or downplay organisations that do not achieve the United Nations' Sustainable Development Goals (UN SDGs), i.e. ones where 'greenwashing' or 'green camouflage' occurs, due to strategic organisational choices and decisions to ignore green behaviours.

Indeed, other phenomena occurring within organisations may side-track the achievement of organisational performance/green goals too and include employee factions and cliques practising resistance, disinterested staff engaging in reduced work effort, employee misbehaviours and recalcitrance (Ackroyd and Thompson 2003), staff disengagement, conscious quitting, climate quitting, eco-anxiety, quiet quitting and 'stay conversations' (Butler 2023; Formica and Sfodera 2022; Hahn et al. 2023; Lakin 2023; Palat 2023; Seagroatt 2023), plus organisational bureaucracy, inertia and quagmires (Spicer 2023). Yet these nuances and complexities of everyday organisational life are not that well seen within many EGB works. This is because EGB studies seem to adopt a unitarist worldview in looking at organisational and managerial requirements in and for EGB first, and employee needs second, and show less awareness about the wider factors influencing and shaping the roles of all actors involved in EGB processes (cf. Farndale et al. 2022). In doing so, they reduce

the contextual emphasis surrounding the who, what, how and why questions involved in analysing work, organisations and employment, and the impact such context has on management phenomena (Stahl et al. 2023).

A second wider emerging issue is that organisations are now being asked to focus on social justice and not solely organisational greening. Such themes include Wilson and Chu's (2019) gendered division of UK environmental labour and the British Academy of Management (BAM) Gender group's (2023, p. 1) critique of universalism, homogenization and Western-centrism. However, such justice issues do not appear much in many EGB studies, i.e. either as substantive elements in literature reviews, as clearly linked research questions, or as research limitations and future research ideas.

Quantitative/Statistical Analysis and Incremental Contributions

A third wider issue arising is that the statistical/quantitative emphasis and primary mode of research inquiry used in EGB research appear to obscure other wider, useful data on EGB. Such data may provide more construct clarity and avoid the reification of EGB itself, and reveal employees choosing to avoid green behaviours, which could be uncovered via more descriptive, qualitative, opinion-based findings gathered through employee interviews, case studies, diary studies, action research and ethnographies. This data omission seems unfortunate in EGB works, as such viewpoints could include case studies of the experiences of young black women working at the sharp end of the climate crisis in the Global South countries (Michelson 2022), who work informally outside known, existing North-Western-style organisational structures in hybrid organisations and social enterprises (cf. Horak 2023). Examples here include individuals in flooded agricultural fields harvesting tea and rice (Bangladesh), gathering seaweed in acidic coastal areas (Tanzania), travelling miles through deserts to gain basic foodstuffs (the Sahara) or fetching water and wood for fuel (Kenya) (Al Mubarak 2023; Crichton et al. 2018; Quiroz 2023). Such women are undertaking daily, community struggles 'to sustain everyday life' (Di Chiro 2008, p. 1; Extinction Rebellion 2023). The views of these climate victims on what they understand EGB to mean, how they cope with the climate crisis, how they organise themselves in trying to enact EGB/sustainability initiatives, and their emotions and frustrations involved, do not clearly appear in EGB scholarship and instead may become missing voices. Thus, it does not seem safe to adopt the arguably 'Euro/US-centric' worldview of an EGB perspective, where work occurs in formal, medium to large-sized organisations primarily located in North-Western countries along traditional lines (cf. Humanistic Management Association 2023). This is because a more complex reality is seen globally, and appears dependent on how EGB is defined,

assessed and measured, including issues of a 'just transition' associated with colonialism (Humanistic Management Association 2023), and the gender, social class and identity-based inequalities issues involved for climate victims (Guerci et al. 2022).

Narrow Focus and Missing Voices

A fourth wider issue arising concerns the relatively arrested development feel to EGB as a research topic, in terms of how and in what ways it serves to change research directions in green HRM and/or green organisational behaviour (OB), and thus trailblaze a path for other researchers to follow. Here, we are not sure where EGB research is going next, if it is really important research that must be done right now, and/or whether the existing EGB-related works mentioned earlier (above) have instead already charted a comprehensive road ahead. Here, EGB research may appear as 'a narrow saw of a narrow saw', as it moves our focus downwards from the management discipline to the sub-fields of HRM/OB, to green HRM/OB and then to EGB itself. We wonder if EGB will break down further into even narrower specialisms of its' own, or break through to become a topic of choice for interested researchers, as it certainly seems an open question whether EGB can catch and surpass green HRM studies which now total over 3 million related works globally (Memon et al. 2022).

A fifth wider emerging issue is that the EGB stress on employee roles and behaviours to enhance organisational performance/sustainability outcomes reduces the focus on other key stakeholders and processes used to achieve those same goals. For example, while many EGB-related works mention the role of green leaders in stimulating EGBs, they say less about managers and workplace trade unions facilitating such staff behavioural changes too. As key linking pins in enacting organisational strategies, policies and procedures (including both profit and/or green ones), managers and unions play crucially important roles in delivering employee-focussed change (Farnhill 2016a, b; 2017; Hampton 2015). Their absence in EGB research perhaps implies that managers and unions are missing voices yet to be clearly heard in the EGB formation process too.

Systems Thinking and Co-creation

A sixth wider issue arising involves the stress made on using EGB to 'look inside' organisations to achieve competitive advantage and sustainability outcomes, as it gives less emphasis to outside interests which may also act to achieve such goals. Here, 'looking outside' organisations appears particularly important for organisational survival and for the communities and societies that support such organisations. Here, works by Bansal (2021), Whiteman and Cooper (2000), Whiteman and Yumashev (2018), Felber (2015, 2019) and Lashitew et al. (2023) focus on building

stronger, better, more inclusive communities and societies globally. Doing so occurs through relational systems thinking, learning from our elders and enacting ideas of a common good, communitarianism and collaboration(s), to protect and safeguard Planet Earth, humans and organisations together. Such thinking may mean that EGB research could have missed an opportunity to make these important, external, contextual connections and clearly join them up. Moreover, a key point of the wider EGB-related literature on green HRM is to challenge the profit motive within organisations, move staff discourse 'outside' the organisation and instead focus on protecting and developing communities, societies and the ecology (Renwick 2020).

Related to this looking outside/context issue is a seventh wider issue of the precise ways actors outside organisations can achieve EGB change within organisations. Such means include governments setting regulations, academics and industry learning together and sector 'best' practices, and wisdom from HR, OB, psychology and management professional bodies in helping identify challenges and opportunities to undertake better EGB research and practice. These processes of co-creation (Sharma et al. 2022), are ones leading Canadian companies are currently being encouraged to undertake via innovation requiring collaboration (Bansal 2023). Indeed, on more macro level influences, a challenge also exists in understanding the full role(s) of government and/or national culture as critical antecedents in developing EGBs (cf. Awan et al. 2018; Gerhart and Fang 2005).

Leadership Roles

While the role of leaders as key actors seems apparent in some EGB scholarship (e.g. Jackson 2022; Jiang et al. 2022: Kim et al. 2017), a wider eighth issue arising is that it does not always fully embrace the available literature, e.g. responsible leadership styles (Miska and Mendenhall 2018), and their unique focus on the natural environment (Maak and Pless 2006, p. 100). Here, Crichton et al. (2018) and Wang et al. (2021) find that responsible leadership promotes environmental innovation as well as organisational citizenship behaviour for the environment (OCBE) in employees, and plays a critical role in bringing about greener employee behaviours. Further, EGB works could make more mention of sustainable leaders (SLs) due to SLs inspiring and supporting action 'towards a better world' (Visser and Courtice 2011), SL work 'reducing unwanted employee turnover and accelerating innovation' (Avery and Bergsteiner 2011), and SLs managing companies 'with environment, society, and long-term sustainable development goals in mind' (Werft 2015).

Organisational Politics

Lastly in this section, a final, ninth wider emerging issue concerns the latent political aspects of EGB research. Here, we question if EGB works adopt a particularly

conservative political perspective, as seen in employees 'knowing their place' in the EGB process—to enact EGB—so the organisation can maintain itself. One such organisational objective could (controversially!) be to avoid giving employees too much liberty and generating change and uncertainty for other organisational stakeholders. Instead, employees could be persuaded to behave civilly through EGBs, and dissuaded from anti-social impulses (cf. Heywood 2021, p. 7), i.e. employee non-green or anti-green acts become controlled by managerial prerogative.

As such, conservative organicism and 'bonds of duty and obligation that hold society together' appear apparent in EGB scholarship (cf. Heywood 2021, p. 56), as employee roles in EGB seem to centre on employees viewing organisations as a 'delicate fabric to be preserved and respected', which derives from a functionalist perspective where employees survive and develop by contributing to maintaining organisational green goals (cf. Heywood 2021, pp. 56, 58). Indeed, the EGB stress on hierarchy and authority appears to be one in which after Edmund Burke a 'natural aristocracy' occurs, where: 'various groups have their own specific roles. There must be leaders and there must be followers: there must be managers and there must be workers—a mix of paternalism and authority (cf. Heywood 2021, p. 58). A question emerging is what happens next for organisations if employees do not want to be EGB 'subjects or 'objects'? What if instead, employees wish to self-organise, self-govern, become worker-directors, and exercise agency—to conversely—shape or reject managerial and/or organisational green behaviours? EGB research does not say much about such issues and the lack of employee liberty appearing, and instead seems to transpose a neoliberal conservative perspective of society into the workplace in implying that EGB is imposed from above and does not arise from below. It may be that EGB enthusiasts imply that only employers should exercise authority regarding EGB, because 'people need guidance, support and security' (cf. Heywood 2021, p. 59). For us, asking such politics-related questions certainly appears to expose relevant weaknesses and assumptions in the EGB literature.

We now make the case that while Tang et al. (2023) provide a much-needed review, we suggest that their analysis could be extended further. Here, we argue for an alternative viewpoint, and a wider way of framing EGB primarily based on critical inquiry and labour process theory before concluding.

Alternative Framing of EGB

Theory, Criticality and Embeddedness

One way to enhance EGB research lies in greater theory development that moves the focus of inquiry beyond the individual employee as an abstract unit of analysis in organisational greening. A focus on labour process theory, critical theory associated with Foucault and aspects of state theory provide more structural theories of EGB in specific contexts than the arguably more abstract individual approaches currently

used to classify and categorise EGB. These three approaches contribute to theory building by incorporating EGB and the motivations for its promotion (as well as resistance to it) within extant well-developed theoretical lenses that focus on the workplace, the firm and the broader political economy. As such, theory development may help researchers understand and appreciate existing EGBs more comprehensively in the organisational greening process. Indeed, more critical thinking and theory can further explain the limitations of claimed EGB processes too.

Moreover, classic works by Braverman (1974) and Edwards (1979) can inform a more critical perspective, where on the one hand, EGB may represent a new form of worker de-skilling in the labour process, as employee skill levels and employee autonomy are downgraded into one green objective. On the other hand, such de-skilling can also operate as a series of controls in the workplace, such as simple supervisory controls that compel workers to behave in certain ways. Similarly, technical controls in workplace machinery dictate the pace and scope of work, whereas bureaucratic controls within the HR function such as individual appraisals and workplace briefings incorporate the imperative of EGB into broader patterns of control. Critical management studies utilising Foucault's analysis of the Panopticon suggest an omnipresent vision provided by the Panopticon that induces a conscious visibility to inform the automatic functioning of power over prison inmates or groups of employees (see Townley 1993). Subsequent contributions to the literature visualise the workplace Panopticon, as a *Big Brother* style surveillance tool (a simple, technical and bureaucratic control) used by managers over employees, which reveals some authoritarian political overtones within the notion of EGB itself (cf. Goodwin 2014; Heywood 2021; Renwick 2023). Therein the metrics of EGB become central to firm level corporate social responsibility in a similar way to corporate modern slavery statements.

This more theoretically embedded understanding can be linked to a wider discussion of how fractions of capital in contemporary capitalism, for example, financialized capital, use the state 'as a tool to promote narrow elite private interests' in and around issues such as EGB (Sallai and Schnyder 2021). It is theoretically important though to point out that the state is an institutional ensemble made up of many component parts some of which exercise significant autonomy and or contradictory behaviour (Jessop 2009, 2016). The behaviour of the component parts of the ensemble may simultaneously encourage or suppress EGB at the workplace level to frame, constrain or enable the specific objectives and interests of capitalist elites over time, for example, in promoting or resisting the imperative of 'net zero' initiatives.

Practitioner Implications

Secondly, focussing on what to tell an interested CEO to do next regarding EGBs, so that CEOs, executives, directors and other organisational leaders can stimulate more EGB; overall may be a useful pathway forward for EGB scholarship. Here, full details on: which exact EGBs, introduced and enacted in what ways, in which

particular organisations, in which industries or sectors, in which national cultures, change which employee behaviours towards increased ocusedtional sustainability, that CEOs and executives can introduce or use right now, would be of great help to those engaged in management practice. Indeed, more work on how EGBs might help achieve the seventeen United Nations Sustainable Development Goals (SDGs) may help society more broadly too, e.g. how can EGBs help create decent work, 'green jobs' and gender equality for black women fleeing climate impacts in the Global South countries? And can such individuals form their own new versions of EGBs (as they understand and define them) to build greener organisations and more tailored forms of green entrepreneurship?

Externality and Loss and Damage

The lack of practical links in EGB research may thirdly herald a need to focus on the unregulated aspects of work, which seem excluded from the currently internally focussed EGB radar. Here, workers in the non-compliant informal economy clearly exist, as in the UK, for example, two million workers equivalent to nine percent of the private sector working population are engaged in workplaces partially or wholly non-compliant with business and employment practice standards (Clark and Colling 2018; Collins et al. 2023). These businesses and the workers therein represent a dialectic in contemporary capitalism where they may also play key roles in greening organisations. Examples at a business level of analysis include undocumented car-wash workers who may use old, abandoned, brownfield, gas/petrol stations and second-hand car lots to wash cars, and cash-in-hand takeout/food delivery riders who often use second-hand/used bicycles to ferry goods around—which are all informal and unrecognised EGBs. However, most importantly there is also evidence that at the same time car-wash businesses routinely flout water use regulations and environmental protection regulations for workers and customers making such workplaces routinely unsafe, for example, in the storage and use of hydrochloric acids used to clean alloy wheels. Similar dialectics are present in cash-only nail bars and ethnic barbershops that may rent and recycle previously abandoned city centre business premises but may ignore aspects of business and employment regulation (Clark and Colling 2018; Clark et al. 2023). Such use of underlying critical and labour process theory reveals contradictions in the EGB-related literature. Indeed, whether or not such workers in these sectors possess the right to work or hold undocumented status and represent worker-owner businesses or small and medium-sized enterprises (SMEs), they may undertake their own versions of EGB, but we just do not see them as their EGB initiatives go under-reported. Thus, valuable EGBs may happen everywhere, yet do so informally in a broader context of business non-compliance, and through a focus on social inclusion and co-creation, we can understand more about the role such employees play in non-standardised, non-MNC, medium or large organisations in EGB processes.

This emphasis on 'looking outside' formally constituted organisational boundaries to find EGBs may also help us to fourthly say more about wider concerns currently discussed in the sustainability literature globally. Such concerns include: how organisations located in some Global South countries rely on fossil fuels as a key energy source (e.g. South Africa) and see the whole package of green HRM, decent, 'green jobs' and EGBs as 'Euro/US-centric' HRM/OB management initiatives and luxuries they cannot afford to enact right now (Masters 2022). Further, some Global South countries may—alternatively—view EGBs as a useful knowledge transfer initiative to help tackle issues around 'loss and damage' (financial reparations from the North-Western countries to Global South ones) that they raised at the recent UN Conference of the Parties (COP) (ICCCAD 2023). Here, EGBs can become important HRM/OB tools to encourage underprivileged and excluded workers to green their own organisations, i.e. a form of knowledge 'payback' from the Global North to Global South countries. Moreover, as some religious texts demonstrate (Khan 2023; Koehrsen 2021), Global South countries are very capable of 'going green', and we know a lot about how rural and indigenous communities painstakingly work to 'steward, manage and protect', defend and regenerate their historic lands (Al Mubarak 2023; Banurri and Apffel-Marglin 1993; BBC 2010; Di Chiro 2008; Douo 2021; Geertz 1974; International Work Group for Indigenous Affairs, IWGIA 2010; Usher 1987). As such, a great opportunity now exists for academics, businesses, government and Non-Governmental Organisations (NGOs) to co-create more on a global scale, and learn more from each other so that EGBs avoid becoming a predominantly North-Western phenomenon.

HR Roles and Corporate Performance

Thinking more widely about the role of EGBs reminds us of the pressing need to stress both HR and employee roles in the EGB generation process. The HR role seems important to surface, as while green HRM has attracted great global interest academically (detailed earlier), the lack of take-up by HR managers regarding green HRM is less so, and HR's lack of enthusiasm for 'green issues' may also be a pitfall for EGB studies to avoid (Renwick 2020). For example, while the UK and Irish HRM profession the Chartered Institute of Personnel and Development (CIPD), started to develop an 'HR goes green' campaign in their trade journal *People Management* before and throughout 2007/8, similar articles in it since that financial crash are very few. This is because some HR managers do not want to lose the strategic role (Ulrich 1997) that they built up for themselves after being previously chastised as a 'Cinderella function' with no seat at the top organisational table (cf. Legge 2005), and as few HR professionals wish to see HR become distracted by the green concern either (Renwick 2008, 2016, 2020). Thus, EGB research could benefit from gathering more data to build a global picture of the HR role in EGBs, and to see HR Directors, HR managers and HR professionals as key linking pins in delivering EGB-firm performance/sustainability connections.

Conclusion

To achieve some of the goals we advocate (above) may require all scholars to (re)examine our perspectives, and move away from the current EGB research focus on statistical/quantitative analysis with the individual as the key unit of analysis. Instead, we may need to embrace a wider, external, contextual, community and societal emphasis, and theories contained in more sociological, political science and critical management texts. Ergo, drawing on Breslin et al. (2020), we argue for less mining and more prospecting, to place EGB research into its historical context and have more 'corporate purpose' to help organisations combat myopia and see green issues holistically. Here, we may need to gain wider knowledge on how EGBs involve issues of interdisciplinarity, intersectionality, marginalised populations and climate/social justice (Mikulewicz et al. 2023), i.e. to work together and learn and understand from talking to each other more. Thus, our aim in this chapter has not only been to question, critique and challenge, but to offer a wider and more nuanced framing and understanding of EGB to help stimulate debate and discussion around EGBs and the wider contexts in which they occur.

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Mapping Sustainable Human Resource Management in Latin America: Future Directions

Yanira Rubio-Leal, Sergio M. Madero-Gómez, Gustavo Barboza, and Miguel R. Olivas-Luján

Abstract Consequences of practicing sustainable Human Resource Management (HRM) are becoming visible in most sectors and industries. In this paper we pay particular attention to sustainable HRM practices that integrate the pillars of the triple bottom line: economic, environmental, and social sustainability. We performed a systematic literature review of articles published from 1996 to 2022, with a particular focus on Latin America (LATAM). Consequently, we analyze 1955 articles through VOSviewer, as well as data from web of science. The primary objective of this paper is to construct an analytical framework upon which future studies can research the consequences of sustainable HRM practices in LATAM.

Introduction

Concern for environmental issues, like global warming and declining of non-renewable resources is growing (Jugend et al. 2020). The United Nations Brundtland Report defined the concept of sustainability in 1987 as "meeting the needs of

Y. Rubio-Leal
EGADE Business School, Av. Rufino Tamayo y Eugenio Garza Lagüera, Col. Valle Oriente, 66269 San Pedro Garza García, NL, México
e-mail: yanira.rubio@tec.mx

S. M. Madero-Gómez (✉)
Tecnológico de Monterrey, School of Business, Av. Garza Sada 2501 sur, 64849 Monterrey, NL, México
e-mail: smadero@tec.mx

G. Barboza
College of Business, Loyola University of New Orleans, 6363 St Charles Ave., New Orleans, LA 70118, USA
e-mail: gabarboz@loyno.edu

M. R. Olivas-Luján
Business, Economics & Communication, Pennsylvania Western University, 840 Wood St, Clarion, PA 16214, USA
e-mail: molivas@pennwest.edu

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the present without compromising the ability of future generations to meet their own needs" (Brundtland 1987). Though the concept has been evolving in recent years, the original approach is predicated on the notion that sustainability has three main pillars that define the triple bottom line, namely: economic, environmental, and social. Recent research suggests that sustainability goes beyond the original argumentation of the triple bottom line conceptualization (Norman and MacDonald 2004). Newer approaches view a more sustainable economic system increasingly dependent on society demanding responsible behavior from corporations, government, and all stakeholders as issues related to information asymmetries are contemplated (Barboza et al. 2020). This new line of conceptualization argues that sustainable human resource management offers a soft approach, developing a culture of trust as the cornerstone of a sustainable HRM strategy. In sum, the new conceptualization argues for integrating human development and sustainable goals of organizations using a holistic approach (Feindouno and Goujon 2016).

Despite the growing global interest in Sustainable HRM, there are few academic publications from scholars based in Latin American. Some authors have examined Latin American involvement in the sustainability debate, at times adopting a broad perspective or other times in-depth analyses (Ferreira et al. 2006). However, a thorough analysis of the development of academic discourse on sustainable HRM in Latin America remains to be done.

This paper's main intention is to contribute research from a sustainable HRM perspective that assigns high relevance to developing employees as a key to create and implement new practices. Sustainable HRM plays must promote a more sustainable workplace to improve the ability to accomplish Sustainable Development Goals (SDGs), which have been identified as critical goals for all countries to reduce negative effects of pollution on the planet. In 2015, the UN General Assembly disclosed "the 2030 Agenda for Sustainable Development," which included 169 targets and 17 sustainable development goals, often referred to as SDGs. These SDGs are intended to continue where the Millennium Development Goals (MDGs) left, as the MDGs were established in 2000, with the intention to be achieved by 2015.

Methodology

To create a comprehensive and extensive systematic review of the literature that covers Sustainable HRM, we used a VOSviewer science mapping approach. This approach enables a more comprehensive basis for reviewing the field in accordance with the research country, author, and other relevant characteristics. According to Chen (2017), science mapping hinges on sources of scientific literature that include Web of Science, Scopus, Google Scholar, and PubMedTo. Readers are provided a dynamic subject map of the field that can be downloaded and used to explore in depth the intellectual content and organization of Sustainable HRM. Because of these benefits, the VOSviewer has gained popularity as a tool to identify and evaluate research in recent years.

Sample

The data used for this review was combined from running search inquiries on the Web of Science, with the last actualization performed on November 7th, 2022. In this search process we take into consideration the fact that sustainable HRM is a cross disciplinary field drawing from several fields that include HRM, Organizational Behavior, Corporate Social Responsibility, Management, Personnel Psychology, and Production. As noted, primary sources are the Web of Science and Scopus databases. Among the keywords used to perform the search are:

- Human Resource Management & Sustainability
- Human Resource Management & Sustainable
- Sustainable HRM
- Sustainable Human Resource Management
- HRM & Sustainability
- Green Human Resource Management
- Green HRM

The resulting number of articles found is reported in summary Table 1.

Overall, the query process yielded a total of 3,961 relevant articles. Once duplicate articles were removed, the useful sample was composed of 1,955 articles, related with 7 fields of Sustainable HRM (1) "Human Resources Management & Sustainability", (2) "Human Resources Management & Sustainable", (3) "Sustainable HRM", (4) "HRM & Sustainability", (5) "Green Human Resources Management", (6) "Green HRM", (7) "Sustainable Human Resources Management". We analyzed the articles using VOSviewer, and then identified the principal concepts to visualize scientific publications through keyword analysis or cluster analysis in which similar articles were grouped together based on their citation patterns. This process helps identify clusters of research within a field, and the relationships between different research areas or countries.

Based on the above, we made the following preliminary assertions:

1 There is a limited amount of peer reviewed publications coming from LATAM

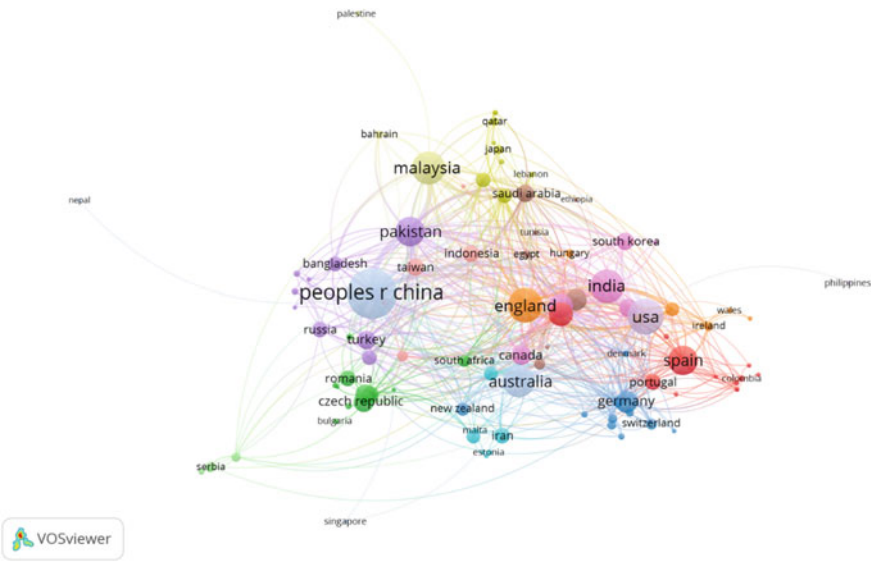
Table 1 Sustainable HRM search results

Terms in the query	Number of articles
Human resource management and sustainability	1195
Human resource management and sustainable	1375
Sustainable HRM	144
Sustainable human resource management	158
HRM and sustainability	569
Green human resource management	346
Green HRM	174
Total	3,961

2 Sustainable HRM is critical to the success of SGDs in LATAM, and HRM ideas and methods are powerful tools in the adoption of sustainable practices
3 The lack of LATAM research in sustainable HRM has a direct impact on the implementation of sustainable practices in LATAM, and consequently in the success of sustainable corporations.

The lion's share of research published on Sustainable HRM is conducted in developed nations, primarily the USA and Europe. It is worth noting that less that 1% of peer reviewed publications in this field come from countries in Latin America. More specifically, we identified nineteen publications from Brazil, two from Mexico, and one from Argentina. Mu and Pereyra-Rojas (2015) indicate that despite Latin America's population represents eight percent of the world population, this only translates to 1.7% in terms of academic publications. Graph 1 shows the VOSviewer-generated network of publications based on their country of origin.

From LATAM, Brazil is the main country with 1% share of publications; Mexico follows with 0.12%, then Argentina with 0.05%. Ronda-Pupo et al. (2015) argue that collaborations in research have an important role on publications; for example, articles that are co-authored exhibit an average influence that is 1.22 times greater than that of single-authored publications. Furthermore, according to the research, Latin America is not as influential in science as the US, Japan, the UK, Germany, and other European nations are. This may be explained by the low level of research funding in Latin America, which in 2011 accounted for only 0.78% of the region's GDP compared to 1.95% in Europe (RICYT 2013).



Graph 1 Publications related to sustainable HRM by country

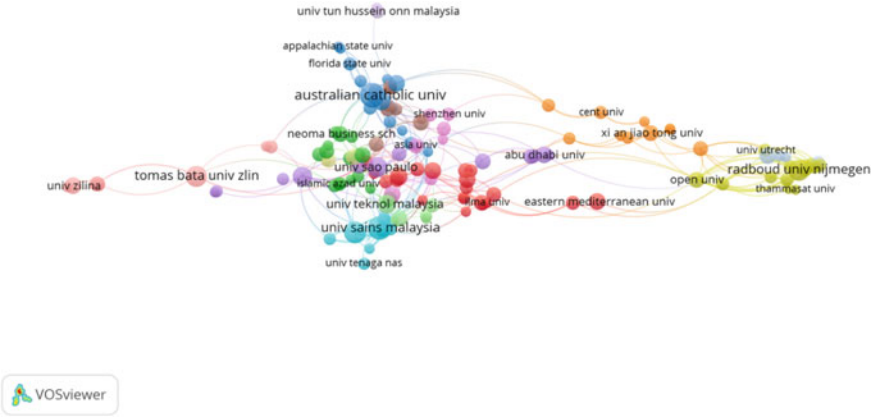
The literature is fairly conclusive on the role that Universities, think-tanks and other organizations play in the generation of new knowledge. The LATAM region is characterized by a lack of resources dedicated to R&D and by low levels of interaction between research institutions and industry development. The low level of resources for research and development at the national, regional, and global level in Latin America is a very serious obstacle to progress in sustainable HR and many other areas. Furthermore, issues related to R&D resource mismanagement complicate the effectiveness that could be derived from academic research as well the potential gains in efficiency in production. Investments in scientific knowledge in LATAM are scarce compared with nations such as Israel in the first place with a 5.43%, Korea in the second place with 4.82%, Chinese Taipei in the third place with 3.631%, Sweden in the fourth place with 3.49%, USA in the fifth place or countries as Switzerland, UK and Japan (RICYT 2013). The returns on these investments become evident when we see how countries like Sweden earn Nobel prizes (33 awards). In LATAM countries R&D investments have been reduced over the years; to illustrate, Mexico in 2014 had a 0.435% and 0.297% in 2022. Latin American governments' interest and support for science has been dwindling in recent years.

In fact, if we take in consideration the investment of each country in research and innovation, we can see that in the Global Innovation Index 2022 (WIPO 2022) that Switzerland is in the first position with 64.6 points, followed by the United States with 61.8, Sweden in the third place with 61.6, and then the United Kingdom with 59.7 points. On the other hand, in Latin America Chile appears in the 50th place, Brazil in the 54th place, and Mexico in the 58th. The investment that Latin America allocates to science, technology and innovation is equivalent to less than 0.5% of the Gross Domestic Product (GDP), an important difference compared to other countries such as Israel, which allocates 4.21% of its GDP or the rest of the countries members of the Organization for Economic Cooperation and Development (OECD) that on average invest 2.40%; this represents an important competitive advantage for those countries.

According to our analyses, one of the main actors in academic research is the University of Sao Paulo. Seemingly, Latin American scholars in the field of Latin American studies view themselves as agents of change, are more intrinsically motivated, and favor academic outlets with the potential for social impact, (see Graph 2). In addition, they tend to be more involved than their US/UK counterparts in engaged scholarship; that is, a research partnership between academics and stakeholders. This occurs not only because of their intrinsic motivation but also because of their reliance on funds mainly from local government or private sources interested in community and societal development.

With respect to sustainable HRM, the research about these practices in LATAM is scarce. Of the 3,961 papers, only 25 deal with research conducted in any of the countries of this region. Table 2 shows how green practices or how green research is conducted in some Latin American countries like Brazil, Mexico, and Chile.

The main universities that contribute to the Sustainable HRM research are based in Europe and North America, and only a few papers were sponsored by institutions in LATAM. This category identifies in which Latin American countries' studies



Graph 2 Main research institutions with publications related to sustainable HRM

regarding Sustainable HRM have been conducted. Brazil was the setting for 19 papers (0.01%). Chile for three papers (0.001%), Mexico for two papers (0.001%) and Argentina for one publication (0.0005%). Latin America is comprised of 20 countries (Teixeira et al. 2020), the number of papers in the research shows how the participation of LATAM in research is below that of the rest of the countries. The main organizations participating are University of Sao Paulo (Brazil), Tecnológico de Monterrey (México), and Pontifical Catholic University of Chile.

In total, twenty-four journal articles from Latin America study Sustainable HRM. In several of these papers the scholars are affiliated to an institution based in the U.S.A., the United Nations, or other institutions from developed countries. However, there are a selective group of authors associated with Latin American universities making significant contributions to the field of Sustainable HRM with particular emphasis in LATAM. For instance, as shown in Table 3 above Madero-Gómez (2020) currently holds 87 citations and discusses issues related to "Job satisfaction as a moderating effect between organizational practices of human resources and the strategic lines of corporate social responsibility in Mexico." Silveira Perez et al. (2022)'s "Circular economy: a challenge for Latin American sports institutions" has 59 citations, and the paper "Towards a Sustainable HRM in Latin America? Union-management relationship in Chile" (Gutiérrez Crocco and Martin 2019) had been cited 54 times. "The evolution of the human capital concept and the challenges for strategic human resource management" (Aliaga and Cofre 2021) from Chile had 35 citations; and "Human resource management in small and medium-sized vineyards in Chile" (Arrau and Medina 2014) had 27 citations (Graph 3).

The authors with more publications are from North America, Asia, and Europe. We notice how the most cited papers were authored by Barney and Wright (1998) Jackson et al. (2014), and Jabbour et al. (2013).

Table 2 Papers dealing with sustainable HRM in LATAM

Authors	Title	Journal	Citations	Author´s Country
Anholon, R; Rampasso, IS; Martins, VWB; Serafim, MP; Leal, W; Quelhas, OLG	COVID-19 and the targets of SDG 8: reflections on Brazilian scenario	Kybernetes	31	Brazil
Aragao, CG; Jabbour, CJC	Green training for sustainable procurement? Insights from the Brazilian public sector	Industrial and Commercial Training	23	Brazil
da Silva, MAB; da Costa, PR; Kniess, CT	Environmental training and developing individual environmental sustainability competences in Brazilian chemical sector companies	Industrial and Commercial Training	50	Brazil
Dias-Angelo, F; Jabbour, CJC; Calderaro, JA	Greening the work force in Brazilian hotels: The role of environmental training	Work: A Journal of Prevention Assessment & Rehabilitation	49	Brazil
Doering, H; Evans, C; Stroud, D	Sustainable Varieties of Capitalism? The Greening of Steel Work in Brazil and Germany	Industrial Relations	53	Brazil
Fernandez, L; Ventura, AC; Andrade, JC; Lumbreras, J; Cobo-Benita, JR	The effect of clean development mechanism projects on human resource management practices in Brazil	International Journal of Operations & Production Management	66	Brazil
Freitas, WRD; Oliveira, JHC; Teixeira, AA; Stefanelli, NO	Green human resource management, corporate social responsibility, and customer relationship management: relationship analysis in the Brazilian context	International Journal of Productivity and Performance Management	115	Brazil
Galdino, M; Lesch, L; Wicker, P	(Un)Sustainable Human Resource Management in Brazilian Football? Empirical Evidence on Coaching Recruitment and Dismissal	Sustainability		Brazil

(continued)

Table 2 (continued)

Authors	Title	Journal	Citations	Author´s Country
Jabbour, CJC	Environmental training and environmental management maturity of Brazilian companies with ISO14001: empirical evidence	Journal of Cleaner Production	55	Brazil
Jabbour, CJC; Jabbour, ABLD; Govindan, K; Teixeira, AA; Freitas, WRD	Environmental management and operational performance in automotive companies in Brazil: the role of human resource management and lean manufacturing	Journal of Cleaner Production	81	Brazil
Jabbour, CJC; Janeiro, RC; Jabbour, ABLD; Gobbo, JA; Salgado, MH; Jugend, D	Social aspects of sustainable supply chains: unveiling potential relationships in the Brazilian context	Annals of Operations Research	60	Brazil
Jabbour, CJC; Jugend, D; Jabbour, ABLDS; Gunasekaran, A; Latan, H	Green product development and performance of Brazilian firms: measuring the role of human and technical aspects	Journal of Cleaner Production	91	Brazil
Jabbour, CJC; Mauricio, AL; Jabbour, ABLD	Critical success factors and green supply chain management proactivity: shedding light on the human aspects of this relationship based on cases from the Brazilian industry	Production Planning & Control	92	Brazil
Jabbour, CJC; Santos, FCA; Nagano, MS	Contributions of HRM throughout the stages of environmental management: methodological triangulation applied to companies in Brazil	International Journal of Human Resource Management	117	Brazil
Latorre, F; Perez-Nebra, AR; Queiroga, F; Alcover, CM	How Do Teleworkers and Organizations Manage the COVID-19 Crisis in Brazil? The Role of Flexibility I-Deals and Work Recovery in Maintaining Sustainable Well-Being at Work	International Journal of Environmental Research and Public Health	85	Brazil

(continued)

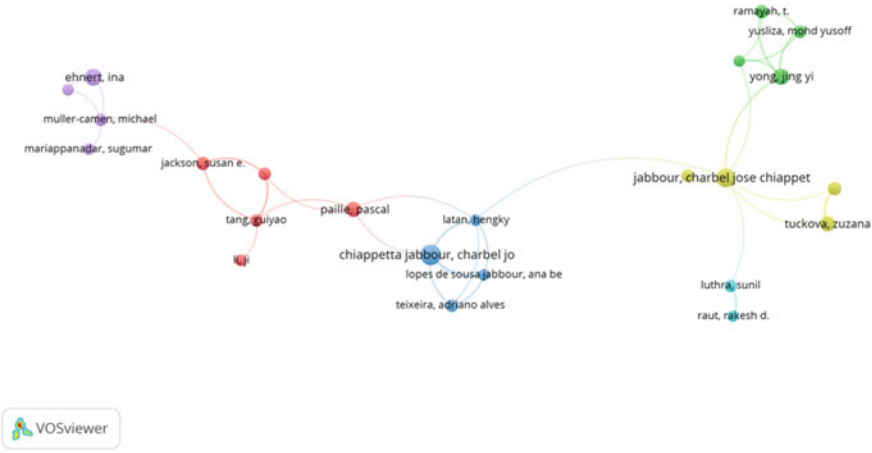
Table 2 (continued)

Authors	Title	Journal	Citations	Author´s Country
Macini, N; Alves, MFR; Cezarino, LO; Liboni, LB; Caldana, ACF	Beyond money and reputation: sustainable HRM in Brazilian banks	Employee Relations	65	Brazil
Mourao, P; Kubo, E; Santos, I; Mazucato, V	Economic Development and Changes in Human Resource Management in a Sustainable Agricultural Sector: Recent Evidence from Brazilian Sugar-Alcohol Companies	Sustainability	48	Brazil
Teixeira, AA; Jabbour, CJC; Jabbour, ABLD; Latan, H; de Oliveira, JHC	Green training and green supply chain management: evidence from Brazilian firms	Journal of Cleaner Production	58	Brazil
Wehling, C; Hernandez, AG; Osland, J; Osland, A; Deller, J; Tanure, B; Neto, AC; Sairaj, A	An exploratory study of the role of HRM and the transfer of German MNC sustainability values to Brazil	European Journal of International Management	42	Brazil
Gutierrez-Martinez, I; Duhamel, F	Translating sustainability into competitive advantage: the case of Mexico's hospitality industry	Corporate Governance-The International Journal of Business in Society	63	Mexico
Madero-Gomez, S	Job satisfaction as a moderating effect between organizational practices of human resources and the strategic lines of corporate social responsibility in Mexico	Estudios Gerenciales	87	Mexico
Aliaga Rebolledo, O; Cofre Vega, D	The evolution of the Human Capital concept and the challenges for the Strategic Human Resource Management in Chile	Revista Gestión de las Personas y Tecnología	35	Chile
Gutierrez Crocco, F; Martin, A	Towards a sustainable HRM in Latin America? Union-management relationship in Chile	Employee Relations	54	Chile

(continued)

Table 2 (continued)

Authors	Title	Journal	Citations	Author´s Country
Perez Arrau, G; Munoz Medina, F	Human resource management in small and medium-sized vineyards in Chile	Ciencia e Investigación Agraria	27	Chile
Andonova, V; Zuleta, H	The effect of enforcement on human resources practices - A case study in rural Colombia	International Journal of Manpower	11	Argentina



Graph 3 Main authors with papers related with Sustainable HRM

The fact that some companies are publishing based on different countries presented methodological challenges. We decided to aggregate the results for Elsevier Sci LTD (92 papers), Elsevier (47), Elsevier Science Inc. (26), and Elsevier Science (23 papers) to just one publisher, ELSEVIER (188 papers). Similarly, we included Springer (94 papers), after noticing that 67 were listed with such label, 14 with "Springer International Publishing," and 13 with "Springer Heidelberg." Finally, Sage (48 papers) is the result of aggregating "Sage Publications Inc." (34 papers) and "Sage Publications Ltd" (14 papers).

Regardless of the number of articles published by individual journals (as summarized in Table 4), the most popular publishing companies are MDPI with 316, Emerald Group Publishing with 243, Elsevier with 188 articles, Wiley with 133, Routledge Journals (including Taylor & Francis Ltd.) with 111, and Springer with 94. Additionally, journals which accepted Sustainable HRM-related articles include Corporate Social Responsibility and the Resource View of the firm as the most accepted frameworks.

Results and Discussion

In this study we find that there are dominant approaches for LATAM research of Sustainable HRM. These approaches are intended to influence companies' organizational culture, create social responsibility among employees, increase green practices, and promote organizational perspectives.

Table 3 Most Cited Sustainable HRM Articles

Authors	Article title	Source title Journal´s name	Times cited
Barney and Wright (1998)	On becoming a strategic partner: the role of human resources in gaining competitive advantage	Human Resource Management	875
Hatch and Dyer (2004)	Human capital and learning as a source of sustainable competitive advantage	Strategic Management Journal	704
Renwick et al. (2013)	Green human resource management: a review and research agenda	International Journal of Management Reviews	597
Coff (1997)	Human assets and management dilemmas: coping with hazards on the road to resource-based theory	Academy of Management Review	587
Daily and Huang (2001)	Achieving sustainability through attention to human resource factors in environmental management	International Journal of Operations & Production Management	496
Jackson et al. (2014)	An aspirational framework for strategic human resource management	Academy of Management Annals	430
Evans and Davis (2005)	High-performance work systems and organizational performance: the mediating role of internal social structure	Journal of Management	378
Colbert (2004)	The complex resource-based view: implications for theory and practice in strategic human resource management	Academy of Management Review	364
Singh et al. (2020)	Green innovation and environmental performance: the role of green transformational leadership and green human resource management	Technological Forecasting and Social Change	349
Paille et al. (2014)	The impact of human resource management on environmental performance: an employee-level study	Journal of Business Ethics	325
Kalshoven et al. (2011)	Ethical leadership at work questionnaire (elw): development and validation of a multidimensional measure	Leadership Quarterly	317
Dumont et al. (2017)	Effects of green hrm practices on employee workplace green behavior: the role of psychological green climate and employee green values	Human Resource Ranagement	315
Kramar (2014)	Beyond strategic human resource management: is sustainable human resource management the next approach?	International Journal of Human Resource Management	293

(continued)

Table 3 (continued)

Authors	Article title	Source title Journal´s name	Times cited
Jabbour and De Sousa Jabbour (2016)	Green human resource management and green supply chain management: linking two emerging agendas	Journal of Cleaner Production	275
Boudreau and Ramstad (2005)	Talentship, talent segmentation, and sustainability: a new HR decision science paradigm for a new strategy definition	Human Resource Management	275
Jackson et al. (2011)	State-of-the-art and future directions for green human resource management: introduction to the special issue	Zeitschrift fur Personalforschung	266
Jabbour et al. (2013)	Environmental management and operational performance in automotive companies in brazil: the role of human resource management and lean manufacturing	Journal of Cleaner Production	224
Tang et al. (2018)	Green human resource management practices: scale development and validity	Asia Pacific Journal of Human Resources	206
Madero-Gomez (2020)	Job satisfaction as a moderating effect between organizational practices of human resources and the strategic lines of corporate social responsibility in Mexico	Estudios Gerenciales	87
Gutierrez-Martinez and Duhamel (2019)	Translating sustainability into competitive advantage: the case of Mexico's hospitality industry	Corporate Governance-The International Journal of Business in Society	63
Silveira Perez et al. (2022)	Circular economy: a challenge for Latin American sports institutions	Retos-Nuevas Tendencias en Educación Física Deporte y Recreación	59
Gutiérrez Crocco and Martin (2019)	Towards a sustainable HRM in Latin America? Union-management relationship in Chile	Employee Relations	54
Aliaga and Cofré (2021)	The evolution of the human capital concept and the challenges for the strategic human resource management in Chile	Revista Gestión de las Personas y Tecnología	35
Arrau and Medina (2014)	Human resource management in small and medium-sized vineyards in Chile	Ciencia e Investigación Agraria	27

Table 4 Publishers with more papers in the field of sustainable HRM

Publisher	Papers
Mdpi	316
Emerald Group Publishing	243
Elsevier	188
Wiley	133
Routledge Journals, Taylor & Francis Ltd	111
Springer	94
Int Business Information Management Assoc-IBIMA	50
Sage	48
Frontiers Media sa	36
Wiley Periodicals, inc	25
Inderscience Enterprises LTD	18
IEEE	17
Enterpreneurship & Sustainability Center	16
BMJ Publishing Group	15
Atlantis Press	12

Sustainable HRM Approaches as a Competitive Advantage

Sustainability seems to have different approaches. For starters, Corporate Social Responsibility provides an influential theoretical framework. In the past, companies rarely perceived themselves as responsible for changes in the environment or society (Kramer and Pfitzer 2016). Recently, this view has changed significantly and both corporations and society have brought forth the notion that there must be a way to create value for stakeholders and shareholders. Particularly Crane et al. (2014) argue from a corporate philanthropy perspective that a stakeholder approach suggests that corporations and investors must regulate their actions and avoid or compensate for all externalities caused on society. Governments must impose taxes, regulations, and penalties so that corporations "internalize" these externalities as noted by Porter and Kramer (2011).

The circular economy framework, on the other hand, aims for a production and consumption model that involves lending, reusing, repairing, refurbishing, and recycling pre-existing materials and products. It has emerged as a global symbol of sustainable production and consumption (Bali Swain and Sweet 2021). Beyond this concept, a Circular Economy promotes the green practices in organizations as an internal culture (Silveira Perez et al. 2022) and is considered as an internal key for sustainable systems; it has been argued that it must be enhanced by leadership and organizational culture (Gutierrez-Martínez and Duhamel 2019). Circular economy suggests that the capacity of leaders to create processes, foster commitment, and align interests and goals in a sustainable manner within employees is essential.

Another key approach that provides an economic framework for examining the role of human resources in creating and sustaining a firm's competitive advantage is the resource-based perspective on organizations. This viewpoint posits that corporate resources are sources of competitive advantage for a focal company. Three basic types of resources can offer this competitive edge (Barney and Wright 1998) that could lead an enterprise to be competitive. Among the firm's physical capital resources are its finances, machinery, location, and other physical assets. The firm's structure, planning, controlling, coordinating, and human resource systems are only a few examples of organizational capital resources. Human capital resources also comprise the skills, knowledge, and intelligence of the staff. Coff suggested that without the ability to handle the accompanying management challenges, businesses cannot get a sustained competitive advantage from their human capital (Coff 1997). That is why the resource-based view affirms the importance of employees to create green practices and reach higher, sustainable performance levels.

Sustainable/Green Human Resource Management as Future Directions

Even though there are several definitions of sustainability and sustainable development, the phrase "three pillars" is a widely accepted perspective on sustainability (Petrişor and Petrişor 2014). Commonly referred to as the "three pillars" of sustainability, economic, social, and environmental factors are the foci that help us understand the purpose of the Sustainable HRM focus and the strategies that may be applied by companies that subscribe to this HRM approach. The concept of Sustainable HRM has several definitions; the lack of a uniform terminology in the field represents an obstacle to develop more research. The absence of a single definition, the vagueness in the conceptualization of the framework, and the lack of clarity in developmental procedures used in sustainable businesses, are part of the existent gap in this field of research among LATAM scholars and journals.

Sustainable HRM is also known as Green HRM (Renwick et al. 2013) or Sustainable Human Capital (Hatch and Dyer 2004). All these concepts are based on the notion that a company's human resources are of crucial strategic importance and that employees' abilities, attitudes, and interactions have the potential to serve as both the basis for developing a sustainable environment and the means by which to put sustainability actions and SDGs into action.

The second element in this conceptualization is the conviction that a company's HRM policies and practices play a key role in enhancing the sustainable goals and capability of its human resources. Sustainable HRM includes the main pillars of the triple bottom within traditional HRM, to design sustainable practices and policies for companies that must achieve success without harming the environment or people. Green/Sustainable HRM practices include both conventional HRM procedures that support environmental objectives, SDGs and their strategic HRM elements

in businesses (Gholami et al. 2016). In other words, green human resource management techniques and transformational leadership strategies with a sustainability perspective may help businesses, small and medium enterprises, governments, and communities advance their goals in ways that are respectful of future generations.

The argument indicates that an effective implementation of sustainable practices leads to a superior organizational performance that is produced in circumstances where work composition, employee influence, and a compensation system foster total employee meaningfulness and people perceive their jobs as "careers" looking for flourishing and realization. It has been suggested (Reio and Kidd 2006; Hatane 2015) that organizations that have highly satisfied employees with a decent work condition (this relates to the Sustainable Development Goal number 8 or SDG 8) operate better financially, more productively, more competently, and with lower absenteeism (Wood et al. 2012). Sustainable HRM practices aim to ensure that the organization's workforce is diverse and inclusive. A diverse workforce with different backgrounds, skills, and perspectives can help to promote innovation, creativity, and productivity, leading to better business outcomes and contributing to SDG 8 "decent work", to SDG 10 "reduced inequalities" and 5 "gender equality." This relatively new field needs further conceptual and empirical research to enhance Sustainable HRM practices (UN 2015).

Sustainable HRM practices prioritize employee well-being and create a healthy and safe work environment. This can contribute to SDG 3 "Good Health and Well-being" encourage employees to adopt sustainable behaviors both at work and in their personal lives (Fernandez-Muñiz et al. 2018) improving their wellbeing and job satisfaction. This can contribute to SDG 12 "Responsible Consumption and Production" and SDG 13 "Climate Action" by reducing the organization's environmental impact and promoting sustainable practices, playing a vital role in achieving the SDGs by aligning organizational goals with broader societal goals of sustainable development. This relative new field needs further conceptual and empirical research is required to enhance sustainable HRM.

Conclusions

The lack of research and investment in Latin America is a major concern. The call to work on designing and implementing practices for Sustainable HRM is for practitioners, scholars, and governments. The need is pressing to improve ways to adopt partnerships for sustainable development, sustainable production and consumption standards (SDG 12), actions to combat climate change and its effects (SDG 13), as well as related SDGs and topics. Nonetheless, sustainable HRM practices even in the larger countries in the region such as Brazil, Mexico, Argentina, and Colombia are still scarce. Major and resolute reallocation of resources are needed. Research from LATAM represents less than 1% of global research in Sustainable HRM, and the progress in SDGs is slow compared with countries with high investment in technology and science.

In this research, we report evidence for and encourage Latin American governments to invest more than 2.4% of their GDP in research and innovation, to promote sustainable practices that could achieve the United Nations Sustainable Development Goals (SDGs). We also recommend that LATAM becomes involved in the development of partnerships between academic institutions, researchers, and national and international institutions (SDG 17) to solve the challenges that impact the environment.

This study has some limitations. First, we only employed one research database, which might not have covered all Latin American articles in all relevant languages to the region. Second, the phrase "green capital human" was not used at the same level as other terms related with Sustainable HRM. Third, VOSviewer relies on data imported from external sources such as bibliographic databases, search engines, or citation managers. The software cannot perform systematic searches across multiple databases, which may limit the comprehensiveness of the search results. The use of Scopus and Web of Science might have created "blind spots" or biases in the selection of publications included in the systematic review. Bibliometric analysis enables the examination of "meta-data" pertaining to the documents that make up a research field, but it does not offer meaningful perceptions into the conclusions of the papers or the caliber of the research.

Since sustainable HRM is a relatively new concept, there is still much to be done to advance and implement it in organizations to substantially achieve SDGs. We hope that our review of the literature on sustainable HRM at various levels provides concrete, helpful knowledge that will inspire future research endeavors.

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GHRM Process: Step Towards Sustainability

Shoeb Ahmad

Abstract Green HRM necessitates using employee engagement to develop and maintain sustainable business processes while promoting awareness, thereby enabling businesses to function in a sustainable manner. Although being a novel concept and innovation in human resource management, sustainability offers enormous potential to support a business in an environmentally friendly manner. To ensure sustainable development and performance, global organizations are implementing eco-friendly practices across their companies, especially in Human Resource Management departments. The global corporate world is witnessing a transition from a traditional arrangement to a more centralized and capacity-based economy built upon green business areas. Human resources (HR) are the foundation of a corporation and play a crucial role in fostering a sustainable corporate culture. The HR department is also crucial for attaining organizational sustainability since it can influence an organization's association with its external environment and its simultaneous impact on both society and the environment. Environmentally responsible HR practices and knowledge capital preservation are two key concepts that are included in green practices that are integrated into HRM. These practices are essentially a part of an extended sustainable development program for a socially responsible corporate world. With Human Resource Departments actively pursuing and implementing green behaviors at work, green human resource management (GHRM) is evolving into structural business approach in many businesses model. The objective of the following chapter is to convey the core ideas of Green HRM and corporate sustainability, and to reflect how to implement HR actions to develop a green workplace culture. In addition, the study intends to highlight the functions and requirements of green human resource management systems in organizations that are committed to environmental sustainability.

S. Ahmad (✉)
Fahad Bin Sultan University, Jordon Street, P.O Box 15700, Tabuk 71454, Kingdom of Saudi Arabia
e-mail: shoebahmad09@gmail.com; sahmad@fbsu.edu.sa

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Introduction

The human resource department is the backbone of an establishment and is deemed to perform a significant part in constructing and modelling the organization's green strategy.

Several practitioners in general and reviewers, particularly in the field of HRM, have realized and consequently emphasized that the efficiency and accomplishment of any improvement in management practice or strategic plan are highly contingent on the eminence and capability of their human resources (Nishii et al. 2008; Domínguez-Falcón et al. 2016; DuBois and Dubois 2012). As the business world goes global, it has realized that a subtle strategy for environmental regulation that focuses merely on regulatory requirements is no longer an effective strategy owing to the cut throat competition amongst organizations to "go green". To stay at the top, organizations worldwide started adopting a proactive approach to sustainable programs for green management which is hugely an approach characterized by future-adapted techniques. These techniques are prompted consciously with a well drafted strategy that impend over conformance and containment to enhance their functioning by concentrating on issues such as waste minimization, carbon emissions reduction, and other performance-enhancing strategies.

Today Sustainable development in organizations is specifically concerned with addressing the genuine requirements of modern generation employees, customers and other stakeholders without ignoring their potential to meet their own needs in the future. Companies today are now mindful of the fact that they must cultivate and promote a strong social consciousness and environmental sense of responsibility among their employees and peers to attain their sustainable goals in future.

The last several decades have seen numerous environmental challenges due to global warming, pollution and increasing carbon levels in the atmosphere. The advent of Green Human Resource Management (GHRM) in the commercial realm was basically due to environmental sustainability rules and awareness among organizations, societies and even the common mass. The world is currently concerned with the new economic challenge of resource depletion at a fast pace and related environmental challenges. The circumstances paved ways for necessary prerequisite to restructure models of economic growth and development at government levels in many nations to attain constructively defined sustainable goals. Governments of different countries have equivocally mandated that their enterprises and organizations include an environmental management program in their business regime. Environmental sustainability has already become a growing concern for management, policymakers, clients, academicians and management experts. Many debates and discussions are held to find new ways and means to facilitate the implementation of GHRM in organizations.

The HRM functions embrace the current conversations and debates amid the struggle of stakeholders in context of difficulties and opportunities posed by environment. Green HRM emerges from the growth of the HRM function in search of green conglomerate in the business area (Zubair and Khan 2019). Although green

HRM is still in its infancy in most countries, it is perceptible that HR professionals and green HRM practitioners can access a growing corpus of knowledge.

Ghrm and Corporate Sustainability

In the twenty-first century, sustainability has become an increasingly important concern for society and industry as well. Today's businesses recognize the significance of sustainability in relation to their effectiveness, competition, repute, and capacity to maintain the most compatible top talent. The World Commission on Environment & Development (WCED) in 1980 coined the phrase "sustainable development" and associated it with environmental integrity and social fairness (WCED 1987). Based on this statement, the term 'sustainable development' was stated as- "Sustainable development is the development that meets the requirements of the present without compromising the ability of future generations to meet their own needs" (WCED 1987, p. 23). World leaders who graced the 1992 Rio de Janeiro Earth Summit with their presence acknowledged and approved the term unanimously. A paradigm shift is obligatory to characterize the green economic factors of any business in countries worldwide. Increasing numbers of businesses are becoming conscious of the impact of sustainability on their productivity, credibility, and potential to attract and retain the best employees. Acknowledging their financial, social, and sustainable implications, companies now solicit feedback through, diversified group of stakeholders when formulating their goals and undertakings.

Although conventional terminologies corporate citizenship and corporate social responsibility are still prevalent within the business culture, they have begun to be superseded by a new term, corporate sustainability, a broader phrase. Furthermore, the term "sustainable development" links sustainability to the corporate world and economic growth concerning society and the nation as well. Organizations today are expected to improve and emphasize on human and social welfare issues besides handling environmental and economic concerns, simultaneously reducing their carbon footprint and ensuring the effective and efficient accomplishment of their organizational objectives.

The significant emphasis on attaining corporate sustainability has forced businesses to implement and align green human resource management (GHRM) strategies with conforming with their corporate sustainability plans (Fig. 1). When all stakeholders (organization, employees, management, and customers) are sincerely devoted to the mission and cause of sustainability, a business can successfully achieve organizational and environmental sustainability goals together. Various studies have demonstrated a correlation among human resources, their sustainable management strategies and the pro-active implementation of sustainable management techniques (Renwick et al. 2013; Paille et al. 2014). The majority of theoretical and experiential research has linked corporate sustainability primarily to variables as: human resource management (HRM), financial performance, and pro-active environmental management (Rothenberg 2003; Govindarajulu and Daily 2004). These theories and

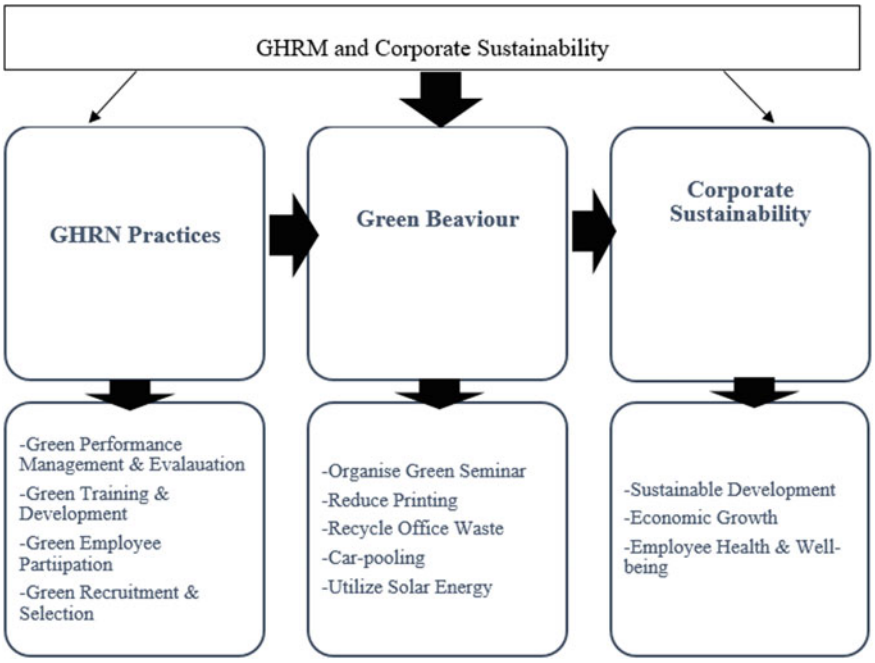

Fig. 1 GHRM & corporate Sustainability

findings conclude that adopting organizational sustainability with exclusive job roles and descriptions help organizations to include green strategies into development and production processes. This system is such that waste is reduced and managed, and employees are aware of how their tasks and responsibilities can promote the sustainable use of resources to endorse organizational sustainability.

Hansla et al. (2008) in their study concluded that environmental awareness, and individuals' approaches and behaviours play a key role in managing sustainable actions. In contrast, absence of environmental awareness creates obstacles and challenges for pro-environmental approaches and behaviours for sustainable actions in organizations. Sustainable knowledge and high-level environmental awareness plays a significant role in influencing pro-environmental opinions and actions, as well as in assisting employees in deciding their behavioural priorities based on their efficiency and environmental values. Corporate sustainability is now linked to higher income and decreased waste, materials, water, energy, and total expenses.

Various scholars use the word "corporate sustainability" to denote the incorporation of organizational concerns of social, environmental, and economic nature into the organization's culture, decision-making process, strategy creation, and implementation, as well as its operations (Renwick et al. 2008; Tariq et al. 2016; Zoogah 2011). External considerations, such as environmental rules, government standards, and legislation, or demands/expectations from pressure groups, e.g., customers and

the community, are the key drivers of the adoption process. In comparison, the components within the organization are generally viewed as complex systems; this mentality creates a difficult gap to fill (Renwick et al. 2008). Numerous recent research studies, for instance, have shown "intra-organizational pressures" for adopting policies that promote and assure sustainability and identify factors internal to organizations, such as the support of top management, management of human resources, training(s) on pro-environmental issues, empowerment of employees, teamwork and reward systems, etc., as crucial aspects for achieving corporate sustainability (Kar and Praharaj 2020; Tooranloo et al. 2017). Other scholars argue that more extensive changes in employee values and applicable norms are necessary for achieving true organizational sustainability (Pandey 2016; Patel 2018). These two perspectives suggest that business sustainability is a multidimensional notion whose operationalization would necessitate organizational transformation and adaptation on multiple levels.

GHRM is essential for an organization's sustainability for various reasons, but principally because of stakeholders' expectations which require organizations to use resources sensibly and responsibly. In other words, organizations are supposed to conserve the environment and minimize their use of available resources like water, energy, air, minerals, and other constituents of consumer goods.

In addition, organizations are encouraged to recycle and reuse these items as much as possible rather than relying on nature to restore or rejuvenate them. Organizations are obligated to protect the beauty and quiet of the environment and prevent any toxicity that could potentially hurt employees and communities. According to the concepts of sustainable development, the social, economic, and environmental goals are interdependent and mutually reinforcing (Tooranloo et al. 2017). Therefore, organizations' development strategies should consider the economic, environmental, and social elements such as social responsibility, environmental friendliness, and economic value.

Green Human Resource Management (GHRM)

GHRM is defined as the part of human resource management that focuses on efforts to transform organizational employees into green employees with a view to achieving organizational sustainability goals as well as reducing labor turnover and utility costs and creating a competitive advantage (Zaid et al. 2018). It is a conception derived from the green management philosophy, strategies, and practices that companies employ for environmental management (Patel 2018).

Green HRM entails using every employee interface to improve and maintain sustainable business practices while raising awareness, allowing firms to operate sustainably. "Green human resource management calls for an integration of organizational environmental management objectives into the HRM process, namely recruitment and selection, training, and development, performance management and reward for environment sustainability" (Renwick et al. 2008 p. 6). Sustainability

has become a pressing concern for society and business in the twenty-first century. Businesses today have realized the importance of sustainability in proportion to their competition, repute, and potential to retain top and most compatible talents in the industry. Though a novel conception and inception in human resource management, sustainability has immense potential to support a business in a green way. Global Organizations are now employing green concepts throughout their enterprises, notably in Human Resource Management departments, to ensure sustainable development and performance.

Green HRM is the process of engaging employees to promote sustainability, increasing their awareness and involvement in sustainability practices at the workplace (Table 1). Green Human Resource Management (Green HRM) is a present-day management concept devised and developed for its ability to encourage green behaviours among employees (Kar and Praharaj 2020). Green HR practices involve limiting paperwork and capitalizing on sustainable green practices. It entails performing eco-friendly activities that lead to enhanced efficiency and production. Green HR is the function of HRM strategies which promotes the efficient application of organizational resources and, on an extended note, to advance the reason of environmental sustainability. Green HR has two essential components: first one is Eco-friendly HR practices and the other one is considered as safeguarding of knowledge capital (Jyoti 2019). It is apparent from these discussions that employees need to be encouraged, empowered, and made environmentally aware of "Greening process" so as to perform green management activities, making green human resource management a global environmental concern today.

GHRM and the Organization

The employment of Green HRM at the organizational level resulted in creating an environmentally friendly corporate culture and work environment, increased resource efficiency, a constructive company image, and improved economic and social performance. Implementing GHRM policies and practices may support the general growth of the work-force by raising the need and supply for green employees. Furthermore, GHRM may stimulate discussion regarding the significance of implementing GHRM policies and practices due to their positive and constructive impact on corporate green process. GHRM may facilitate the advancement of green corporate image of an organization by designing a socially accountable corporate policy, which will help even more to attract and retain talents having pro-environmental views., "A novel approach to the implementation of the HR function that incorporates ecological objectives in all HRM sub-areas, from employment planning to recruiting, selection, employee motivation and development, as well as their evaluation and impact on working conditions" (Bombiak and Marciniuk 2018, p. 5). Evidently, most regular HRM practices like: Green recruitment and selection, Green Performance Management and Evaluation, Green Training and Development, Green Employee Participation (Fig. 2) contains a green element that contributes to the firm's sustainability. Green

Table 1 Green HRM process

GHRM practices	Authors
Green recruitment and selection	Focus upon environmental factors of job description, applicant specifications and appraise jobseeker's understanding about sustainability with their values, and beliefs (Renwick et al. 2013)
Green education and training	Training and development in organization is a mechanism that greatly emphasizes growth of employee knowledge, abilities, and skills concerning particular valuable competencies (Zoogah 2011)
Green performance management & evaluation	Provide employees with positive feedback and advice on related environmental issues (Jabbour et al. 2010) Encompasses issues concerning environmental concerns and company policies (Ahmad 2015)
Green employee participation	Fosters active and committed employee participation in environmental management programs (Remmen and Lorentzren 2000) Potential facilitator that demonstrates the influence on employee motivation for embracing green practices (Tariq et al. 2016)

job analysis, for example, could incorporate the environmental element as a responsibility in the job description proposal, green abilities as a distinct element of the work specification, and organizational ecological criteria in job descriptions. On the other hand, green recruitment approaches may prioritize hiring personnel who contribute to a company's environmental values and are willing to join relevant endeavors. Other environmental factors in recruitment processes related to green job descriptions, green branding, a pro-environmental image, and integrating green knowledge and skills with all organizational job processes may be included.

Green Recruitment and Selection

Green recruitment and selection is the process related to hiring and selecting new people familiar with terms related to sustainable technologies, eco-friendly systems, and environmental conservation terminology. GHRM practices regard green recruitment and selection as an essential component that helps to ascertain green professionals with green tendencies and promotes the development of a green culture. Green recruiting and selection ensure that the new workforce converses with the green process and practices that will contribute to the organization's effective environmental management. There is no specific definition for green recruitment and

Fig. 2 GHRM & the organization

selection, and it often refers to paperless hiring and selection with minimal environmental impact. Several firms worldwide have embraced green HRM techniques to improve their recruitment and selection process to promote an eco-friendly workplace environment. Nowadays, firms are engaging in virtual hiring techniques that enable them to guarantee the availability of essential perceptions of their green HR activities. Virtual recruitment portals all over the world encompass essential details on firms' eco-friendly initiatives.

According to previous studies, job seekers are now well aware of the organization's environmental sustainability measures (Wehrmeyer 1996; Stringer 2009). Typically, job seekers prefer collaborating with firms that demonstrate the capability to connect employees and organizations and the other way round, using an online recruitment platform which is eco-friendly. To foster environmental sustainability, hiring managers evaluate individuals who understand natural resource preservation and conservation throughout the hiring process. It is evident that there is a correlation between an organization's eco-friendly image and its ability to attract talent. Therefore, it is suggested that firms place a greater emphasis on eco-friendly activities and key job characteristics throughout the selection process, thereby enhancing their eco-friendly reputation and image. The process can improve environmental management systems, as the green culture and values are passed on to new recruits. Paperless recruitment process using digital platforms and online processes like online application forms, online interviews, telephonic interviews are conducted to support sustainability.

Managers can also enhance Environmental Sustainability by ensuring that newly hired personnel's environmental culture and values are communicated throughout the department. Job descriptions should include elements that highlight the importance of environmental awareness. An orientation program for new hires should enlist the availability of knowledge regarding the organization's sustainability policies, principles, and green goals. Regarding the recruitment and selection process, organizations can achieve sustainability by creating new occupations or positions highlighting the corporate sustainability components of the firm.

Green Performance Management and Evaluation

Performance management is a continuous process in the organisation that evaluates an individual's performance regularly to support the firm's strategic objectives. Green performance management incorporates challenges related to organisational policies and environmental protection by integrating environmental management into performance management. An organisation's green performance is determined by its ability to integrate green performance standards and standards into its appraisal systems, where personnel are appraised by means of technology in place of conventional paperwork process. With Environmental Management influencing global business strategy, the green wave may also positively impact PM. Green performance management encompasses issues concerning environmental concerns and company policies (Ahmad 2015). It is a measure to protect the environment from harm and is critical to the success of green management programs in organisations.

Performance appraisal is the most fundamental and important element in performance management process. Managers who conduct Environmental PAs should be familiar with green compliance issues as they are accountable for their green management process. Any gap between corporate rhetoric and action needs to be filled and simultaneous development in HR systems related to PA and reward should be encouraged. In addition to meeting the criteria of reliability, validity, and fairness, effective performance appraisals provide helpful feedback to employees (Jabbour et al. 2010, p. 5) and support continuous improvements in the firm's environmental outcomes (Jackson et al. 2011, p. 7). For a perfect green appraisal, organisations may involve technology to affiliate and align performance benchmarks and process with any online portal, a software, or a website to conduct HR processes like job analysis, job descriptions, performance appraisal. This procedure will facilitate organisations to create and maintain a green performance management culture. Employee development plans are directly uploaded to the portal based on performance, and the training department becomes active to ensure plan implementation. performance management (PM) together with environmental management (EM) challenges the measuring of environmental performance standards across all the units of a company and obtaining valuable data on managers' green performance. To implement GPM systems in an organisation successfully there is a need to link performance evaluations with job descriptions that clearly specifies green goals and tasks.

HR systems, such as e-HR, can be implemented to assist management and employees in tracking their carbon emissions. Incorporating environmental criteria into the staff appraisal process allows a learning culture in GHRM to be fostered. Organisations who want to incorporate Green Performance Management can discuss these issues with management with their employees as their future goals for the coming year, and attaining these goals would serve as the foundation for Green performance evaluation.

Green Training and Development

Training and development is a practice that places a great deal of emphasis on the growth of employee skills, abilities, and knowledge concerning particular valuable competencies (Zoogah 2011). In simple words-Green training and development practices are the process to reduce waste, utilise resources efficiently and effectively, conserve and preserve energy, and prevent further environmental destruction.

Green training and development practices have been recognized as a realistic mechanism for handling different environmental challenges; they are crucial component for championing the cause of ecological sustainability at the workplace as, in future, they can facilitate a beneficial situation for both management and employees. These programs are strongly linked to an employee's ability to find and minimize the waste associated with their job description, as assigned by the company. The Organization's adoption of green practices in HR primarily depends on their adeptness to make their employees aware about eco-friendly practices. This in turn, increases the employees' emotional attachment to sustainability concerns of the organization. Significant correlations exist between environmental training and development interventions and organizational eco-performance (Pandey 2016).

Organizations can draft green training and development programmes by establishing a committee comprised of management authorities, green personnels, and other important participants as human capital with pro-environment training is regarded as an essential asset for achieving sustainable organizational development goals and objectives. Organizations can also prioritize and strengthen employee engagement and participation in green activities through regular training and development focused on achieving green objectives. "When the organization practice and extend green training and development through induction for new employees; it makes them more committed towards protecting the environment because the content of the induction programme would have been intensive enough to usher the trainees into understanding the policies of the organization and its procedures towards green management (environmental sustainability)" (Fapohunda et al. 2022, p. 3).

Green Employee Participation

Participation of employees in the organization's decision-making process is known as employee participation (EP). Employee participation significantly affects the mental and psychological health of the employees and strengthens their commitment to the firm. Green employee participation includes employee involvement in suggestion and ideas related to sustainability and problem-solving groups. It also fosters active employee participation in green management programs (Remmen and Lorentzen 2000), and facilitates employee autonomy to generate and evaluate eco-friendly ideas. Employee involvement together with GHRM helps monitor employees' green actions. Moreover, it provides basic information and support in green initiative programs, and fostering green employee involvement plans according to organizational standards, and assist in supervisory behaviours in environmental management, among other aspects (Renwick et al. 2013). Green employee empowerment is a potential facilitator that demonstrates the influence on employee motivation for embracing green practices (Tariq et al. 2016, p. 8).

To stimulate employee involvement and participation within the organization, the identification of eco-friendly or environmentally advanced employees and management is necessary because they can systemize existing financial, human, and natural resources to add value to the company's products or services where they previously did not exist. Apart from this, in GHRM, employee participation teams can reduce carbon prints as they are perceived to be aware of the required work processes and resources. Employees can cope with complicated works successfully, and it helps promote their confidence and their commitment towards organization. EP teams can monitor how work procedures are carried out and improve the health and safety of employees. Management should ensure that employees are included in the drafting of sustainable strategies in order to develop and increase the knowledge required to promote "green" products. Employees are encouraged to generate ideas and suggestions for reducing carbon emissions and conserving energy by their employers.

Organization and Employees' Willingness to Adopt GHRM

GHRM process can directly impact employees, particularly on their pro-environmental or green at-work behaviour; because it helps organizations accomplish their overall greening goals, the importance of GHRM processes at work for organizations cannot be overlooked.

GHRM contributes to the organization's profitability and sustainable development, minimizing further environmental degradation and other issues related to climate change and aligning them with a company's sustainable goals. The ability of an organization to inspire its employees in context of the organizational capacity to generate green goals is the primary indicator of their willingness to undertake green initiatives.

It is observed that an employee's willingness to choose environmentally friendly practices and procedures concerning their job description greatly affects both their performance and health. Employees' ability to identify ecological challenges, such as dealing with loss in production process and waste management practices, strongly correlates with the organizational environment that encourages employees to adhere to the company's ecological objectives which ultimately improves the company's green performance. By incorporating green value into their products and services, businesses can influence how their resources (natural, human, and financial resources) are apportioned. Employee understanding of green HR programs and sustainable work practices are closely associated along with an organization's capacity to meet GHRM problems, such as lowering carbon emissions, recycling, and making green purchases. The amount of commitment and identification the employees have with their organizations is also increased.

Government vision and policies also have a moderating impact on GHRM practices and organizational sustainability. Additionally, firms can achieve organizational sustainability by implementing eco-friendly HRM practices while leveraging employees' pro-environment skills and considering the government's vision and policies for the green environment. Organizational sustainability is closely tied to its capacity to meet the demands of regulatory stakeholders by concentrating on and stressing GHRM's environmentally friendly policies.

In order to achieve their objectives for sustainable development, organizations must involve their employees in drafting environmentally friendly policies. To promote and accelerate the readiness and willingness among employees and the business in adopting GHRM practices, HR department should hire professionals and experts to take quick action and adjust to the sustainable workplace. This is only possible if the business creates official and informal networks of communication with its staff, emphasizing the green initiatives of the business, for example, in the newsletter and website. Other approaches to motivate employees include exchanging research, exhibiting environmentally friendly behaviour, and collaborating with internal marketing personnel to regularly distribute educational and inspirational articles, columns, and other resources to employees.

The firm's environment can be improved by integrating HR processes such as knowledge management, employee participation, screening, employee training & development, laying-offs, status disparities, and management process together. Additionally, HR can create an environmental report with a policy statement, goals, indicators of achievement, and an overall impact that will inspire line managers and staff to be proud of sustainability initiatives.

Conclusion

Green HRM indeed promises a great future for HRM stakeholders and is receiving positive attention from companies, scholars and practitioners everywhere to gain competitive advantage. Sustainability is crucial to achieving a strategic advantage in

the market and improved economic performance. Employers and practitioners can identify the benefits of associating HRM with a primary focus on waste management and recycling, thereby generating environmentally friendly products. It is pertinent for firms to carry out business in a way that respects the environment and society, given the considerable influence of corporations on environmental and social issues. Unions and employees can assist businesses in adopting green human resource management practices which can support, protect and take care of employee overall health and well-being at workplace to boost the firm's environmental performance. For recruitment and selecting employees, organizations should use a green approach, educate them in sustainable practices, and develop their compensation and rewards system accordingly. The imperative of incorporating these concepts into all domains of corporate operations, including the field of human resources, cannot be underestimated.

GHRM may also promote and encourage employees to understand ecological issues by increasing their awareness towards sustainability and instilling environmental values into them. Organizational sustainability and profitability contributes positively to a nation's economy, and also promotes national sustainability programs. If effectively designed and implemented, GHRM contributes positively to organizational sustainability.

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The Two Last Decade of Research on Environmental Training: Survey on the State of the Art of the Theme and Future Directions

Adriano Alves Teixeira and Talita Borges Teixeira

Abstract Despite the importance that the literature has attributed to Green Human Resource Management, in particular, to green training, there is still little research dedicated to this subject. In addition, the two research that carried out a systematic review on green training are already outdated, for example, the research by Stefanelli et al. (Benchmarking: An International Journal 27:2048–2076, 2020) mapped the publications available until 2018. Thus, the aim of this research was to carry out a systematic review of the literature on green/environmental training using the two main databases, Scopus, and Web of Science, as search platforms. We mapped the last 20 years of publication, synthesizing and systematizing the state of the art on the subject in order to find gaps and propose a robust research agenda for the future. In this sense, the main contribution of our work is the presentation of an agenda for future research with 10 recommendations for scholars who are interested in the subject. Furthermore, by mapping and systematizing the state of the art on the green/environmental training topic, we accumulate knowledge from various studies, facilitating the consultation and dissemination of information among professionals interested in the subject.

Introduction

From the end of the twentieth century, the recognition that the environment comprises finite sources of natural resources and their exploitation and degradation at current levels may generate unprecedented environmental catastrophes, begins to change the consciousness about the actions to be developed on environmental issues (Teixeira

A. A. Teixeira (✉) · T. B. Teixeira
Production Engineering at São Paulo State University, Bauru, São Paulo, Brazil
e-mail: adriano.a.teixeira@ufms.br

A. A. Teixeira
Business School at Federal University of Mato Grosso do Sul, Três Lagoas, Mato Grosso do Sul, Brazil

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et al. 2011). Thus, what once seemed to be considered a fad (Hale 1995) now has a prominent place in strategic planning and is discussed in all areas of organizations.

Among the areas of the organization, the area of human resources (HR) has been considered crucial for environmental management to be effective (Daily and Huang 2001; Govindarajulu and Daily 2004) and was named as Green Human Resource Management (GHRM) (Renwick et al. 2008). GHRM is the implementation of a human resource management model that proactively supports actions in favor of the environment in organizations (Ren et al. 2018).

GHRM is relevant to improving the economic, environmental and social performance of organizations (Subramanian et al. 2019), since it can motivate and provide employees with skills, principles and values to deal with the various environmental challenges (Longoni et al. 2018) while at the same time it can make employees more responsible, by creating a culture of learning, dissemination of ideas and the development of experiments (Gupta 2018), even positively affecting the development of Circular Economy (CE) strategies in organizations (Jabbour et al. 2019).

Regarding GHRM practices they are the same as traditional people management: recruitment and selection, training, performance evaluation, rewards, organizational culture, green teams, employee empowerment, but all with an "ecological focus" (Jabbour et al. 2019), that is, focused on the "greening" of organizations. Among these practices, training has been considered one of the most important practices (Srivastava and Shree 2019; Gupta 2018; Teixeira et al. 2016); Teixeira et al. 2012) mainly by facilitating the adoption of more advanced environmental management practices, for example, green supply chain management (GSCM) (Nejati et al. 2017; Teixeira et al. 2016) and is already being pointed out as essential for the implementation of CE (Geng et al. 2013; Geng and Doberstein 2008) and to facilitate the transition to a more sustainable society (United Nations 1992).

Thus, given the relevance of the theme, the main objective of this chapter is to conduct a systematic review of the literature of the last 20 years of research on environmental training/green training together with the Scopus database and Web of Science providing readers with theoretical and practical basis on the subject and directions for future research.

Green/Environmental Training

The term "human capital" was coined in the 1960s by Gary S. Becker referring to the stock of knowledge, skills, experiences, and other characteristics that are essential to economic growth (Becker 1993). Thus, for an organization to perform well, be competitive and innovative, the knowledge and skills of the workforce become essential (Martocchio and Baldwin 1997).

As a focal human resources (HR) practice, training/development is used to develop human capital within companies and represents an area of growing academic interest (Sitzmann and Weinhardt 2018). Organizations with performance problems, in order to improve productivity, tend to invest more in training practices (Bartel 1994; Zwick

2006), since it improves organizational effectiveness (Alliger et al. 1997; Kozlowski et al. 2000), multilevel performance and sustainable competitive advantage (Barney and Wright 1998), innovation (González et al. 2016), employee performance in current and future assignments (Esteban-Lloret et al. 2018), and employee satisfaction at work (Hanaysha and Tahir 2016). In this context, organizations are elevating training to a strategic component that must be fully integrated into the organization, changing the way of thinking about training as a separate and autonomous event (Salas and Cannon-Bowers 2001).

In this sense, training is defined as the "systematic acquisition and development of the knowledge, skills and attitudes required by employees to properly perform a task or job, or to improve performance in the workplace" (Godstein 1980). For Esteban-Lloret et al. (2018) training is defined as the application of a process aimed at providing skills, knowledge, and capabilities pertinent to the workforce to provide performance improvements in current and future assignments. Therefore, employee training is a systematic process that helps them learn and thus improve their knowledge, skills or behaviors seeking their efficiency at work and better corporate performance (Hanaysha and Tahir 2016).

Allied to the relevance that has been given to human capital and training for a strategic organizational management and considering that sustainability is a global issue that has pressured organizations to be increasingly concerned with the effects of environmental issues on their competitiveness and long-term success (Paillé et al. 2014), it is essential to study how the human factor can assist in the development and implementation of sustainability strategies (Cohen et al. 2010; Jackson et al. 2011).

In this sense, the use of human resource management practices has gained prominence such as: recruitment, selection, remuneration, training, development and advancement of human capital to promote the sustainable use of resources within organizations and enable environmental sustainability (Mathapati 2013; Mishra et al. 2014), and among these practices, green training, has been considered one of the most relevant (Teixeira et al. 2012; Jabbour 2013; Stefanelli et al. 2020).

Green training, by analogy, can be considered the systematic acquisition of knowledge, skills, attitudes, rules, and concepts related to environmental issues that provide a better "ecological" performance at work, thus, generally, green training is implemented with a response to organizational changes related to environmental management, either to give knowledge and experiences necessary, such as to raise awareness and engage employees in environmental initiatives. However, to achieve the expected aims, green training needs to be a continuous priority and have essential investments to meet sustainability goals and improve the sustainable performance of organizations (Jabbour et al. 2019).

Studies have shown the importance of environmental training, for example, Teixeira et al. (2012) studied green training and environmental management practices in 9 Brazilian companies. The results confirmed that there is coevolution between these two variables, that is, as there are more and better green training practices there is also a greater maturity in the implementation of environmental management practices.

Usman et al. (2022) conducted a survey of 467 manufacturing employees from various industries to identify whether green training positively influences employee

eco-friendly behavior outside of working hours. The authors conclude that organizations should invest in and develop green training initiatives when seeking to build competitive advantages and promote sustainability through environmental management.

Stefanelli et al. (2020) performed a systematic review of the literature on green training with the aim of proposing a future research agenda. In total, the authors suggest 11 recommendations to guide researchers in human resources, environmental management, sustainability, and supply chain management.

Teixeira et al. (2016) led a survey with ninety-five companies located in Brazil to identify the relationship between green training and external green supply chain practices (GSCM). The authors identified that green training positively influences the practices of GSCM.

Jabbour (2015) conducted a quantitative and exploratory study with 95 companies in Brazil in order to verify the influence of green training on the maturity of the environmental management of these companies. The author concludes that green training, in fact, has a great influence on the maturity stage of the companies studied.

Moreover, based on the results of research on green training, it is perceived the relevance of the subject and a significant increase in research, however, green training is still little studied and only in the last 4 years that research on this topic begins to increase more significantly (Fig. 1). Therefore, more research on green training and its relationship with organizational performance (environmental, social, and economic) needs to be developed, mainly, research that raises the state of the art of the theme (Jabbour., 2013) and indicates suggestions for future research to support and direct researchers, professionals, and experts. Thus, this chapter aims to carry out a systematic review of the literature of the last 20 years on the theme "Green Training" and "Environmental Training".

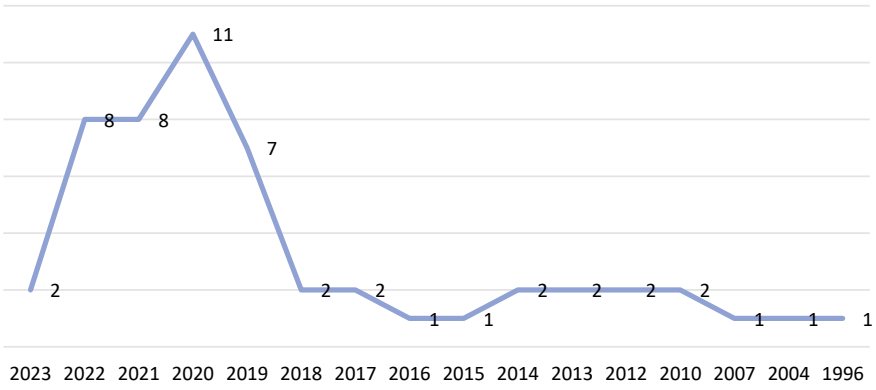

Fig. 1 Research involving environmental training per year

Research Method

For this research we chose to carry out a systematic review, since it can contribute by providing insights through a complete theoretical synthesis (Tranfield et al. 2003). Thus, to analyze the state-of-the-art research on GHRM, Scopus and Web of Science database were chosen intentionally the Scopus is considered the largest abstract and citation database of peer-reviewed literature (Elsevier 2018), and Web of Science provides access to an unparalleled, reliable, integrated, and multidisciplinary research (Web of Science-Clarivate 2023).

The search was carried out on 02/17/23 including title of the article, all languages, type of document "article" and "review", considering the entire period available with the following terms: "environmental training" and "green training".

The results returned a Scopus list of 75 articles, of which 5 were discarded for having restricted access and 22 for not being related to the theme of this chapter. In the Web of Science, the research returned 54 articles that after the removal of the duplicates found in the Scopus list and with restricted access, effectively remained 5 articles. Thus, a total of 53 articles were systematized and had their content analyzed in full to extract the information according to the next section.

Presentation of the State of the Art on Green/Environmental Training

Systematization of Work on Green/Environmental Training

To systematize the study, the following dimensions were used: country where the research was conducted, country of the university of the first author, type of research, method used, and sector in which the research was conducted (see Sect. 4.1). Subsequently, the focus and main results of the research were analyzed (see Sect. 4.2).

Country/Regions

In this dimension, it is identified in which countries the studies on green/environmental training were carried out. According to Fig. 2, in the first place appears Brazil with 22.64% of the studies (12 works), in the second place with 9.43%, China (5 works), in third with 7.55% each, respectively, appear Pakistan, India and Turkey, with 3.77% (4 works) appears Vietnam, and with 1.89% (1 work each country) are Spain, United Kingdom, Malaysia, France, Ecuador, United Arab Emirates, Thailand, Indonesia, Taiwan, Italy, Mexico, Russia, Cuba and Nigeria. It is worth mentioning that in 4 studies it was not possible to identify the country in which the research was carried out because they were literature review studies, and 2 articles did not mention the countries of the respective research.

It is possible to observe that Europe, North America, Asia, Oceania, and most of Latin America are still underrepresented when it comes to green training. Another

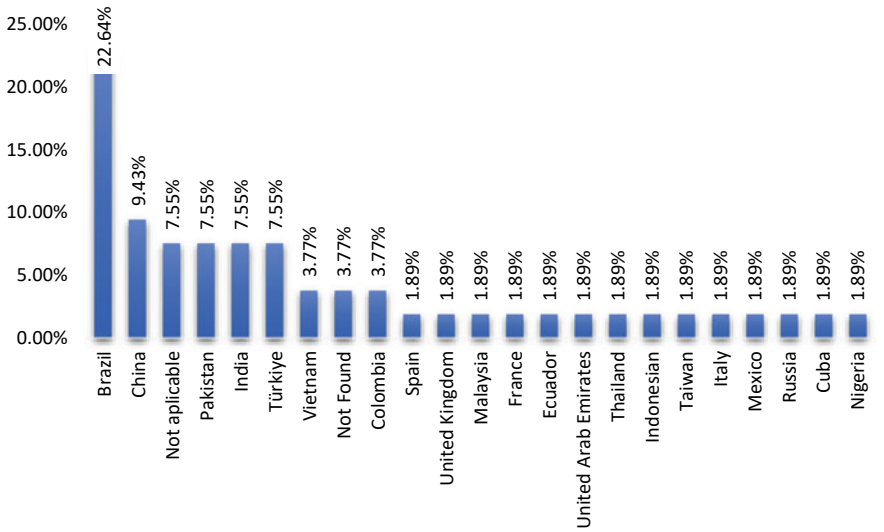

Fig. 2 Country of the execution research

important piece of information is that approximately 81% of the work was carried out in emerging markets and only 11% in countries considered developed.

Country of university of the first author

When we analyzed the countries of university of the first authors of the studies (Fig. 3), we find that 15 studies had as first authors Brazilians (28.30%), China, India and Turkey were in the second place with 5 authors each (9.43%), in third place 4 are Pakistanis (7.55%), in the fourth place appear Spain, Malaysia, France, Thailand and Colombia with 2 authors each (3.77%) and Vietnam, United Kingdom, Ecuador, United Arab Emirates, Taiwan, Italy, Mexico, Russia and Cuba have only 1 author each (1.89%).

Research method

This dimension analyzed the methodological procedures used by the authors. The objective was to understand which research techniques (case studies, survey, literature review, case study and surveys or other methods) were considered in the research. It was found that 56.60% of these studies conducted surveys (30 research), 22.64% used case studies (12 research), 11.32% adopted other research methods (6 research), such as documentary research, analysis of reports, analysis of primary sources, 7.55% performed literature review or conceptual research (4 research) and only 1.89% (1 research) adoption case study and survey altogether (mixed) (Fig. 4).

Sector

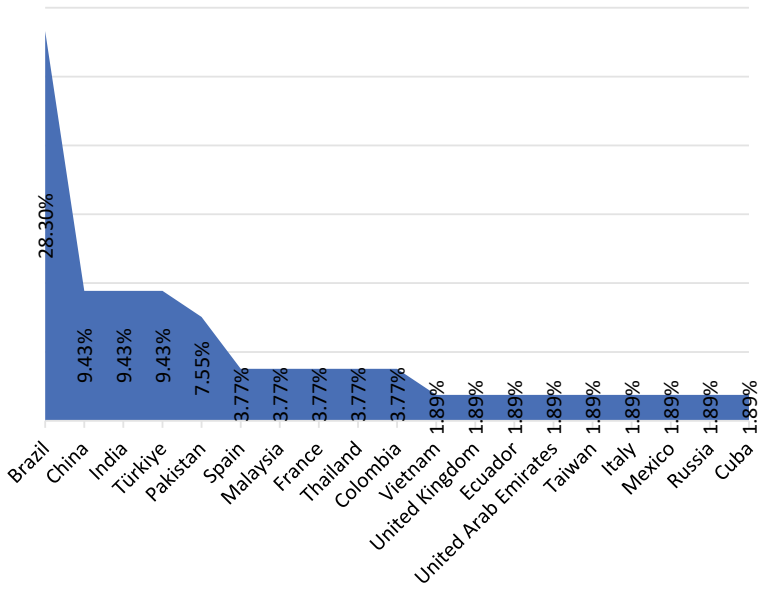

Fig. 3 Countries of the first authors of the studies

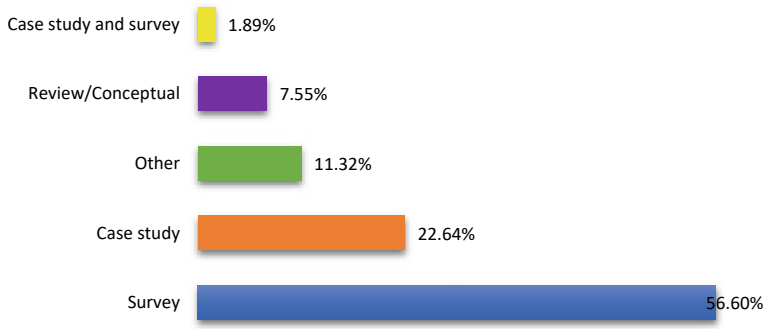

Fig. 4 Research method

Finally, we analyze in which sectors (public, private, public, and private (jointly) and not applicable (when the study was not conducted in a specific sector, for example, in the case of literature review) (see Fig. 5). The results show that more than half of the studies 58.49% were conducted in the private sector (31 research), 16.98% in the public sector (9 research), 11.32% in both sectors, that is, public and private (6 research) and 13.21% not applicable (7 research).

In addition, it is important to note that approximately 47% of the research were conducted in the service sector, 32% in the manufacturing sector and 6% jointly involved the service and manufacturing sectors.

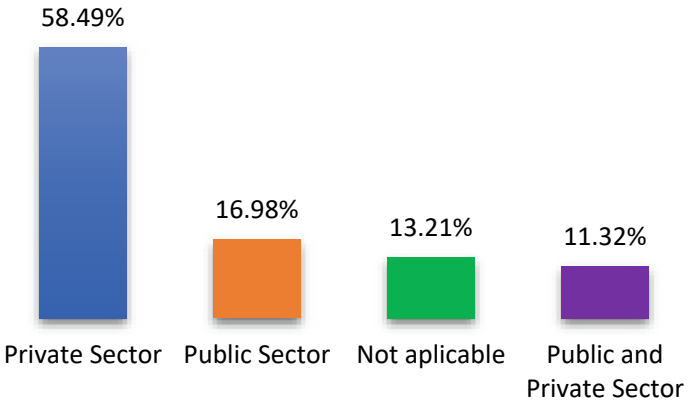

Fig. 5 Sector in which the research was carried out

Focus and main results of research

In a nutshell, based on the research parameters mentioned at the beginning of Sect. 3 and in order to facilitate the understanding of the development of the theme and to draw a profile of the research carried out on green/environmental training in the world, we present Table 1 with the authors, the titles of the articles, the sectors of the organizations surveyed/country of origin of the research and the main focus of the research.

On Table 1 we note that, despite the growth of research in the area, the subject continues with relevant gaps that need to be overcome, including some of them that had already been pointed out in the studies of Jabbour (2013) and Stefanelli et al. (2020). Among the research gaps we highlight those that we consider main to help develop research in the area:

- A limited number of articles discussed (separately or jointly): the benefits, role, characteristics, types, and good practices of green training in organizations.
- Only two studies discussed all the phases of the training suggested in the ISO 10015.
- Rare research has studied the possible relationships between green training and other GHRM practices, as well as with other recent areas (GSCM, SSCM, CSCM, CE, NET-ZERO, SDG's); and
- Very few studies have conducted studies involving/comparing several countries.

Therefore, it is essential that scholars in training/human resources or other areas that are interested in the subject develop research involving the topics listed above, so that they can make research in the area more robust, understanding, in fact, the contributions of training to a more sustainable world.

Table 1 Authors, types of organizations researched/country of origin and research focus

Authors	Title	Sector/country	Research focus
Onubi et al. (2023)	Bridging the gap between perceived pro-environmental benefits and pro-environmental behavior: Mediating roles of green work climate and pro-environmental Training	Construction/Nigeria	Explore the perceived pro-environmental benefits that can lead to pro-environmental behavior through pro-environmental training and green working climate
Nguyen et al. (2023)	Top management support, green training, and organization's environmental performance: the electric power sector in Vietnam	Energy/ Vietnam	Explore the influence of top management support on green training
Memon et al. (2022)	Importance of top management commitment to organizational citizenship behaviour towards the environment, green training and environmental performance in Pakistani industries	Sextile, pharmaceutical, rubber, chemical and fertilizer/ Pakistan	To evaluate the relationship between green training and organizational citizenship behavior in relation to the environment, as well as the relationship between senior management's commitment and environmental performance and the relationship between senior management's commitment and ecological training
Alola et al. (2022)	Green training an effective strategy for a cleaner environment: Study on hotel employees	Hotelier/ Turkey	Examine the effect of green training on organizational citizenship behavior and perceived behavioral control
Huang et al. (2022)	Assessing the Effectiveness of Environmental Training for Diving Tourists Using the DEA Model	Tourism / Taiwan	Valuing the effectiveness of environmental training in underwater activities
Gull and Idrees (2022)	Green training and organizational efficiency: mediating role of green competencies	Textile /Pakistan	Examine the importance of implementing green training as part of green management practices in operations

(continued)

Table 1 (continued)

Authors	Title	Sector/country	Research focus
Usman et al. (2022)	Toward a more sustainable environment: Understanding why and when green training promotes employees' eco-friendly behaviors outside of work	Textile, health, steel manufacturing, electronics, oil and gas, banking, and hospitality / Pakistan	Propose and test a model to verify the association of green training with the environmentally friendly behavior of employees outside of work
Gull nnd Rehman (2022)	Impact of Green Training on Ecological Sustainability in the Presence of Employee Resistance as a Moderator: Evidence from Textile Sector of Pakistan	Textile /Pakistan	Examine the association of green training with ecological sustainability
Colombo et al. (2022)	From green training and involvement to an organizational rationale for sustainability: does it improve individual green performance?	Energy / Brazil	Analyze the effects of green training and engagement on individual green performance
Deshpande and Srivastava (2022)	A study to explore the linkage between green training and sustainable organizational performance through emotional intelligence and green work life balance	Not applicable	To verify the relationship between green training, work-life balance, sustainable organizational performance, and emotional intelligence
Márquez Delgado et al. (2021)	Formación ambiental en funcionarios de gobierno del Poder Popular: una aproximación teórica	Public sector - Government officials /Cuba	Socialize theoretical references associated with the environmental training of employees
Wu et al. (2021)	How does green training boost employee green creativity? A sequential mediation process model	Public sector /China	Propose and test the relationship between green training and employees' green creativity through green values and intrinsic green motivation
Del-Castillo-Feito et al. (2021)	The effect of implementing environmental policies and employees' environmental training in multinational companies' legitimacy level in emerging countries	Multinationals installed in countries operating in South and Central America	To verify the relationship between environmental policies, environmental training of employees and dialogue with the local community and the legitimacy of multinationals

(continued)

Table 1 (continued)

Authors	Title	Sector/country	Research focus
Yafi et al. (2021)	Impact of green training on environmental performance through mediating role of competencies and motivation	Public and private universities /Malaysia	Examine the impact of green training on green environmental performance through the mediating role of green competencies and motivation in the adoption of green human resource management
Amrutha et al. (2021)	Linking organizational green training and voluntary workplace green behavior: Mediating role of green supporting climate and employees' green satisfaction	Information Technology/India	Empirically evaluate the relationship between green training and green behavior in the workplace
Paillé and Valéau (2021)	"I don't owe you, but I am committed": Does felt obligation matter on the effect of green training on employee environmental commitment?	Public and private sector employees/ France	Analyze the mediating role of perceived organizational support for the environment in the relationship between green training and employees' environmental commitment
Donmez-Turan et al. (2021)	The analysis of pro-environmental behavior based on ecological worldviews, environmental training/knowledge, and goal frames	Public education	Explain pro-environmental behavior based on individuals' ecological worldviews and goals that individuals wish to achieve with their environmental knowledge
Zhang and Sun (2021)	Cognitive dissonance of self-standards: A negative interaction of green compensation and green training on employee pro-environmental behavior in China	Public and private sector employees /China	Explore the potential interaction of green compensation and green training in employee pro-environmental behavior
Chamorro González et al. (2020)	Formación verde en los programas de contaduría pública de las universidades de Antioquia	Public and private universities /Colombia	To investigate discussions on the environmental literature

(continued)

Table 1 (continued)

Authors	Title	Sector/country	Research focus
Cop et al. (2020)	Perceived behavioral control as a mediator of hotels' green training, environmental commitment, and organizational citizenship behavior: A sustainable environmental practice	Hotelier / Turkey	Test the mediating effect of perceived behavioral control in the organization through environmental training, environmental commitment, and organizational behavior
Lunkes et al. (2020)	Interactions among environmental training, environmental strategic planning, and personnel controls in radical environmental innovation	Stock Exchange Company/ Brazil	To analyze the effect of environmental training on the relationship between strategic environmental planning and personnel control on radical environmental innovation
Joshi and Dhar (2020)	Green training in enhancing green creativity via green dynamic capabilities in the Indian handicraft sector: The moderating effect of resource commitment	Handicraft Sector/ India	Examine the influence of green training on green creativity in the craft sector
Xie and Zhu (2020)	Exploring an innovative pivot: How green training can spur corporate sustainability performance	Manufacturing Companies/ China	Examine the effect of green training on corporate sustainability performance
Stefanelli et al. (2020)	Environmental training: a systematic review of the state of the art of the theme	Not applicable	Review the literature on green training and propose future research agenda
Arcia (2020)	Pedagogical strategies for environmental training base on socio-environmental subjectivities	Community/ Colombia	Interpret pedagogical strategies that can generate understanding and critical environmental awareness in management and conservation
Xie et al. (2020)	How can green training promote employee career growth?	Manufacturing/China	Examine the relationship between green training and career growth and employee performance

(continued)

Table 1 (continued)

Authors	Title	Sector/country	Research focus
Liu et al. (2020)	Uncovering the influence mechanism between top management support and green procurement: The effect of green training	Manufacturing/China	Develop a moderate model of multiple mediation to highlight the effect of green training
da Silvaet al. (2020)	Environmental training and competences for environmental sustainability in Brazilian chemical companies	Chemical Sector/ Brazil	Analyze how environmental capacity building can help generate individual and organizational competencies
Mee-ngoen et al. (2020)	Green training, green project, and green construction as antecedents of customer satisfaction: Examining the mediating role of green supply chain management	Construction industry/ Indonesia	Explore the relationship between green training, green project, green construction, and green supply chain management
Villa et al. (2019)	Environmental curriculum: the meaning of environmental training in higher education	Public and private higher education institutions/ Mexico	Explore environmental training in environmentally focused curricula and programs
Singh et al. (2019)	Environmental ethics, environmental performance, and competitive advantage: Role of environmental training	Machinery Manufacturing and Maintenance / United Arab Emirates	Check out the links between environmental ethics, green training, environmental performance, and competitive advantage
Gomez-Conde et al. (2019)	Environmental innovation practices and operational performance: The joint effects of management accounting and control systems and environmental training	Hotelier/ Brazil	Analyze the effect of accounting and management control systems on environmental innovation practices and operational performance
Pinzone et al. (2019)	Effects of green training on pro-environmental behaviors and job satisfaction: Evidence from the Italian healthcare sector	Hospital / Italy	Theorize and test the effects of green training, including green training, organizational citizenship behavior, and job satisfactiono

(continued)

Table 1 (continued)

Authors	Title	Sector/country	Research focus
Silva et al. (2019)	Environmental training and developing individual environmental sustainability competences in Brazilian chemical sector companies	Chemical Sector/ Brazil	To analyze how environmental training can contribute to the development of individual competences aligned with the environmental dimension of sustainability
Mejía Paredes et al. (2019)	La formación ambiental: un análisis acerca del entrenamiento de docentes para la educación inicial	University /Ecuador	Analyze background and propose a set of actions that contribute to the environmental training of future teachers of early childhood education
Somja et al. (2019)	The stakeholder's pressure and environmental supply chain: Does the environmental training matter in Thai sports manufacturing firms?	Manufacture Sports Exporters/ Thailand	To analyze the role of environmental training as a mediator in the relationship of stakeholder pressures and in the adoption of GSCM
Srivastava and Shree (2018)	Examining the effect of employee green involvement on perception of corporate social responsibility: Moderating role of green training	Hotelier/ India	Analyze whether green engagement can affect employees' perception of corporate social responsibility, with the intervening role of green training
Pham et al. (2018)	Enhancing the organizational citizenship behavior for the environment: the roles of green training and organizational culture. Management & Marketing	Hotelier/ Vietnam	To examine the relationship between green training, organizational culture, and the behavior of organizational citizenship in relation to the environment
Maslennikova and Gibadulina (2017)	Strengthening the practical component in the environmental training of future engineers	Federal University/ Russia	Investigate the training of skills to reinforce the practical component of the environmental training of students, with technical specialization
Aragão and Jabbour (2017)	Green training for sustainable procurement? Insights from the Brazilian public sector	Public University / Brazil	Investigate the relationship between environmental training and sustainable purchase adoption

(continued)

Table 1 (continued)

Authors	Title	Sector/country	Research focus
Teixeira et al. (2016)	Green training and green supply chain management: evidence from Brazilian firms	Certified Companies ISO 14001/ Brazil	Analyze the relationship between green training and the GSCM external practices
Jabbour (2015)	Environmental training and environmental management maturity of Brazilian companies with ISO14001: empirical evidence	Certified Companies ISO 14001/ Brazil	Analyze the relationship between green training and the company maturity
Saturnino Neto et al. (2014)	Green training supporting eco-innovation in three Brazilian companies: practices and levels of integration	Companies in low carbon Eco innovation Projects / Brazil	Analyze the relationship between the training green / environmental and the low carbon Eco innovation Projects development
Dias-Angelo et al. (2014)	Greening the work force in Brazilian hotels: The role of environmental training	Hotelier Sector / Brazil	Determine whether the Human Resources management, the training, it is supported by all the Environmental Management Practises
Jabbour et al. (2013)	Environmental training in organizations with ISO 14001 certification: study of multiple cases and identification of co-evolution with environmental management	Financial sector, professional technical education, pulp manufacturing, wood panel manufacturing, automotive batteries, food and nutrition, aeronautics and manufacturing and marketing of wires and cables / Brazil	Analyze the environmental training features
Jabbour (2013)	Environmental training in organizations: From a literature review to a framework for future research	Not applicable	Perform a systematic literature review about the environmental training in the organizations

(continued)

Table 1 (continued)

Authors	Title	Sector/country	Research focus
Vidal-Salazar et al. (2012)	Human resource management and developing proactive environmental strategies: The influence of environmental training and organizational learning	Hotelier Sector / Espanha	Analyze whether the environmental training and the organizational learning are influencing the proactive environmental strategies development
Teixeira et al. (2012)	Relationship between green management and environmental training in companies located in Brazil: A theoretical framework and case studies	Financial sector, professional technical education, wood panel manufacturing, automotive batteries, and manufacturing and marketing of wires and cables / Brazil	Understand the relationship among the green management and the green training and the framework purpose to the green training
Mustafa and Nedim (2010)	A qualitative research example to explore the reasons for primary school's success in environmental education	School/ Turkey	Development in Cleaning and environmental training in Primary School
José Chiappetta Jabbour et al. (2010)	Managing environmental training in organizations: Theoretical review and proposal of a model	Not applicable	Green training framework propose in the organizations
Unnikrishnan and Hegde (2007)	Environmental training and cleaner production in Indian industry—A micro-level study	Agrochemical Companies, pesticide, fertilizers, pharmaceutic / India	Analyse several kinds of organizational training
Hapçioglu et al. (2004)	A Model in Environmental Training–The University/Elementary School/ Municipality Cooperation	Public School / Turkey	Develop an effective framework of green training to the implementation in the elementary teaching
Beard (1996)	Environmental training: emerging products	Computer Training Pack / United Kingdom	Presenting an environmental training approach through the computer training pack

Source Elaborated by the authors

Discussions and Proposal for Research Agenda

Based on the results presented in Sects. 4.1 and 4.2 it is possible to point out some important research gaps (Fig. 6) on the subject and elaborate suggestions to direct innovative research on green training in the coming years.

Only 11% of the research was carried out in developed countries. In comparison with the only two literature reviews on the subject conducted by Jabbour (2013) and Stefanelli et al. (2020) that found, respectively 32% of the research conducted in developed countries and 30% in emerging markets, 29% in developed countries and 56% in emerging markets, it is possible to perceive in our research a great growth of research in emerging markets driven, mainly by research performed in Brazil and China. In addition, less than 10% of the research was carried out on the European continent. In Latin America only Brazil (22.64%), Colombia (3.77%), Ecuador (1.89%) and Mexico (1.89%) have research and the countries of North America and Oceania do not have published works, therefore, our first recommendation is the development of research on green training in developed countries (North America and Europe) and as a second recommendation that more research be carried out in Latin American countries, Oceania, and Asia.

Another important gap is in relation to the research method adopted by the studies found. Less than 2% of the research used mixed methodology (survey and case study altogether). Thus, we suggest (third recommendation) that the new research adopted a mixed research approach so that more insights can be provided due to the complementarity of the techniques.

Regarding the sector where the research were conducted, there are three points to be taken into consideration. The first of these is that only 16.98% of the research

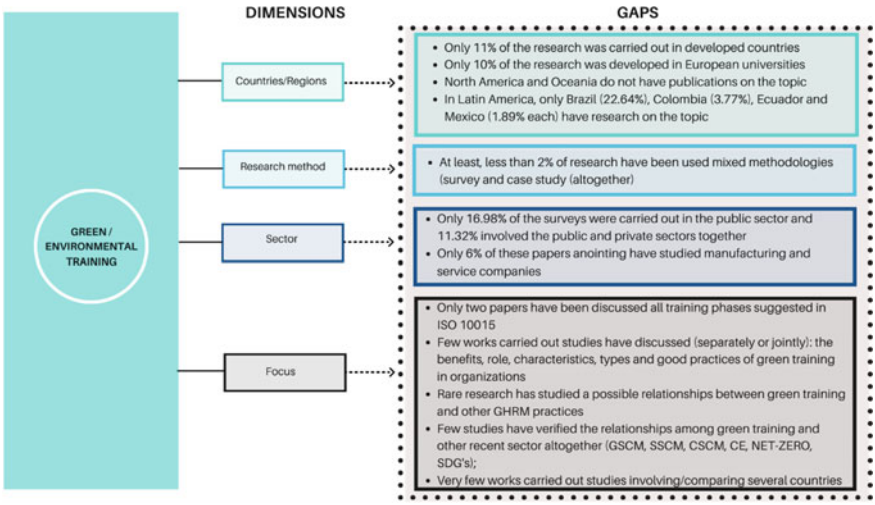

Fig. 6 Green/environmental training research gaps

were conducted in the public sector and only 11.32% jointly involved the public and private sectors, so our fourth recommendation is that further research considers jointly studying organizations, both public and private sector, to provide data for comparison of practices and results achieved. In addition, as a fifth recommendation, more studies involving the public sector are relevant to map the characteristics and good practices of green training in this sector and, as only 6% of the works were developed in manufacturing and service companies (together), we suggest that authors around the world dedicate themselves to exploring green training in these organizations (sixth recommendation).

Concerning the content of the research conducted involving green/environmental training, four relevant gaps can be verified. Very few articles have discussed separately and, mainly, jointly, subjects such as benefits and the role of green training, the types and characteristics of green training and good practices of green training in organizations. Thus, our seventh recommendation is that more research studies address these issues separately or together.

We also found that only two studies sought to research the phases (see ISO 10015) that companies should adopt so that training can be better developed and achieve the desired success, so we suggest as the eighth recommendation, more research on how companies are developing (phases/sequence) green training internally.

Finally, we suggest two more recommendations. As there are very few studies involving/comparing countries, we recommend (ninth recommendation) that further research studies seek to conduct studies involving previous recommendations in different countries (in the same research), to generate new insights into the green/environmental training literature and more research that studies the possible relationships between green training and other green training practices. GHRM and green training with other emerging research areas/subjects; for example: GSCM, SSCM, CSCM, CE, NET-ZERO, SDG's (tenth recommendation).

As a result of the gaps presented and the recommendations for further research, we developed on Fig. 6, to synthesize the gaps in green training research and on Fig. 7 indicating the opportunities for future research which we believe are necessary to develop human resources and facilitate the transition to a more sustainable world (United Nations, 1992).

Final Considerations

The main aim of this chapter was to present a systematic review of the literature on green/environmental training to raise the main research gaps and guide, through recommendations, future research. Thus, our work has the following theoretical and practical implications.

Theoretical implications

In total we suggest 10 recommendations and from them we build the framework (Fig. 7) that is expected to be useful to contribute to the advancement of the state of

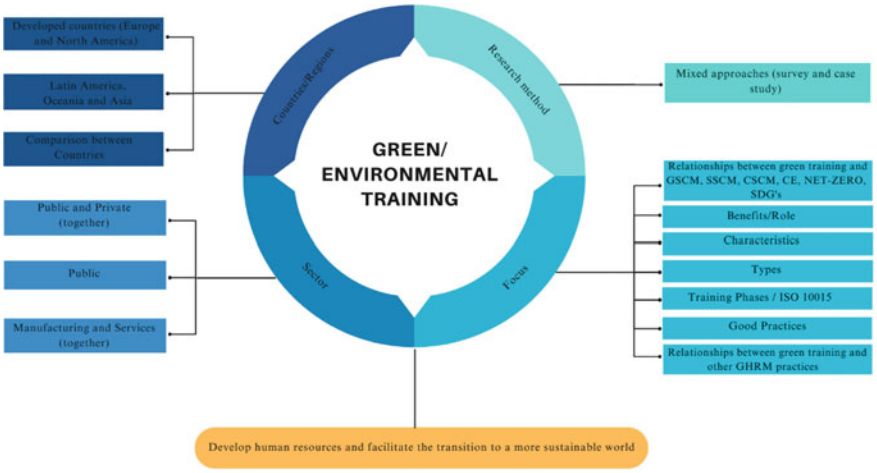

Fig. 7 Future research opportunities in green/environmental training

the art of the theme of green training, green human resource management (GHRM) and other areas of knowledge that may benefit from the results of this research, in particular, circular supply chain management (CSCM), sustainable supply chain management (SSCM), green supply chain (GSCM), circular economy (CE), net-zero, Sustainable Development Goals (SDG's), agendas of recent research that will need a great deal of research effort to develop and we believe that our work can be extremely relevant in directing the studies thus enabling original research involving the role of green training.

In addition, this chapter presents 36 new studies that were not considered in the research of Stefanelli et al. (2020) due to the restriction of the research cut-off date, thus updating an important study topic that can enable a smoother path towards sustainability.

Practical implications

Professionals can also gain benefits from this research. Firstly, because we shed light on the relevance of green/environmental training for organizations and, secondly, because we mapped and systematized 53 works that addressed the subject of green/environmental training, so our work provides a consistent basis for consultation by accumulating knowledge from a series of studies that can facilitate organizational practice.

Limitations

Like all research, our work has limitations. We believe that the main ones are related to the databases chosen (Scopus and Web of Science), the search terms used and the search performed only in the titles of the articles, however, because they are the databases that, together, have the main and largest number of articles in the world and

how we wanted to track, in fact, studies addressing the topic of green/environmental training, we believe our choices were appropriate.

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An Investigation into the Left Side of Green Human Resource Management

Emmanuel Twumasi Ampofo and Osman M. Karatepe

Abstract A major issue confronting humanity in the world today is global climate change. What appears the certainty is that the world is becoming an unsafe place for human existence due to the increasing rate of degradation to the environment. It is obvious that companies are a major contributor to climate warming. In 2017, it was reported that only 100 companies have contributed to over 71% of greenhouse gas emission in the world since 1988. However, there has been inspiring efforts by some companies to change the narrative. In recent times, many global firms have critically assessed their environmentalism and are therefore adopting several pro-environmental policies and practices such as green supply chains, green finance, and green marketing. In the management literature, green human resource management (HRM) has gained significant attention because of its immense role in helping companies to obtain sustainable competitive urge. A careful search in the green HRM literature reveals that the construct has been linked to several outcome variables including turnover and organizational citizenship behavior. However, just a few antecedents of green HRM have been identified in the pertinent literature. These include corporate social responsibility, top management commitment, and intellectual capital. In this chapter, we discuss other potential key predictors of green HRM. Based on relevant theoretical underpinnings, this chapter identifies several personal, organizational, and environmental variables that affect green HRM. Thus, this piece does not only broaden knowledge regarding the antecedents of green HRM but also emphasizes the importance of personality and context in influencing the acceptance and implementation of eco-friendly practices in organizations.

E. T. Ampofo
Department of Human Resources and Organizational Development, School of Business, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
e-mail: etampofo@knust.edu.gh

O. M. Karatepe (✉)
Faculty of Tourism, Eastern Mediterranean University, TRNC, Via Mersin 10, Gazimagusa 99628, Türkiye
e-mail: osman.karatepe@emu.edu.tr

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Introduction

In recent times, companies' cognizance of environmental sustainability has increased appreciably since they comprehend that their operations contribute immensely to environmental issues (Anwar et al. 2020; Karatepe et al. 2022a; Paulet et al. 2021). In the management literature, companies adopt human resource management (HRM) policies and practices that help protect and sustain the environment (Zhang et al. 2019). Green HRM represents the HRM facets of environmental management that aim to encourage eco-friendly behaviors at work (Renwick et al. 2013; Rubel et al. 2021). Green HRM helps develop employees who are environmentally conscious and committed to the matters of environmental sustainability (Aboramadan and Karatepe 2021). Activities relating to green HRM includes hiring environmentally friendly employees, providing employees with skills and training in environmental management, and offering rewards to employees for demonstrating pro-environmental behaviors (Kim et al. 2019; Yusliza et al. 2017).

Recent empirical works have demonstrated that green HRM is a predictor of several organizational outcomes such as task performance, quitting intentions, work engagement, employee green behavior, and employee retention (Aboramadan and Karatepe 2021; Acquah et al. 2020; Fawehinmi et al. 2020; Islam et al. 2022; Karatepe et al. 2022b; Tanova and Bayighomog 2022). The extant literature also reveals the predictors of green HRM which include top management commitment (Yusliza et al. 2019), intellectual capital (Mansoor et al. 2021), ethical leadership (Islam et al. 2020), and corporate social responsibility (Úbeda-García et al. 2021). These predictors are inexhaustive as there are other factors that could affect pro-environmental HRM policies and practices.

Against this backdrop, our paper attempts to increase the understanding about green HRM via various antecedents. Specifically, the paper theoretically discusses three alternative antecedents of green HRM. These include personal variables, organizational variables, and external variables.

Our paper makes significant contributions to the literature at least in three ways. First, research suggests that personality traits are crucial in influencing one's strategic decisions and choices in the workplace (Alayo et al. 2019; Samimi et al. 2022). However, few personal variables have been identified as the antecedents of green HRM which consist of intellectual capital, top managers' green commitment, and managers' green orientation (Haldorai et al. 2022; Tanova and Bayighomog 2022). The upper echelon theory contends that corporate executives' cognition, experiences, and values have a positive impact on their perceptions and interpretations of the environment and therefore affect their decision-making (Liao 2018). The personalities of top managers are crucial because it can influence a company's understanding and consciousness of environmental issues (Hrazdil et al. 2021). Thus, corporate managers with green personality traits are likely to champion green sustainability through green HRM (Mensah and Ampofo 2020).

Second, organizational factors play a vital role in a firm's formulation and implementation of major strategies and tactics (Jum'a et al. 2022). Recent writings have

shown that an organization's decision to implement environmentally friendly HRM policies and practices is driven by organizational influences like corporate social responsibility and organizational environmental culture (Al Doghan et al. 2022; Úbeda-García et al. 2021). However, studies linking organizational factors such as corporate value, organizational reputation, organization size, and workplace politics to green HRM are sparse in the relevant literature.

Lastly, external influences can shape a company's policies and practices toward environmental sustainability (Lim 2018). The institutional theory opines that firms' strategic decisions are not only influenced by their motive to maximize profit but also include their quest for legitimacy from the external institutions (DiMaggio and Powell 1983). Thus, external environmental factors can compel companies to adopt and implement HRM policies and practices that foster environmentalism. External influences of green HRM found in the present literature include customer pressure and regulatory stakeholder pressure (Guerci et al. 2016). However, a detailed search into the extant literature reveals that external factors including external environmental orientation, competition, governmental environmental regulations, changing customer and investor demands, economic conditions, and technology have not been explored yet as the predictors of green HRM. Research suggests that external variables can largely impact how an organization behaves (Ahmad et al. 2018; Chen and Ma 2021).

Figure 1 illustrates the research model of this chapter. In the model, the mediators (e.g., green work engagement) and outcomes of green HRM (e.g., reduced proclivity to quit and green creativity) are also given (Karatepe et al. 2022a, b; Tanova and Bayighomog 2022). Though there are empirical pieces about most of the mediators and outcomes given in the model, research about these issues for green HRM is still in its infancy stage. This has also been highlighted in Karatepe et al. (2022a, b, c) editorial piece about creativity in the service environment.

Literature Review

In this paper, we review the relevant literature on various potential predictors of green HRM. Specifically, we discuss the antecedents of green HRM from three perspectives, that is, personal variables (i.e., self-efficacy, extroversion, optimism, openness to experience, conscientiousness, moral reflectiveness, and willingness to sacrifice), organizational variables (i.e., corporate values, workplace politics, company policies and focus, organizational reputation, and organization size), and external variables (i.e., external environmental orientation, competition, governmental environmental regulations, changing customer and investor demands, economic conditions, and technology).

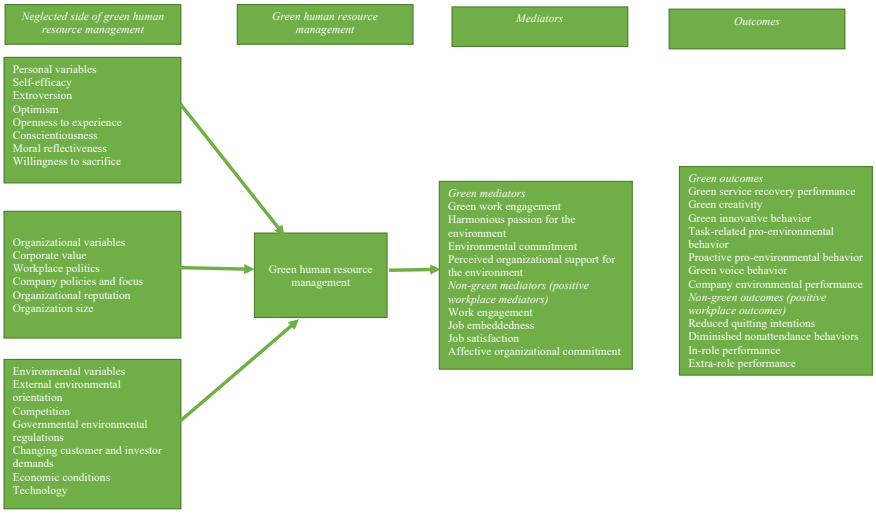

Fig. 1 Antecedents of green human resource management

Personal Variables

Self-efficacy refers to individuals' awareness of their capacity to influence the environment for the better (Lin and Hsu 2015). Employees with higher self-efficacy are more likely to display behaviors that promote environmental sustainability. Research suggests that self-efficacy thoughts serve as important elements at the foundation of human behavior which act as psychological drivers for inducing behavioral change (Bandura 2001; Carter et al. 2018). In this regard, organizational actors in top managerial roles who are environmentally or green self-efficacious would show greater tendency to adopt and implement HRM policies and programs that are tilted toward preserving the natural environment for future generations.

Individuals who are extroverts demonstrate high extent of assertiveness, talkativeness, sociability, and active commitment to work (Wang et al. 2021). Research denotes that extroverts tend to advocate strongly against destructions of the environment (Sun et al. 2018). Top executives who are extroverts may find it difficult to keep silent on environmental issues in an organization. Rather, they are likely to make their voice be heard through adoption and implementation of green HRM policies and practices. Earlier research demonstrated a positive impact of extraversion on environmental engagement (Milfont and Sibley 2012).

Optimism refers to the continual anticipation of favorable results and perceptions of adverse situations solely as temporary hindrances (Seligman 2006). This implies that top executives who are optimistic about the environment may view the present environmental devastation as a temporal menace which could be curbed. Such managers may feel that they have a critical role to play in preserving the environment for future generations. Consequently, top executives with high optimism

about a better future environment are likely to consider green HRM as an important strategy to improve the environment.

Openness denotes an individual trait that encompasses creativity, broad-mindedness, preparedness to play with novel ideas and problems, inquisitiveness, multiplicity of interests, curiosity, and imagination (Bozionelos et al. 2020). Open individuals usually tend to live by their unique ideas, make their personal rules, regularly question previously recognized ideas, effortlessly adapt to change, and show empathy for the environment (Xu et al. 2021). Hirsh and Dolderman (2007) convincingly argue that open persons are often concerned about the environment and end up indulging in eco-friendly behaviors. Therefore, corporate executives who are open may enhance environmentalism through the implementation of effective green HRM policies and practices (Duong 2021).

Conscientiousness highlights an individual's proclivity to be organized, self-disciplined, and comply with rules and norms (Kvasova 2015). Individuals high on conscientiousness tend to become aware of serious environmental issues more easily because they have significant ecological interests (Sun et al. 2018). Research suggests that individuals who have future orientation are generally more worried about the outcomes of their activities (Milfont and Sibley 2012). Accordingly, individuals occupying top management positions in the organization are likely to take responsibility to implement green HRM as a proactive approach to avert future ecological devastation.

Moral reflectiveness reflects the individual differences regarding the morally guided reflections in one's daily experiences and decision (Li et al. 2022; Reynolds 2008). Individuals with moral reflectiveness engage often in altruistic, discretionary, and helping behaviors (Afsar and Umrani 2020; Li et al. 2022). Individuals high on moral reflectiveness focus on morality and have self-control (Afsar and Umrani 2020; Li et al. 2022). According to Aguilera et al. (2007), concerns of individuals relating to environmental issues are attributable to moral motives, which denote a main reverence for human worth and dignity. Individuals who are engaged in moral issues value the prosperity of others (Kim et al. 2017). Accordingly, managers high on moral reflectiveness may attempt to protect the environment against degradation via eco-friendly HRM policies and practices.

Willingness to sacrifice reflects the decision of individuals to forego their own immediate self-interests to enhance the wellbeing of others (Van Lange et al. 1997). Individuals who put the wellbeing of others first are likely to consider the wellbeing of the environment, even at the expense of their effort or personal interest (Davis et al. 2011; Powell and Van Vugt 2003). When top executives show willingness to sacrifice for the environment, they tend to implement pro-environmental HRM policies and practices.

Organizational Variables

Corporate values describe the beliefs that lead or guide businesses to make a strategic choice among possible means and objectives (Thomsen 2004). Organizations are likely to be successful when they adhere to their values (Joyner and Payne (2002). Organizations with value environmentalism are likely to engage in eco-friendly strategies such as green HRM to achieve success. For instance, companies that value environmental sustainability will often provide green training and development programs to enhance employees' pro-environmental behaviors and reward employees with elevated levels of eco-friendly behaviors.

Organizational reputation explains the public perception and overall judgment of how good or attractive an organization is (Lange et al. 2011). Given the increased public cognizance of sustainability issues, firms that are environmentally conscious and engage in green practices like green HRM may have a favorable public image, the opposite is true. In other words, firms that seek to remain good in the eye of the public are likely to implement environmentally friendly policies and programs like green HRM. Past studies revealed that a company's reputation had a favorable impact on its performance (Carmeli and Tishler 2005; González-Rodríguez et al. 2019).

Organization size can largely influence green HRM because the implementation of green strategies may require huge capital. For example, employees would need to be constantly trained and empowered on environmental issues to demonstrate green behaviors. Large organizations may have the capacity to raise capital to implement green strategies, while small companies may lack sufficient capital to engage in green activities (Clemens 2006; Susomrith et al. 2019).

Workplace politics can affect a company's implementation of pro-environmental strategies. Top executives may utilize their influence to advance their personal goals at the expense of organizational goals (Lampaki and Papadakis 2018). In organizations where the milieu is characterized by heightened political activities, top executives who perceive that the organization's decision to champion environmentalism may diminish their self-aggrandizement are likely to discourage the implementation of green HRM. The job demands-resources theory contends that goal achievement may be threatened or necessitate making unwarranted concessions in demanding situations (Demerouti et al. 2001), like an organizational environment that is politically influenced.

Environmental Variables

External environmental orientation refers to the degree to which companies respond to and meet the expectations of external stakeholders on environmental issues (Banerjee et al. 2003)**.** External environmental orientations largely affect companies' adoption of environmental strategies (Chan et al. 2012). The institutional theory contends that companies are likely to increase their stability, legitimacy, and

chance of surviving if they operate within the restrictions that the institutions permit (DiMaggio and Powell 1983). These institutions are considered as important external stakeholders that enforce formal or informal restrictions on how companies should manage their connection with the environment (Banerjee 2001). Therefore, factors in the external environment can require companies to implement green HRM.

Competition is the pursuit of a market position by organizations that provide equivalent goods to a certain consumer base (Hoffmann et al. 2018). Tang (2006) reckons that competitive pressure is a major driver of firms' adoption of innovative strategies. From the resource-based view (Barney 2001), when customers become aware and much concerned about environmental issues, companies feel obliged to adopt green HRM to enhance their competitive advantage.

Environmental regulations are legally binding restrictions from the government to protect the environment and encourage the rational and effective use of resources (Guo 2019). As per the assertion of the institutional theory (DiMaggio and Powell 1983), organizations are strictly required to operate within the dictates of the government's environmental regulations to gain legitimacy. Firms that flout environmental regulations may face cost imposition from the government. Organization's implementation of green HRM could be a response to pressures arising from the governmental environmental law enforcement.

The current business trend largely hinges on technology such that firms that fail to operate in that direction stand the risk of failing (Budhwar et al. 2022; Holland et al. 2022). Research indicates that technological advancement reduced the impact of human activities on the natural environment (Vrontis et al. 2022). In a period where technology adoption has resulted in several positive organizational outcomes (Che and Zhang 2018; Maroufkhani et al. 2020), firms feel compelled to apply technology in all facets of their activities to remain relevant in an increased competitive market (Ojo et al. 2020). For example, companies may rely on software applications that help recruit employees, manage staff data, and enhance internal communication.

The stakeholder theory provides a means of addressing the constantly shifting demands of key stakeholders of the organization, especially investors and customers (Elijido-Ten 2007). According to Ullmann (1985), a company may enhance its environmental performance if it perceives that its influential stakeholders care about environmental issues. This implies that firms will be compelled to implement green HRM if customers and investors are more concerned about the natural environment. Advocacy on green protection has increased in recent times which has heightened customers and investors awareness of environmentalism (Paulet et al. 2021; Vrontis et al. 2022).

Conclusion

This chapter sets out to discuss the neglected side of green HRM in the extant literature. These are potential predictors of green HRM that have not been subjected to empirical inquiry so far. As presented in Fig. 1, we emphasized the need for empirical

research about the link between personal variables (i.e., self-efficacy, extroversion, optimism, openness to experience, conscientiousness, moral reflectiveness, and willingness to sacrifice) and green HRM. For example, we do not know whether top managers who are environmentally or green self-efficacious would display propensity toward the adoption and implementation of green HRM such as green training, green empowerment, green career opportunities, and green teamwork. This is also true for organizational variables (i.e., corporate values, workplace politics, company policies and focus, organizational reputation, and organization size). We do not know whether companies investing in the enhancement of their organizational reputation do also invest in the effective implementation of green GHRM practices. As for the environmental variables, competition or competitiveness can be one of the primary reasons triggering firms' interest in green HRM practices. Companies paying utmost attention to the environmental regulations imposed by the government may invest in the development of their employees' green knowledge, skills, and abilities. However, there is no evidence supporting the premise that competition and environmental regulations do force such companies to make investments in green HRM practices.

In light of what has been discussed so far, researchers are encouraged to investigate the following issues to broaden the database in the field of green HRM:

- The antecedents of green HRM can be examined and tested at the company, departmental, or team level. As shown in Fig. 1, the predictors of green HRM can be linked to several critical outcomes via the mediating roles of relevant variables.
- A sequential mediation model can be developed and tested. Using triple mediators in this sequential mediation model would enhance the literature on green HRM.
- Though it is not presented in Fig. 1, some of the antecedents of green HRM can be treated as moderators. For instance, the indirect impact of green HRM on company's environmental performance via the mediating role of green work engagement can be moderated by green technology. This highlights the need for a moderated mediation model.
- Using a mixed-methods research design to explore the aforementioned linkages would be useful for enhancing the green HRM literature.
- Having time-lagged and/or multiple sources of data (procedural remedies) in the green HRM research would enable researchers to control common method variance.

We hope that this chapter will inspire researchers to focus on these voids in the field of green HRM in the future. Such research cannot only advance the understanding about the predictors of GHRM in various industries but can also help managers to make effective green decisions.

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Evaluation of Human Resource Management in the Green Revolution. Key Constructs in the Green Human Resource Management

Janaka Siyambalapitiya and Xu Zhang

Abstract The effects of environmental disasters and global warming on the quality of life have increased in recent years. One main reason for this detrimental change is the increasing economic activities and the consequent environmental degradation. Therefore, environmental pressure on businesses has intensified over the past few years; thus the future of business is being built on green and socially responsible sustainable operations. The literature on environmental management has recognised that in order to achieve environmental sustainability objectives, organisations can use human resource management practices to stimulate their employees, and great efforts have been made to explore what drives employees to engage in pro-environmental behaviours that help their organisations to become environmentally friendly. Indeed, the growing concerns of sustainable business may be partly responsible for the recent greening of human resource management scholarship and practice. Therefore, this resulted in a new strategic manoeuvre called green human resource management (GHRM). GHRM has been identified as one of the new effective management disciplines integrating with environmental management themes in strengthening an organisation's environmental performance, hence the key is grounded on the association of HR practices with the organisation's environmental activities. Thus, the topic and research area of GHRM is one which has become increasingly important in the past few years hence, investigating green revolution in human resource management and identifying its key constructs are paramount. The objectives of this study are two-pronged, hence initially study directed to identify the green transformation to human resource management and a desk review was conducted in search of the literature on GHRM using the archival method, to structure the GHRM constructs. The review was conducted to survey human resource management practices in the aspects of environmental management research from 1996 to 2021 on the process format of

J. Siyambalapitiya (✉)
Department of Management Sciences, Faculty of Management, Uva Wellassa University of Sri Lanka, Badulla, Sri Lanka
e-mail: janaka@uwu.ac.lk

X. Zhang
Dalian University of Technology, Dalian, China
e-mail: xzhang@dlut.edu.cn

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human resource management from green human resource planning to green grievance handling and exit. Summing up the main outcomes that the green human resource management is one of the most important components while building the capabilities in environmental perspective that enable a change, from conventional HR practices to green as a way to achieve new paradigms. Therefore, it has an indispensable role to play in building the capabilities of the employees to achieve environmental objectives. Reaching sustainability may require not only limited attention to technical and scientific advancements but also human elements. Therefore, practitioners must think beyond the routine activities of organisational human resource management practices may be a critical predictor of the environmental improvement efforts.

Introduction

The effects of environmental catastrophes and global warming on the quality of life have risen in recent years and occur each day. It is commonly accepted across the globe that the climate has changed substantially in the past decades and will proceed to do so at a rapid rate. One of the main reasons for this occurrence is the increasing economic activities resulting in environmental deterioration (Alvarado and Toledo 2017). Today, the impact of business on environmental issues is more apparent (Jackson et al. 2011), and as such, governments, authorities, organisations and people, increasingly focus on finding solutions to environmental issues to move toward a sustainable future (Hoffman 2009). The consensus is starting to form around the need to protect the natural environment from the damaging effects of some industrial activities. Organisations have to adequately address business, moral, and social obligations to protect both their interests and the environment by moving towards proactive environmental management (Hunt and Auster 1990). Indeed, addressing the growing concerns of sustainable business may be partly responsible for the recent greening of human resource management scholarship and practice (Jackson 2012).

As two decades already have passed since discussed greening employees in *Greening People: Human Resource and Environmental Management* book edited by Wehrmeyer (1996), still use of the concept is not comfortable due to lack of theoretical and empirical evidence. Even though human resources are considered vital to an organisation's environmental activities, studies on the connection between human resource management and environmental management are scarce. Therefore, many organisational efforts in this direction fail because of consistent HR practices during the implementation of environmental programmes (Milliman and Clair 1996). Meanwhile, many enterprises are not aware and also not thought about the sustainable environmental strategies and its impact on the HR aspects (Ehnert et al. 2014). Therefore, employees need to be involved in decisions on mitigating companies' effects on the environment, improving environmental awareness and promoting companies' environmentally friendly behaviour (Klinkers and Nelissen 1996). Thus, HR can contribute to the success of complex environmental management activities (Russo and Fouts 1997). However, even as governments, businesses, consumers, and

scholars face increasing green challenges and opportunities, HR practices have been comparatively slow to address such topics (Jackson et al. 2011).

Hence, in the inception of GHRM scholars and practitioners, like Jabbour and Santos (2008), Jackson and Seo (2010), Jackson et al. (2011) and Renwick et al. (2013) started to search for solutions in the human resource management aspects of environmental management and set up a separate area of scholarship termed as green human resource management. Among the various methods and practices to address the environmental issues proactively, green human resource management has been identified as an important tool for sustainable business operations and environmental management activities (Wehrmeyer 1996; Daily and Huang 2001; Renwick et al. 2008) Hence the key of GHRM grounded to enhance an organisation's environmental performance through improving employee engagement and commitment towards the environment (Renwick et al. 2008; Jackson et al. 2011).

Evolution and Current Status of Green Human Resource Management

The fast-growing nature of green human resource management has head towards broad applications for future sustainable business. Therefore, it is important to study and investigate how green human resource management evolved. Thus, this chapter briefly explains how GHRM evolved and its key constructs.

When people looking for sustainable business practices, they identified sustainability as 'the development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (World Commission on Environment and Development 1987, p. 41) and further recognised that it is inseparable development problems from environmental issues. Therefore, today many argue that the environment is closely related to business activities and influenced by the organisational environment (Dubois and Dubois 2012). Against this backdrop, leading companies began to encourage and implement proactive environmental management practices (Jabbour and Santos 2008) and started to widespread green transition in many subject areas such as green marketing (Peattie 1992), green finance and accounting (Bebbington 2001; Owen 1992), green supply chain (Srivastava 2007; Carter and Rogers 2008; Jabbour and De Sousa Jabbour 2016), green operations management (Gunasekaran and Ngai 2012), green tourism management (Gray 1993), green food service industry (Haddock-Millar et al. 2016) and green aviation (Harvey et al. 2013). These transitional concerns were behind the establishment of the new manoeuvre called green human resource management.

Green Management

The effects of environmental disasters and global warming on the quality of life have increased in recent years. The earth's climate has changed substantially in the past decades and will continue to do so at a rapid rate. One main reason for this detrimental change is the increasing economic activities and the consequent environmental degradation (Alvarado and Toledo 2017). Society, including public and private organisations, has increasingly focused on finding solutions to environmental issues to move towards a sustainable future (Hoffman 2009). Increased energy costs, customer awareness, stakeholder pressure and global regulations are few of the problems faced by the future firms. Hence, the pressure on business to become environmentally sustainable has escalated over the past few years. Even though some organisations moving away from the environmental regulations and keeping defence responses, a growing number of organisations who have been transformed to green operations have adopted a proactive stance on environmental protection (Moon and Leon 2007).

As the environmental pollution levels and waste emerging from businesses are growing, at the same these consequences resulted in an increase in the implementation of environmental regulations and policies by governments and friendly environmental practices from private and corporate sectors directing of reducing the rapid destruction of the non-renewables and societal consequences. Therefore, Bansal and Roth (2000) stated that with this green movement companies might be responsive to environmental legislation, to build a strong stakeholder relationship, gain economic wealth and a competitive advantage, and also to maintain an environmental balance. These factors were behind the emergence of a new manoeuvre called green management. This green approach was considered to be effective as well as profitable from 2000 onwards as seen by Lee (2009). Thus, green management is defined as a term of a strategy which is adopted by an organisation in order to organise the environmental management activities for saving, guarding and measuring environmental aspects (Cherian and Jacob 2012).

Green management is lacking in standard definition; however, a survey of interpretations reveals many common threads. Hence, we previewed some abbreviated comparisons of green management definitions from a variety of sources, especially from the management perspective. Green management is merely the rethinking, or more accurately, being more mindful of how organisations are operating concerning the environment (Tran 2009). Banerjee (2001) has seen green management as the technique in which organisations manage the environmental issues and thereof to develop environmental strategies, especially for large companies that operate globally. Hart (1997) argues that the companies which use tools such as pollution prevention, product stewardship and corporate social responsibility are identified as the organisations involved in green management (cited by Lee 2009). Therefore, Lee in 2009 concluded that green management could influence organisational change in the factors of regulatory structure, innovation capability, human resources, cost savings and competitive advantage. The experts argue that green management matters termed

the triple bottom line which consists of environmental benefits, positive economic effects, and healthy societal images. The term triple bottom line was first coined by Elkington (1994) aiming to explain the social and environmental impact of an organisation's activities, measurably, on its economic performance to show improvement or to make evaluations more in-depth (Tran 2009). Hence, the concept which emerged in the 1990s became a famous slogan internationally in year 2000 onwards.

Bansal and Roth (2000) saw that the initiatives of organisation's corporate responsibilities towards the environment aiming towards mitigating the organisation's impact on the natural resources by a change in organisation production processes, use of environmental sustain resources and implementing environmental management systems, could implement green management in any organisation. Therefore today, many literature researching *green* contribution or environmental consideration into subject areas such as green marketing (Peattie 1992), green finance and accounting (Bebbington 2001; Owen 1992), green supply chain (Carter and Rogers 2008; Jabbour and De Sousa Jabbour 2016; Srivastava 2007), green operations management (Gunasekaran and Ngai 2012), green tourism management (Gray 1993), green food service industry (Haddock-Millar et al. 2016) and green aviation (Harvey et al. 2013).

Green Transformation to Management

Today the topic *greening* become apparent and has increased growing interest among business executives, governments, consumers and in academia. Many researchers and professionals are researching the challenges and opportunities presented in environmental concerns in their respective subject areas. Hence, many researchers and sustainable businesses have identified greening as an emerging concept in the twenty-first century.

Why Companies Go Green

Many companies are today feeling the pressure to adopt environmentally sustainable practices into their business. This was shown by customers demanding more green products, increasing pressure from environmental groups and new legislation to reduce carbon dioxide emission. Hence it is needed to leverage between green and business strategies to match stakeholder requisites. Organisations that adopt environmental management activities in their organisations can not only minimise waste in production but also backed to increase productivity, and increase the corporate image and reputation of popular environmentalism consciousness (Yozgat and Karata 2011). In the industrialised nations, more and more companies go green as they realise that they can reduce pollution and increase profits simultaneously (Hart 1997).

During the last decade, research investigations concerned with organisations and the natural environment have investigated why organisations respond to environmental issues therefore why firms go green. Researchers like (Dillon and Fischer 1992; Lampe et al. 1991; Lawrence and Morell 1995 and Vredenburg and Westley 1993) have identified the factors and motives for why organisations go green or in the sense that why organisations apply *corporate greening*. Accordingly, the most commonly accepted motives are 'regulatory compliance, competitive advantage, stakeholder pressures, ethical concerns, critical events, and top management initiative' (as cited by Bansal and Roth 2000, p. 717). Further, King et al. (2010) included concepts for motives for firms to go green such as ethical behaviour, being socially responsible, and protecting the environment hence, Worthington et al. (2008) argue that corporate greening implementations have become an increasingly important discourse within the literature of corporate social responsibility (Yozgat and Karata 2011). Moreover, in the recent past corporate social responsibility has taken concern among the firms as well as among the people and becoming of increasing interest, as it includes issues about society's well-being, issues about global warming and carbon footprints of the organisations. HR can play an important role in commencing and coordinating ideas for corporate social responsibility initiatives; however, lip service of corporate social responsibility may not be sufficient if they are not implemented as documented. Bansal and Roth (2000) stated that firms are environmentally responsive to comply with rules and legislation to establish a better relationship with stakeholders, reach economic wealth and competitive advantage and maintain an environmental balance, for the sustainability of the businesses. Hence, the expert's views and many shreds of evidence have shown that the future of sustainable business is being built on green and socially responsible organisations.

Transforming Human Resource Management to Green

It is common today that business is experiencing increasing pressures for environmentally sensitive products and operations. However, many enterprises are not having a clear idea about how sustainable environmental strategies impact their business as well as how to deal with social or human aspects of business life (Ehnert et al. 2014). Over the last decade, scholars specialised in environmental management have directed their attention to green aspects of human resource management and have emphasised the importance of implementing greening employee management practices (e.g., Hart 1997; Daily et al. 2012; Fernandez et al. 2003; Jabbour and Santos 2008; Paille et al. 2014). Ones and Dilchert (2012) reported that when pro-environmental behaviours are established based on individual jobs, it may help employees to transform into green which will work as a key contributor for the environmental performance in the organisations (as cited by Jackson 2012). Although, Brio et al. (2007) evidenced that ISO 14001 certified factories located in Spain, the most important critical success factor for environmental performance as the human factor in an organisation. Therefore, HR practices are acclaimed as the driver of

organisation's green culture and achieving sustainable business goals (Cherian and Jacob 2012).

In the literature, few empirical works have addressed the extent of adoption of human resource management practices stimulates employees' friendly environmental behaviours, allowing them to improve the environmental performance in the organisation context (Paille et al. 2014). To implement and maintain environmental management systems in organisations, human resources should align with environmental management (Govindarajulu and Daily 2004). However, even as governments, businesses, consumers, and scholars face increasing green challenges and opportunities, the HRM practices have been comparatively slow to address such issues (Jackson et al. 2011). The United Nations Environment Programme's (UNEP 2008) *Green Jobs* report presented evidence of employment's movement towards greener, cleaner and more sustainable jobs, as well as provided perspectives on the future of green jobs. However, little discussion found in the literature on transforming human resource management to greening (Liu and Xie 2013). Hence, many organisational efforts in this direction fail because human resource management practices are left unchanged during the implementation of environmental programmes (Milliman and Clair 1996).

Green Human Resource Management

When organisations are implementing or moving towards the environmental approach, the employees are the key to its success or failure (Winter 1996) and if employees are not convinced no matter how well established the strategies, it will decide the success or the failure of the firm. Hence, involving employees in decisions on corporate environmental care proved to be most effective in improving environmental awareness and intended corporate environmental behaviour (Klinkers and Nelissen 1996). Thus, organisations need to rethink how they manage and use their human resources as well as the current and future potential within and outside the organisation (Ehnert et al. 2014). Society, along with public and private organisations, increasingly focuses on finding solutions to environmental issues to move toward a sustainable future (Hoffman 2009). The consensus is starting to form around the need to protect the natural environment from the damaging effects of some industrial activities. Companies have to adequately address business, moral, and social obligations to protect both their interests and the environment by moving towards proactive environmental management (Hunt and Auster 1990). Indeed, the growing popularity of initiatives to address the broader concerns of sustainable business may be partly responsible for the recent greening of human resource management scholarship and practice (Jackson 2012).

Defining Green Human Resource Management

Green human resource management is a recently embraced terminology which debated for the employee green transition, but it lacks in standard definition. Initially, Renwick et al. (2008) identified the increasing requirements of integrating environmental management into human resource management research and practice, and they found gaps in human resource management literature on the human resource aspects of environmental management and identified a gap termed as green human resource management. Later in 2011, Jackson et al. saw green human resource management as a subset or another field of HRM which expanded its role in pursuing environmentally sustainable business. Further, they have identified and highlighted the significance of research and teaching of green human resource management anticipating the tragic changes in the environment and the importance of putting the environment on a higher agenda of business today. Evidence in line with this argument in the UK, 23% of HR professionals given the fact that themselves having ownership of environmental issues and another 46% believe that HR should take necessary steps towards the environmental issues (Charted Institute of Personal Development [CIPD] 2007).

According to Prasad (2013) identified green human resource management as a part of the green management that consists of philosophy, policies and practices that were followed by a firm for the environmental management. Hence, the author recognised green human resource management as a part of green management which consists of the philosophy, policies and green practices. Firdaus and Udin (2014) discussed and defined green human resource management as a combination of all activities related to helping out achieve environment management that will reduce the carbon footprint in areas that concern on boarding and acquisitions of human resources, performance management, learning and development, compensation and reward management.

Opatha and Arulrajah (2014, p. 104) defined 'green human resource management as the policies, practices and systems that make employees of the firms green for the benefit of the individual, society, natural environment, and the business'. Hence, they emphasise the policies and practices to make an employee green as well as the beneficiary stakeholders of green human resource management for sustainable environmental development. In line with this definition Zoogah (2011) and Marhatta and Adhikari (2013) also defined green human resource management as the use of human resource management policies, philosophies and practices to promote sustainable businesses. Hence, researchers stress similar aspects of green human resource management, which use human resource management for sustainable use of resources, promote the cause of environmentalism and create a moral in employees for environmental protection with job satisfaction.

Liu and Xie (2013) identified green human resource management as one of the most substantial and the main components of green management system in the sustainable development paradigm. Therefore they agreed with Li and defined 'green human resource management as a tool to enhance economic, social and ecological benefits to achieve employees' psychology, human and ecological harmony' (as

cited by Liu and Xie 2013, p. 84). Further, they explained that tristate harmony as the basic content of green human resource management concept. Thus, the authors explain ecological harmony meant to be as aligning with nature. Psychology harmony is the physiological conditions of the employees such as mental health, and human harmony is the harmony between the firm and employees. Recently, Ren et al. (2017, p. 10) identified green human resource management in their working definition 'as the phenomena relevant to understanding relationships between organisational activities that impact the natural environment and the design, evolution, implementation and influence of HRM systems'.

The current conceptualisations of green human resource management are subject to two perspectives, firstly the GHRM concept is considered as the human resource management aspect of environmental management (Jabbour and De Sousa Jabbour 2016; Renwick et al. 2013). This was the initial and principal conceptualisation, based on Wehrmeyer (1996) which is set on building the relationship between human resource management aspects environmental management. Researchers follow this perspective such as Jabbour et al. (2010), Zibarras and Coan (2015) assumed that human resource management practices that strive the organisations towards better environmental performance. In this perspective, it is evidenced in the literature that some functions of human resource management are much more comprehensively researched and more broadly considered such as training and development (Renwick et al. 2013) while other human resource functions are deserted.

The other viewpoint is the behavioural perspective which recognises that green human resource management requires a behavioural and attitudinal change in employees to support the environmental performance of the organisational (Ehnert et al. 2014; Ren et al. 2017). In line with this perspective Jabbour et al. (2010) discussed the green voluntarily or involuntarily teams to address the organisation's environment-related issues or to improve environmental performance. Further, Muster and Schrader (2011) introduce two main analytical dimensions in green work-life balance. Considering employees in two perspective roles in their life as producers and consumers. Thus, they argue that employees' green private life behaviour influences the organisational green working life and termed it as *green work-life balance.* However, Plambeck (2012) states some examples of voluntary actions for reducing greenhouse gas and benefits reached by many organisations are not adequate to address a global problem as seen by many experts. Nevertheless, both the perspectives advocate that green human resource management and environmental management have a reciprocal relationship in which environmental activities support and are supported by transforming the employees to green, which in return contributes to environmental performance in long-term as well as in short-term (Wagner 2015).

Key Constructs in Green Human Resource Management

Key constructs identified in the process format perspective format of human resource management from human resource planning to grievance handling and exit (i.e. an approach applied by Renwick et al. 2008 and Mandip 2012) whenever HR aspects of environmental management appear in the published literature from 1996 to date. From the identified articles, the GHRM practices that were discussed from an organisational point of view were traced, and Richards and Gladwin's (1999) three criteria (i.e. relevance, practicability, and appropriateness) of the analytical process were adopted to decide which GHRM practices to include in the GHRM construct. The first measure considered was ***relevance***, which ensured that firms would deem the items selected as important to manage their employees for environmental improvements. The second criterion was ***practicability***, which ensured that the practices would be practical and reliable. Finally, the third approach was ***appropriateness***, which ensured that the practices reflected actual environmental impacts and coincided with a company's long-term aims.

Green Human Resource Planning (GHRP)

Human resource planning determines the human resources required by the organisation, and it is an effective tool to deal with the future. Principally human resource planning is forecasting future needs of people, forecasting the future availability of people and balancing two components. According to Bulla and Scott (1994), it is 'the process for ensuring that the human resource requirements of an organisation are identified, and plans are made for satisfying those requirements' (as cited by Armstrong 2006, p. 363). Green human resource management involves both traditional human resource practices aligned with environmental goals and strategic aspects of human resource management (Jabbour et al. 2010). Assents of human resource management strategy play a vital role in the achievement of an organisation's overall strategic objectives hence the process of anticipating and making provision for the movement (flow) of employees into, within, and out of an organisation is a key to reach the strategic objectives of the firms. So, this pattern of human resources deployments or human resource planning enables an organisation to achieve its goals. According to Jackson et al. (2011), scholars in strategic human resource management and environmental management share a common assumption that effective organisations align management practices with the strategic objectives (Ambec and Lanoie 2008), hence GHRP also involves planning for future green job requirements considering where the organisation is headed up to meet the strategic environmental objectives while preparing green job descriptions with respect to environmental considerations of the organisation. To build a relationship and align business strategy with the human resource management practices, environmental management policies require a clear

and sophisticated understanding of environmentally sustainable objectives of the business (Jackson et al. 2011).

By aligning green human resource planning process with the organisation's strategic objectives, it can provide the guidance for green human resource management functions ensuring that green human resource management practices are supported by the strategic objectives of the organisation. Indeed, proving the right number of employees at the right time for continous seamless operations of the organisation. Therefore, green human resource planning should match the organisation's total strategy, supporting organisations to 'economise resources and protect the environment' (Liu and Xie 2013, p. 88). Thus, green human resource planning should focus on short-term development strategies as well as the long-term development strategies of the organisation, while it adapts to internal and external environmental changes and challenges. Therefore, Liu and Xie (2013) stated that this planning must be prospective and flexible, when needed. When human resource management activities are linked to the strategic planning process, it will support the successful implementation of 'cohesion of policies, processes and systems, and to engage line managers in realising the importance of employee development and in reflecting this in their behaviours' (Rimanoczy and Pearson 2010, p. 11). Therefore, green human resource planning determines to get the right number of qualified and most suitable employees for the right job at the right time. This will further help in uninterrupted operations of the labour force in an organisation.

Literature reflects that the underlying assumption is that green human resource planning can make an impact on personnel cost-effectiveness, increase labour productivity, reaching strategic green objectives and management of resource development. Nevertheless, empirical results of two study analyses demonstrated no significant difference in employee performance between the formal human resource planning users and the non-users (Nkomo 1987) but stated limitations as sampling and confounding variables, which led to the negative results. Consequently, the concern of green human resource planning is to integrate strategic planning process into the enterprises to economise resources and protect the environment proposes that green human resource planning will greatly increase the chances for successful implementation of strategic organisational objectives.

Green Recruitment

According to Byars and Lloyd (2004), recruitment involves attracting a pool of qualified job seekers so job vacancies can be chosen. Hence, it is the process of identifying and locating suitable candidates and encouraging potential candidates to apply for existing or future job openings (Snell and Bohlander 2007) and consists of two major activities of finding suitably qualified individuals and attracting them toward job vacancies.

Recruitment and job description are perhaps the most critical yet the most underrated human resource management activities contributing to environmental success

in companies (Wehrmeyer 1996). For the effective green recruitment process, one of the prerequisites is the timely and accurate information on existing and future green employees in the labour market. The recruitment practices can support the organisation's environmental activities by attracting potential candidates who understand the environmental culture and the values of the organisation (Wehrmeyer 1996). Therefore, when attracting such environmentally capable employees might brand the organisation as the green employer as well as a high quality environmental friendly organisation of choice (Jackson et al. 2011). Phillips (2007) states that increasing the reputation as the green employer is an effective way to attract new employees with environmental talents though Jackson et al. (2011) argue it is less understating the form of an impression. Nevertheless, empirical findings of Phillips, 2007 summarised from the UK Labour Market Outlook Survey conducted in 2007, which 47% of HR professionals are certain that employees prefer to work for environmentally friendly organisations, and 46% mentioned that green image of the organisation helps to attract potential recruits. Indeed, empirical evidence from Grolleau et al. 2012 found that environmental commitments and environmental standards are some of the most important recruitment tools, especially in difficult situations for new recruitments.

Today corporate environmental responsivity has been identified as an important point to the job seekers, especially when it is comparable among the business firms. Therefore, firms who are environmentally friendly or environmentally proactive should communicate with the potential job seekers. Using the recruitment brochure organisations can communicate with the potential and current job seekers about the green practices of the organisation and the green reputation beforehand. This two-way communication process in the sense of organisation's green practices, philosophies, concepts and cultures, outflows the organisation's green information and readiness of job candidates to align with the green organisational activities may enable the green recruitment objectives. Clarke (2006) states that the evidence of tapping into environmental interest candidates and employing them in the organisation may benefit the organisation's green image as well as its reputation. Meanwhile, Liu and Xie (2013) stated that company green image, environmental culture environmental policy statements with environmental performance could be shown to the job seekers in order to attract the most suitable talents. The Carbon Trust Survey cited from CIPD (2007 demonstrated that more than three-quarters of employees considered working for the organisations having environmental policies to reduce their carbon footprint.

Many environmental management activities, such as environmental auditing, performance assessment or the understanding of ecological principles, are important competencies that are easier to buy in and can also be accumulated through recruits rather than by providing funds for green training and development (Wehrmeyer 1996). Renwick et al. (2013) cited a few empirical research findings to highlight the optimistic of green recruitment such as, university graduates willing to work for firms with pro-environmental images (Backhaus et al. 2002), and highly performed university graduates consider the environmental image and the environmental performance of the firms before they apply for job openings (CIPD 2007). Hence it is demonstrated that the highly achieved job-seeking graduates do consider the environmental image of the organisations before applying for job openings. Ones and Dilchert

(2012) mentioned that organisations could incorporate environmental sustainability in the recruitment efforts by the forms of communicate environmental values of the organisation, using environmental values in the recruitment message, training the recruiters especially to acknowledge environmentally related questions and use of the best channels to communicate with environmental-minded job seekers to find the potential candidates (as cited by Renwick et al. 2015).

Today in many recruitment agency websites especially for major European employers use their client's environmental details and provide sufficient details about the environmental activity of the organisations (Ehnert et al. 2014). Renwick et al. (2013), state that job seekers prefer to work with organisations that have a close fit between their and organisations' environmental practices, values and reputation. Thus, many organisations are now increasingly prominent in environmental recruitment efforts. Brekke and Nyborg (2008, p. 509) demonstrated that if a socially responsible green firm and a non-responsible brown firm (i.e. refer to a firm that is not environmentally friendly) exist in equilibrium, employees with high moral motivation self-selected the socially responsible green firms. So, the motivation among job seekers to join the firms would have an environmental culture higher than the brown firms, and further, they stated that the strength of this preference is positively correlated with worker productivity.

Green Selection

While the process of recruitment aims at attracting the number of candidates, concerning with locating and encouraging potential applicants for existing or future job openings and in the selection process choosing the most appropriate candidate who best meets the criteria of the offered vacancy. Therefore, organisations use screening techniques to filter the best out of the best in the selection process, and the foremost reason is the difficulty of reversing false selection decisions. Thus, in the green selection process, the practice of shortlisting should identify the employees who are committed to the environment to be shortlisted than the other candidates who do not show any interest in the environmental values and culture of the organisation (Jabbour and Santos 2008), hence the environmental requirements should signal in the early stage of the selection process (Grolleau et al. 2012).

Brekke and Nyborg (2008) proved that organisations might able to use their green environmental profile as a screening device, hence the managers can usefully ensure that not only has the job been designed with concerning the environment, but also that the ideal candidate has environmental competencies that are useful to the firm as well as fulfilling the specific job vacancies (Wehrmeyer 1996). It seems that some key multinational companies (Ehnert et al. 2014), use green human resource management along with their environmental image and the brand as a green employer of choice among the environmentally aware younger generation (Renwick et al. 2008). Thus, one of the significant criteria in the selection of candidates is the suitability of

the environmental competencies such as environmental knowledge skills and abilities of the respective job or the functional level of the organisation. Today web-based recruitment and selection activity has provided much more details than the traditional media such as paper-based advertisements concerning the details about organisations' environmental values, culture and its practices (Renwick et al. 2008). Hence, organisations and recruitment agencies' websites provide many details about the environmental activity of the organisations to attract more candidates who have environmental competencies. Therefore, when it is spread the information about the job vacancies among a vast number of job seekers, organisations can maintain a good employee selection radio as the number of environmentally capable job candidates increases.

Jabbour et al. (2010) stated that the employees selected with environmental committed and sensitive to environmental issues might have a high potential to contribute to the environmental performance of the organisation. Therefore, organisations can select the candidates with considering to the environmental competences as they contribute to the green corporate culture and values of the organisation (Liu and Xie 2013). In 2007, Monster.com, a recruitment agency in the UK conducted a job seekers survey and concluded that 80% of young professionals are interested in securing a job that positively impacts the environment, and 92% gave preference to work for a company that is environmentally friendly. Therefore, it is highlighted that the environmental issues are becoming increasingly important and more routine aspects of the job search in addition to selecting job seekers. Thus, by attracting and selecting sensitive environmental employees, firms can benefit from strengthening their greenness instead of investing in transforming employees to be green.

Green Training and Development

Renwick et al. (2008) identified environmental training as a major contributor to manage waste in organisations as environmental training supports the waste analysis of the working areas. Therefore, in most concerns, green training and development educate employees about the value of environmental management, trains employees in new systems of conserving energy, waste reduction and categorising techniques, and provides sufficient knowledge to solve the environmental problems (Zoogah 2011). Hence, Fernandez et al. (2003) highlighted that in environmental approach in organisations requires employee awareness and the knowledge about the business processes, the material used and employee training to show them emotional involvement in reaching objectives. Therefore, environmental knowledge has been identified by Parker (2011) as a key factor regarding environmental concerns. Training enables individuals to carry out their work in a way which minimises significant impacts on the environment. Training appears to be an absolutely critical component in the success of environmental endeavours (Cook and Seith 1992) besides an organisation's commitment to environmental training, an environmental training programme

objective that is consistent with the organisation's environmental goals and strategy must be established (Cook and Seith 1992 and as cited by Milliman and Clair 1996).

Therefore, environmental training has become an increasingly important topic for companies in the recent past. Training is widely seen in the green human resource management literature as a key intervention for the awareness of other green human resource practices. Training and development have to raise general awareness, and it has to transfer skills and enable the participants to cope with the environmental challenges of their jobs. Employees have to know about the driving forces that make the company care about this subject, and they have to understand the link between the environmental activities, their job and their own life. Environmental education and training are increasingly seen as a key tool to improve environmental performance by committing the entire workforce and providing the necessary information and skills (North and Daig 1996). Therefore Brio et al. (2007) stated that advanced environmental methods people concentrate (Brio et al. 2007) and depend on the tacit skill development through employee development (Renwick et al. 2008) which is the backdrop of the success of environmental activities of firms. Therefore, advanced environmental management approaches are based on people concentrated and dependent on skill development through employee training and development (Brio et al. 2007).

The underpinning success of environmental management approach requires employees to receive appropriate training, and it is the basic building block to any successful activity of environmental management (Govindarajulu and Daily 2004). To manage effective green practices in organisations, experts have identified that firms must increase the environmental knowledge among the employees and this can be done through an environmental training approach giving the employees adequate knowledge to deal with the different environmental issues and the associated opportunities (Cherian and Jacob 2012; Daily et al. 2012). It is evidenced by Kent County Council in the UK has done an education and training programme called *greening through ownership*, a training programme developed based on three stages, namely seeing, challenging, and changing, as part of the enhanced environmental training of green teams, which is shown to be the first step towards greening the organisation and changing its business culture (Beard and Rees 2000). Therefore, all employees must receive environmental training rather than only employees in specified jobs related to environmental activities, which is considered as one of the factors for improving environmental performance (Jabbour and Santos 2008).

According to North and Daig (1996) seven steps are important for environmental education and training, setting environmental targets; carrying out environmental training needs analysis; identifying target groups; developing the training content; designing the training programme; and delivering training and review results. Through proper environmental training, employees improve their skills and abilities to contribute to environmental activities; therefore, environmental training and education have been identified as one of the best management practices that result in employees becoming engaged in eco-initiatives (Ramus 2002). Thus, in environmental training a number of phases need to be implemented, such as audit and identify trading needs, job evaluation to identify poor performance areas, induction

sessions to increase the environmental awareness, evaluation of the performance of the employees and monitor the productivity performance with waste reductions (Renwick et al. 2008). On the other hand, Jabbour and Santos (2008) identify a systematic approach to training, which gives employees the knowledge, attitudes, and skills to help organisations implement employees' environmental missions and visions. Additionally, James, 1996 indicates that job rotation can be used as a means to train environmental executives or to familiarise potential board members with the environmental side of operations and policy (cited by Wehrmeyer 1996). Other than specific environmental training programmes, training such as interactive skills, team building, benchmarking, brainstorming, and consensus building will support the organisation's environmental performance and also contribute to change the green culture and the values of the organisation (Bhushan and MacKenzie 1994; Daily and Hung 2001; Govindarajulu and Daily 2004).

For successful implementation of environmental training does not fully depend upon the quality of the training, the supervisory participation and employee encouragement to participate in environmental training has been identified as one of the most important components in the organisation management context and often missing. Further environmental training, along with developing an encouraging environmental culture for the training, employees will perceive that they are contributing to the environmental outcomes, which will be one of the most important green human resource management practices that will help to achieve environmental objectives (Ramus 2002). Therefore, environmental training mediates the relationship between stakeholder pressures and various environmental practices (Sarkis et al. 2010) as well as with other green human resource management practices. Hence, training underpins the relationships and interrelates the success of green human resource management functions in organisations.

All the employees in the company, and not only environmental concern jobs, should participate in environmental training since, Jabbour and Santos (2008) identified environmental training as one of the major contributors for the success of environmental management, as the awareness and knowledge are the foundation for the success of the environmental skills which can focus on the environmental training programmes. Fundamentally this serves as induction to familiarise the employees with the organisation's environmental practice. Through a study of 220 Mexican manufacturing organisations, Daily et al. (2012) revealed that environmental training had a stronger relationship with environmental performance than environmental empowerment. Therefore, environmental training pertinent to managers as well as for employees, whereas in China, top management senior staff from manufacturing firms demonstrated a stronger environmental attitude which enhanced environmental protection performance (Ji et al. 2012).

Reviewing some of the general requirements of a *systematic approach* in training and development (Jabbour and Santos 2008), it is possible to find out a sequence of active phases, such as training needs identification, design, implementation and finally evaluation. Denton (1999) argued the systematic training programmes enable and teach employees both how to identify environmental problems and to make the right decisions. Therefore, applying a systematic approach to identify green

training needs, design green training programmes, implementing green training and evaluation of green training ultimately fulfil the goals of environmental training to train employees to take environmental responsibilities in the organisations (Daily et al. 2001; Govindarajulu and Daily 2004).

Green Compensation and Rewards

In compensation management, it is vital to decide and enhance the motivation and growth of employees, while aligning their efforts with the organisational objectives, philosophies and cultures of the organisation (Snell and Bohlander 2007). Another function of green human resource management is the development of reward programmes to provide an incentive for employees to be environmentally proactive. Among the many green human resource management practices, rewards are the most common means for connecting organisational objectives to employees' interests (Jackson et al. 2011). Providing financial rewards for environmental performance has been identified as a most powerful way to generate employee involvement and commitment to environmental programmes (Milliman and Clair 1996).

Several forms of rewards can be seen in the corporate world. Among the financial and recognition awards are highlighted in many organisations. Today organisations are practising pay increments, profit sharing, incentives and financial benefits, some of the examples for rewarding employees for environmental performance. Among them, financial rewards may be the most powerful motivators for inducing employees to participate in environmental improvement efforts (Govindarajulu and Daily 2004). Therefore, implementing green rewarding systems in organisations can be effective in motivating employees to generate eco-initiatives (Ramus 2002). Environmental factors in performance-related pay (PRP), as well as the type of fringe benefits provided, are good indicators of management's success in integrating environment into all phases of a company (Milliman and Clair 1996). Thus, Renwick et al. (2008) stated that even organisations are benefited from establishing a reward system such as waste reduction practices.

Some argue that organisations must have separate compensation systems to match with the environmental objectives apart from the general compensation standards. Therefore, organisations can maintain separate quantitative measures to evaluate environmental performance for the purpose of rewarding employees. It is evidenced in corporate business that some organisations have also used public recognition systems for rewarding employees for the environmental achievements and 'it is quite often a matter of financial compensation' (Fernandez et al. 2003, p. 647). Hence, Daily and Huang (2001) and Govindarajulu and Daily (2004) state some non-financial rewards such as green favoured parking, paid vacation, gift vouchers and time offs to encourage employees on environmental performance. There are many other ways rewards can be implemented in greenway, for example as cited by Renwick et al. (2008, p. 31) states about the *carbon credit cards* Brockett (2006), *cash incentives for employees to buy hybrid cars* and financial incentives into their

reward strategies, tax incentives and exemptions to bicycles. Further giving verbal feedback to employees about the positive green rewards, which may help motivate employees towards environmental improvements as well (Govindarajulu and Daily 2004).

A well-created reward system can back the employees to promote sound environmental practices. Milliman and Clair (1996) point out, that to include environmental problems and issues into performance-related pay (PRP) systems, either as an additional performance criterion or as a minimum standard to be (Wehrmeyer 1996). Indeed, a variable pay element may also be able to add to the compensation system as seen by Mandip (2012) for the green reward and compensation of the employees by linking the pay elements to eco-performance. Matching compensation management with environmental management and aligning rewards with organisation's strategic green objectives is found in some evidence in the corporate world. Stanwick and Stanwick (2001), demonstrated a strong relationship between chief executive officer (CEO) compensation and firm environmental reputation. A more similar study conducted in the USA using longitudinal data on 469 firms Berrone and Gomez-Mejia in 2009 found that the 'long-term pay is an important incentive for pollution prevention, and it is more effective where it is needed the most' (Berrone and Gomez-Mejia 2009, p. 120). Under the green approach for reward and compensation management, today organisations are implementing reward systems to encourage employees for environmental performance and organisations are ideally seen to benefit from establishing green rewards and compensation systems. For example, the world's most sustainable companies, such as Allergan, Adobe Systems, and Ball Corporation, transformed their compensation practices by linking pay to ecological impact factors to promote environmental practices in their organisations (Newsweek Green Ranking 2014).

Green Performance Evaluation

Performance appraisal is used to determine how an employee is performing on the job besides feedback communications and is typically performed annually by supervisors for subordinates. It obviously and very clearly understands that staff green appraisal should cover environmental aspects and green issues though challenges to measuring environmental achievements of different sections of the organisation in different categories of employees. According to Wehrmeyer (1996), the green performance evaluation would include 'environmental incidents, the take-up of environmental responsibilities, and the success in communicating environmental concerns and company policy'. Further, Renwick et al. (2013) argued and presented the same machinery of green performance evaluation, and additionally, Haddock-Millar et al. (2016) raised the argument of manager's accountability for environmental management performance evaluation on wider performance objectives.

Active organisations include quantitative environmental standards to ensure that employees have specific and clear measures in appraisals (Milliman and Clair 1996).

Setting a diverse number of environmental goals to be measured in appraisals is quite difficult, and further hard on qualitative objectives, such as teamwork and information sharing. Nevertheless, by applying criteria such as reliability, validity and fairness supports continues improvements in the performance evaluation process while providing useful feedback to the employees about the firm's environmental outcomes (Jackson et al. 2011). An essential perspective of performance management systems is integrating and intending environmental objections in the key functioning areas. This can be interpreted as green operation standards and green behaviour values which should aid as measures in the performance appraisal of employees at all levels. Hence, the environmental objectives of the organisation should communicate with employees with their individual environmental targets (Gupta and Sharma 1996). Considering the fulfilment of environmental responsibility as quantitative green indicators in performance evaluation, (Liu and Xie 2013) state that communicating environmental responsibilities with all levels of employees during the performance evaluation process will be a significant factor to improve the environmental performance of the organisations. Therefore, Ahmad and Nisar (2015) explained communicating environmental feedback not only during scheduled performance evaluation periods but also throughout the year may benefit the firms to achieve their environmental objectives and on the other hand, it will help the employees to improve their environmental knowledge, skills and abilities as well.

It is evidenced that the managers for pro-environmental behaviours supported the effective organisational environmental management practices through implementing green rewarding at minimum state (Zibarras and Ballinger 2011). The previous study of Renwick et al. (2013) cited Chan and Hawkin (2010) findings stated and acknowledged some caution of using green performance evaluation with a shred of evidence from Hong Kong hotel workers that worker continues reminders and harsh punishments may adversely affect the environmental practices of the firms. Hence, this type of evaluation and feedback can lead to hidden behaviours of employees in environmental breaches. However, Wehrmeyer (1996) stated to include environmental issues in the appraisal process as a good indicator of the seriousness of a company's environmental management approach.

Jackson et al. (2011) highlighted some issues of evaluating environmental outcomes or results and the way of distributing responsibility among employees to monitor environmental performance, such as how accurately and consistently to measure performance standards across different units of the organisation. Challenges of performance appraisals involve how accurately and consistently to measure performance standards across different units of the organisation. This is a particularly important issue for multinational corporations. To measure environmental performance effectively quantitative environmental goals are often included as key criteria in appraisals. Quantitative appraisals can also cause managers to focus almost exclusively on the numerical objectives. Additionally, another important phase in performance appraisals is how to obtain accurate and objective data on managers' environmental performance. In response to many of the issues of performance evaluation, many organisations intended to developed personalised environmental management

information systems and conducted environmental audits (Milliman and Clair 1996 and Wehrmeyer 1996).

When environmental initiatives or improvements included in performance appraisal systems, it could work as a major motivating factor for some employees. Hence, Govindarajulu and Daily (2004, p. 368) stated that not only monitory rewarding motivated employees for environmental achievements but also non-monitory rewards such as green favoured parking, paid leave, time off workings and green loans for environmentally friendly purchases such as zero-emission vehicles, bicycles can be quite effective in encouraging employees.

Green Employee Relations

Through employee involvement and participation, it could build vigorous employment relations using the employee's knowledge about the work and business processes and its products and services. For example, employees can propose environmentally friendly systems and methods to improve health and safety conditions by using their on-hand experiences which could help to establish green employee relations. Further waste reduction, pollution prevention, improved methods of worker health and safety and recycling activities are a few of the achievements outreach by employee relations in many firms. Further, Ramus (2002) stated that the supportive role of supervisors towards employees in environmental activities encourages employees to handle environmental problems. Fernandez et al. (2003) argue that when environmental management activities and the awareness of environmental management are integrated with human resource management practices, it becomes a part of the culture of the organisation, thus execution of an environmental approach in organisations demands culture based environmental values, and it will increase the awareness of the employees, else investment and efforts could be in the loose parts. Therefore, Klassen (2000) stated that the weakness and shortcomings of human resources management activities and the organisation's environmental culture as substantial obstacles to the environmental activities in the organisation (Fernandez et al. 2003).

Jackson et al. (2011) reviewed Muster and Schrader's arguments on *green work-life balance*, which explains the idea that the greening of human resource management can reach two perspectives, mainly as employees and at home as consumers. In this article's central notion stated that only workplace practice of green activities might not be sufficient to achieve green objectives of the organisation; instead, they argue that employees' green actions in their private life significantly impact the green behaviour at the workplace. Therefore, the success of greening organisations depends upon how organisations motivate their employees to be green consumers in their private lives and how employees will bring private life greening conducts to organisation green behaviour (Jackson et al. 2011). Further, Ramus and Steger (2000) found

a relationship between environmental policy and supervisory support while implementing employee-led environmental activities in organisations and they empathised on the supervisory encouragement for the employee environmental creativity.

Organisation strategy involvement and employee participation are said to positively influence while reaching the environmental actions based on competitive advantage in the organisations as seen by Brio et al. (2007). However, in an empirical study conducted in the UK industrial organisations with 214 samples found that human resource management practices are not used by the HR managers for employees to be pro-environmental, thus managers should encourage their employees and incorporate environmental practices within the organisations as managers are the gatekeepers for environmental performance (Zibarras and Coan 2015). Indeed, employee involvement is the key to pollution management while without management support and initiative, employee participation is useless (Denton 1999). While the floor level operational employees having the on-hand experiences on the business processors may be critically important for environmental performance. Therefore, managers may implement employee participation programmes for environmental issues specifically targeting the hourly paid floor level operational employees (Rothenberg 2003).

The key benefits that organisations can gain from introducing and implementing green employee relations are said to be the improvements in employee health and safety conditions and, the development of more knowledgeable employees and managers in environmental activities while reducing the environmental impact of the organisation (Govindarajulu and Daily 2004). Empirical survey data from 675 employees in two Australia-based organisations showed that involvement in environmental initiatives is connected with higher levels of employee engagement with the organisation and its green performance, and lower intentions to quit among employees (Benn et al. 2015). Therefore, Ahmed in 2015 summarised that employee participation increases the green initiatives in the organisations as employees' environmental knowledge skills and abilities could align with the organisation's environmental objectives. Hence wealthy environmental ideas should be welcomed by all the employees who will inspire their interest and make the best use of their skills.

Green Grievance Handling

Organisational grievance action is taken in the situations where an employee who has violated an organisational rule or at any reported whose performance has worsened to the point where corrective action is needed by the management (Byars and Rue 2004). In practical terms, grievances and discipline management in breaching environmental rules and regulations are seen few in firms as well in research agenda, although Wehrmeyer (1996) stated that the high-risk operations, the ability to raise grievances of an environmental nature are vital for the safety records, and if the employee's contract is terminated by the organisation (dismissal), the general debriefing should include an environmental dimension. Therefore, because of the benefits of complying with health and safety regulations, it is important for environmental management responsibilities to include disciplinary procedures for incidents of non-compliance (Wehrmeyer 1996). Besides, the enforcement of safety regulations and, by implication, environmental management rules and duties, should have

disciplinary procedures attached to them in the event of non-compliance (Wehrmeyer 1996). Accordingly, Brio et al. (2007) argued that organisations should implement practices that motivate the reporting of environmental problems. In doing so, they can solve environmental challenges as they arise and therefore increase their employees' environmental commitment. However, Jackson et al. (2011) see that actions with punishments for not achieving environmental objectives or for the underperformance of environmental activities are viewed as too harsh. Benn et al. (2015) presented and highlighted empirical research evidence that employees who were environmentally capable and aligned with organisation's environmental objectives were getting more involvement and contribution for the organisation's environmental activities and were less likely to quit. Thus, designing and implementing environmental grievance procedures and corrective action documentation enhance employees' learning experiences and consequently, improve organisations' environmental performance. Hence it will increase the environmental commitment of the employees.'

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Individual Country Studies

Investigating Voluntary Workplace Green Behaviours in Brazil

D. W. S. Renwick, Andrew Brint, Paula De Camargo Fiorini, Ana Beatriz Lopes de Sousa Jabbour, and Charbel José Chiappetta Jabbour

Abstract We develop and test an original framework to explain what influence group workplace green cultural environment has on Voluntary Workplace Green Behaviour (VWGB), and how changing a group's green culture likely impacts VWGB. Using data collected from four firms located in Brazil, a multilevel model is employed with VWGB being split into between and within group components. Study findings reveal that VWGB within groups is substantially affected by how high each group member rates their individual moral outlook and they assess the group's green culture, and between groups average views of a group's green culture significantly correlate correlation with group average VWGB. Unexpectedly, no strong linkage emerged between the group leader's self-assessed VWGB and the group member's assessment of its green culture. Our findings pose implications for the possibilities and challenges of transforming firm sustainability in emerging economies.

D. W. S. Renwick
Nottingham Trent University, Nottingham, England
e-mail: douglas.renwick@ntu.ac.uk

A. Brint
University of Sheffield, Sheffield, England
e-mail: A.Brint@sheffield.ac.uk

P. De Camargo Fiorini (✉)
São Paulo State University - UNESP, Bauru, Brazil
e-mail: paula.fiorini@unesp.br

A. B. Lopes de Sousa Jabbour
EM Normandie Business School, Métis Lab, France
e-mail: bsousajabbour@em-normandie.fr

C. J. Chiappetta Jabbour
NEOMA Business School, Mont-Saint-Aignan, France
e-mail: c-j.chiappetta-jabbour@neoma-bs.fr

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Introduction

While studies on workforce pro-environmental initiatives focus on the compulsory (in-role) behaviour of employees resulting from formal policies and environmental management systems this emphasis is partly explained due to concerns for social legitimacy and compliance with ecological demands (Boiral 2009; Hameed et al. 2020). Nevertheless, evidence from organisational citizenship behaviour (OCB) research shows that individual discretionary initiatives play a fundamental role in reducing corporate environmental impacts (Amrutha and Geetha 2021; Boiral 2009; Kim et al. 2019; Kim et al. 2017), with examples including separating trash for recycling, turning off lights/devices when not used, and saving energy and office resources, even though they are not recognised by formal management and reward systems (Boiral 2009; Kim et al. 2017), meaning achieving corporate green goals also depends heavily upon employees' non-compulsory environmental behaviours.

As such, attention now reflects on how to encourage staff to voluntary environmental workplace friendly behaviours to contribute to the company's sustainable performance (Amrutha and Geetha 2021; Zhang et al. 2021), and studies exploring so-called voluntary workplace green behaviours (VWGBs) highlights the importance of social antecedents and personal characteristics to comprehend their motivations (Jackson et al. 2019; Kim et al. 2017, 2019). Drawing on assumptions within social identity theory (Turner and Oakes 1986), and based on Kim et al.'s (2017) model, we test a multilevel model using contextual (leader VWGB and workgroup green culture) and individual (reflective moral attentiveness) antecedents to explore VWGB in the Brazilian context, to understand what influence workplace green cultural environment has on VWGB and how changing a group's green culture is likely to impact VWGB too.

This work extends the literature on OCB and VWGB, as firstly, despite recent attempts to clarify the influence of work group green culture on promoting voluntary environmental behaviours in organisations (e.g. Amrutha and Geetha 2021; Kim et al. 2017; Wu et al. 2021; Zhang et al. 2021), it remains unclear what the difference of impact is when group green advocacy is targeted at the group as a whole, compared to focusing on group members, which has implications for theory and practice by showing the relative efficacy and influence of antecedents motivating VWGB when targeted at group and individual levels (Chen and Kanfer 2006). Secondly, this study highlights a lack of empirical evidence and multilevel research on behavioural studies and environmental sustainability (Chen and Kanfer 2006; Kim et al. 2019; Schnake and Dumler 2003), and using multilevel theory is relevant for allowing theoretical-empirical modelling that considers complex human and social phenomena (Kozlowski and Klein 2000; Pilati and Laros 2007). Thirdly, as cultural and regulatory aspects vary globally in affecting employee workplace pro-environmental behaviour, it becomes relevant to add Brazilian, which is an under-explored context and may present different results from previous research (Jackson et al. 2019; Kim et al. 2017).

Theory and Hypotheses Development

VWGBs

The incorporation of ecological issues into organisational citizenship behaviours (OCBs) has been studied through the concept of VWGBs, or environmental organisational citizenship behaviour for the environment (OCBEs) (Boiral 2009; Kim et al. 2019). Following the study of Kim et al. (2017), we adopt the term VWGB herein, which is considered a type of prosocial or citizenship behaviour taking place in organisations, means discretionary social actions performed by workers contributing to more effective environmental sustainability firms which are not part of the formal reward system, and which go beyond usual job requirement expectations (Boiral 2009; Kim et al. 2017). Voluntary employee environmental commitment can positively contribute to reducing pollution at source, prevent stakeholder greening pressure, and enhance company image and reputation (Boiral 2005, 2009).

Although VWGB is based on extra-role and spontaneous gestures, studies show this prosocial behaviour as not only motivated by intrinsic characteristics, but also encouraged through management and contextual factors (Kim et al. 2017, 2019). Individual antecedents of VWGB comprise employee internal characteristics such as daily positive affect, personality traits, individual green values, conscientiousness and moral reflectiveness, and contextual or social factors shape employee VWGB too, including environmentally-specific transformational leadership, leader workplace pro-environmental behaviour, work group green advocacy, and development of a green culture (Jackson et al. 2019). Therefore, to accurately predict an individual's VWGB, it is necessary to conduct a joint analysis of both personal and social context influences (Kim et al. 2017).

VWGB Antecedents

Leaders' VWGB and Work Group Green Culture

Drawing on assumptions from the social norms perspective (Feldman 1984), social identity theory (Turner and Oakes 1986), and the VWGB literature (Kim et al. 2017; Wu et al. 2021), social contexts encourage particular patterns of workplace-based actions such as green behaviours. Social identity theory claims that social contexts can drive an individual's behaviour by influencing their identification with a group (Turner and Oakes 1986), and employees' observation of leaders' and co-workers' pro-environmental behaviours can lead to individuals engaging in the same type of behaviour.

Previous works have indicated a positive relationship regarding leaders' influence on employees' actions, as Robertson and Barling (2012) verify that leaders use their relationship with direct reports to intentionally influence the latter to employ

workplace green behaviours. Kim et al. (2017) find positive relationships between leaders' green behaviour and direct reports of environmental behaviour in South Korean organisations, and that when a company introduces formal green policies, leaders' behaviours motivate employee engagement in eco-activities and signal the importance of endorsing corporate sustainability which occurs when leaders give social cues as voluntary green actions.

Further, corporate leaders represent role models in the workplace because of their higher status and position (Boiral 2009; Brown et al. 2005; Robertson and Barling 2012; Wu et al. 2021), and experiencing leaders' consistent VWGB tends to develop and cultivate employees' non-obligatory green behaviour, where leadership can have a direct and indirect influence on direct reports' behaviour (Kim et al. 2017). Recently, Cai et al. (2020) found that leaders' VWGB directly affects their team's green efficacy and eco-innovation, and Kim et al.'s (2017) study presented positive effects of pro-environmental leadership behaviour on shaping work group green culture.

As such, a green culture has the tendency to favour environmental OCBs by spreading a sense of environmental responsibility among co-workers (Boiral 2009), while for Kim et al. (2017) a work group green culture describes "the collective influence behaviour of a work group", and a green culture can have a strong effect on people's attitudes and behaviours (Chen et al. 2021). Following the social identity theory, the context and climate created by work group members can persuade an individual group member towards VWGBs, as peers act as workplace social influencers (Kim et al. 2017).

Moreover, Kim et al. (2017) and Jackson et al. (2019) argue that cultural and regulatory aspects, as well as environmental beliefs and attitudes, differ globally, and influence the environmentally friendly behaviour of employees at work. Such aspects highlight the importance of adding new evidence in underexplored contexts such as Brazil, as settings with strong environmental regulations and widespread green knowledge in companies could demand less influence of leadership and group green advocacy to motivate VWGB, while contexts with weak environmental beliefs could strengthen the influence of leaders' VWGB and workgroup green advocacy.

Therefore, literature evidence is found arguing that at a contextual level, leaders' voluntary environmental behaviour can form and stimulate their direct reports' groups' green culture, while such a green workplace atmosphere creates additional social pressure on the group to engage in VWGB. Such thinking leads to our first two hypotheses, establishing the between group level model:

Hypothesis 1: Leader VWGB is positively related to their Work Group Green Advocacy (WGGA).

Hypothesis 2: WGGA is positively related to the VWGB of the group.

Influence of Work Group Green Culture WGGC on Individual and Group VWGB

Extending the current literature on OCB and VWGB, we investigate the influence of work group green culture both between groups (Hypothesis 2) and within groups. Despite recent attempts to clarify the impact of WGGA on promoting voluntary environmental behaviours in organisations (Amrutha and Geetha 2021; Kim et al. 2017; Wu et al. 2021; Zhang et al. 2021), it remains unclear the difference of its efficacy when targeted at the group as a whole compared to focusing on group members. Kim et al. (2017), for example, studied the effect of co-worker green advocacy (CWGA) within work groups and found that group green advocacy partially mediates the relationship between a leader's VWGB and an individual's VWGB, and Zhang et al. (2021) found green work climate to be a mediating mechanism on the relationship between responsible leadership and VWGB, and that when employee green values are high, the effect of green climate on VWGB is attenuated.

Most recently, Amrutha and Geetha (2021) discovered that green supporting climate partially mediates the influence of green training on VWGB in Indian companies, while Wu et al. (2021) found that leaders' VWGB can have a trickle-down influence on workers' proactive pro-environmental behaviours through their green self-identity, which is larger among workers with high green climate perceptions.

Thus far, the studies above have neglected an important source of variability in VWGB motivations, by not addressing the impact of WGGA on VWGB, so as to understand what element of the difference between VWGB in different groups is due to the group environment, and what element is due to different group composition. Indeed, Chen and Kanfer (2006) state that research on the antecedents of behaviours in work has focused on a limited single-level view by addressing only individual motivations or contextual influences, and ignores a complete analysis of both individual and group level aspects, they suggest there are differences between team motivation and individual motivation, and some antecedents or practices have a stronger initial influence on team motivation than on the individual, while others can increment and sustain motivation in both levels. Thus, we consider the fluctuations in group and individual VWGB herein due to the influence of group green culture, and formulate the following hypothesis:

Hypothesis 3: Within a group, Work Group Green Culture (WGGC) is positively related to an individual's VWGB, i.e. individuals who have a higher assessment of the group's green culture are more likely to have a higher VWGB.

Reflective Moral Attentiveness (RMA)

Besides the impact of contextual factors on corporate voluntary behaviour, the OCB literature also reports the importance of understanding personal influences and individual characteristics. In this respect, Bissing-Olson et al.'s (2013) study of Australian

workplaces found that positive daily affect among employees helps to promote pro-environmental behaviour. Additionally, Kim et al. (2017) showed that conscientiousness and RMA influence individual VWGB, and Hameed et al. (2020) suggested that individual green values and green employee empowerment are aspects impacting the relationship between green HRM and employees' voluntary green behaviour in Pakistan, and that an individual's VWGB involves a psychological process.

In this work, we suggest that RMA can have a significant effect on the voluntary pro-environmental behaviours of individual workers within a group. Specific to the relationship of moral and environmental behaviour, Feinberg and Willer (2013, p. 56) found that for the moral foundations of green attitudes among Americans, meaning that RMA can be seen as a positive antecedent of an employee's VWGB. Here, RMA means an individual process of considering moral concerns to guide daily activities by judging what is right and wrong for the engagement in behaviours (Kim et al. 2017; Reynolds 2008), and considering that individual traits vary among people, depending on the extent individuals reflect on morality leads them to involvement in different behaviours. In support, a body of knowledge evidence that when a person exhibits RMA, they tend to value the well-being of others (Reynolds 2008), and consider the importance of engaging in social and environmental issues at work as an opportunity to fulfil their moral motivations (Afsar and Umrani 2019; Kim et al. 2017; Zhao and Zhou 2021). A recent study conducted with 560 employees working in Pakistan by Afsar and Umrani (2019) found that RMA has a significant influence on the commitment of workers to green issues, and that perceived CSR may enhance employee pro-environmental behaviour indirectly via MRA, environmental commitment, and co-worker pro-environmental advocacy. From the above, we hypothesise that:

Hypothesis 4: RMA is positively related to an individual's VWGB within a group.

Methodology

Purpose

The objective of this research is to understand what influence the workplace's green cultural environment, as measured at the group level, has on VWGB, and hence how changing a group's green culture is likely to impact on VWGB. Central to accurately analysing the influence of a group's green environment on VWGB is quantifying what element of the difference between VWGB in different groups is due to the group environment, and what element is due to the different group compositions, i.e. to individuals making up the groups. Therefore, a multilevel model is employed herein with VWGB being split into between and within group components to detail how a group's green culture affects groups as a whole and individual group members.

Our multilevel model follows on from Kim et al. (2017), and while we incorporate the main relationships and latent variables from their work, we particularly focus on

how VWGB varies between and within groups in Brazil. A recent paper by Jackson et al. (2019) looked at how the factors affecting VWGB vary from country to country, among five countries. However, as the data set we used formed part of the five-country data set in Jackson et al. (2019), our model was based on Kim et al.'s (2017) original model and Korean dataset, to ensure their data set did not overlap with ours from Brazil, so as to avoid any model selection bias.

Data

The data herein consisted of responses from 308 individual group members split across 80 groups in four organisations (see Jackson et al. 2019). As the critical sample size in multilevel structural equation modelling (SEM) is the number of groups, as Hox (2013, p. 290) notes that "at least 100 groups are recommended, but in small models 50 may suffice (Hox et al. 2010)." This leads Heck and Thomas (2015, p. 166) and Finch and Bolin (2017, p. 249) to note that the within groups model usually fits better than the between groups model.

Model

Our model in Fig. 1 looks at what influences the two elements of an individual's VWGB. Thus:

The within groups VWGB is assumed to depend on the group's green climate, i.e. GGA, (hypothesis 3) and an individual's moral outlook, i.e. RMA (hypothesis 4).

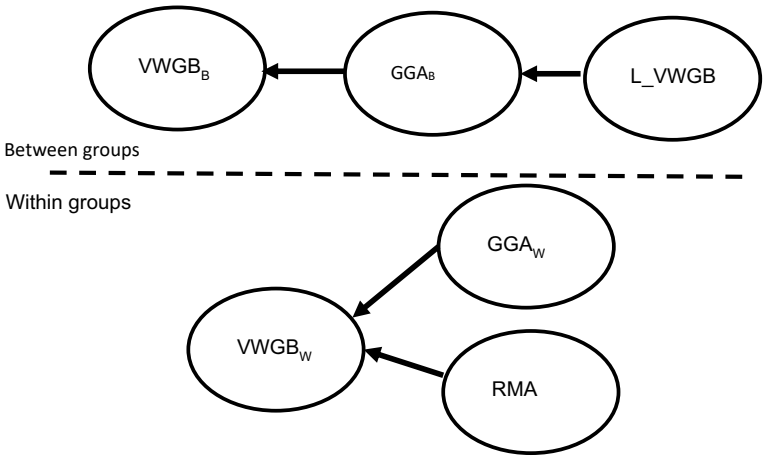

Fig. 1 A path model for analysing the components of VWGB

The between groups VWGB is assumed to be primarily dependent on the between groups GGA (hypothesis 2). In turn, the main influence on the between groups GGA is assumed to be the group leader's self-assessed VWGB (hypothesis 1).

Our model above is based on Fig. 1 in Kim et al. (2017). However, modelling VWGB uses self reported ratings rather than leader reported ratings, and splitting VWGB into between and within group components meant that we modelled the influence of the leader's VWGB at the group level, and as only affecting VWGB through its effect on green culture. The need to keep the model simple due to the limited between groups sample size meant that we did not model the latent variables in Kim et al. (2017) that had a more indirect effect on VWGB such as leader's RMA. The advantages of modelling VWGB and GGA as having between and within groups elements are that it reduces problems of homogeneity within groups, and that relationships at one level do not necessarily hold at another level (Ryu 2014).

Constructs

Item suitability was assessed against Blunch's (2017) requirements of large variances and expected values being near the middle value. Here, construct validity was assessed using the Kaiser–Meyer–Olkin measure of sampling adequacy, Bartlett's Test of Sphericity, Scree plot and Cronbach alpha (Field 2013, pp. 709, 877). SPSS was used to run both Principal Component Analysis (PCA) and Principal Axis Factoring (PAF) on each construct, and revealed no significant difference between the two approaches on the above measures.

Voluntary Workplace Green Behaviour (VWGB)

The PCA gave a KMO value of 0.912, a significance level of 0.000 for Bartlett's test of sphericity, and a Cronbach alpha value of 0.889. The component contributions are shown in Table 1.

Therefore, the eigenvalue criteria indicate that it is appropriate to represent the data using the first principal component. Combining this with the KMO and Bartlett values indicates that the voluntary VWGB construct using the ten items is suitable for use in SEM. Consequently, the four items with the highest weights are questions concerned with the individual encouraging and facilitating the green behaviour of

Table 1 The main principal components for VWGB

Component	Eigenvalue	% of variance
1	5.05	50.5
2	0.93	9.3
3	0.87	8.7

colleagues, while questions with lower weights are concerned with the individual carrying out actions independently.

Figure 2 shows the varimax rotated factor space when the number of factors is restricted to two, and the results are similar if the oblique direct oblimin rotation is used instead of the orthogonal varimax rotation. The four encouraging colleague questions are clustered together on the right hand side, while five of the six individual behaviour questions are more loosely clustered on the left hand side. The remaining individual behaviour question, Q51, is closer to the encouraging colleagues group than the individual behaviour group.

Taken together, Table 1 and Fig. 2 above indicate that inside the wider concept of VWGB, there is a more tightly defined concept of encouraging colleagues to carry out such behaviour. While Q51 is close to this subgroup in Fig. 2 and in the list of principal component weights, its nature aligns more with the other five questions. Therefore, the validity measures for defining the construct based only on Q52, Q57, Q58 and Q59 were calculated. The PCA gave a KMO value of 0.818, a significance level of 0.000 for Bartlett's test of sphericity, and a Cronbach alpha value of 0.856. Therefore, restricting the analysis to the subset of four questions meets the criteria set earlier. The component contributions are shown in Table 2.

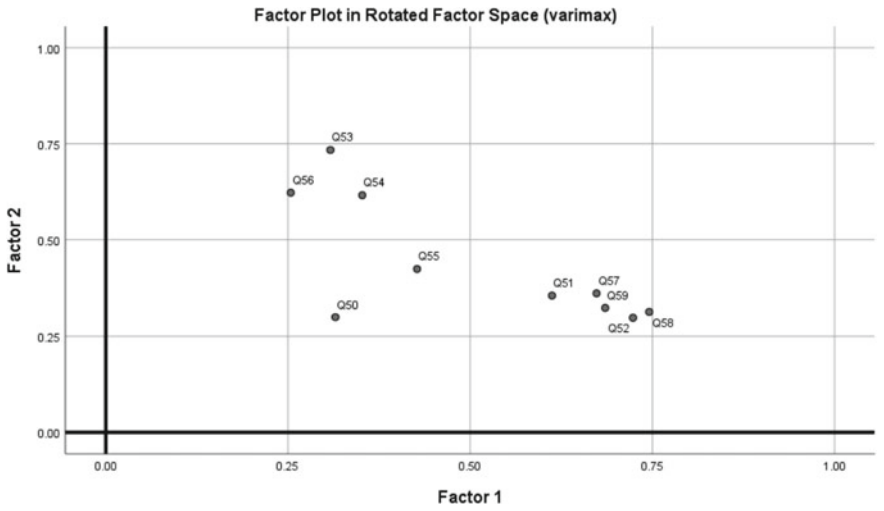

Fig. 2 Factor plot in rotated factor space: The four encouraging colleague questions (Q52, Q57, Q58, Q59) are grouped on the right with just the individual behaviour question Q51 close to them

Table 2 The main principal components using items Q52, Q57, Q58 and Q59

Component	Eigenvalue	% of variance
1	2.80	69.9
2	0.47	11.7
3	0.40	10.0

The means and the standard deviations of the questions were Q52 = {3.3, 0.98}, Q57 = {3.0, 1.0}, Q58 = {3.4, 0.93} and Q59 = {3.2, 0.98}, with a minimum of 1 and a maximum of 5 in all cases for the 5 point Likert scale. These items are satisfactory in terms of Blunch's (2017) requirement. Consequently, the quartet of encouraging colleagues questions {Q52, Q57, Q58, Q59} was used to construct the VWGB latent variable in the structural equation models.

Group Green Advocacy (GGA)

PCA gave a KMO value of 0.735, a significance level of 0.000 for Bartlett's test of sphericity and a Cronbach alpha value of 0.878. The eigenvalues were 2.42, 0.35 and 0.24, with the corresponding percentages of the variance explained at 80.5%, 11.6% and 7.9% respectively. The means and the standard deviations of the questions were Q31 = {4.3, 1.3}, Q32 = {4.5, 1.3} and Q33 = {4.2, 1.4}, with a minimum of 1 and a maximum of 6 in all cases for the 6 point Likert scale. Hence these items are satisfactory in terms of Blunch's (2017) requirement. Therefore, these questions were used for the group green advocacy latent variable in the structural equation models.

Reflective Moral Attentiveness (RMA)

The PCA gave a KMO value of 0.814, a significance level of 0.000 for Bartlett's test of sphericity and a Cronbach alpha value of 0.844. The highest three eigenvalues were 3.11, 0.76 and 0.48, with the corresponding percentages of the variance explained at 62.1%, 15.1% and 9.6% respectively. The means and standard deviations of the questions were Q95 = {4.1, 0.78}, Q96 = {4.0, 0.77}, Q97 = {3.7, 0.93}, Q98 = {4.0, 0.79} and Q99 = {3.9, 0.79}, with a minimum of 1 and a maximum of 5 in all cases for the 5 point Likert scale. While these items still conform to Blunch's (2017) requirement, their responses are more bunched towards the top end than those from VWGB and GGA, meaning these questions satisfactorily define the MRA latent variable in the SEMs.

Modelling the Influences on VWGB

Mplus was used to implement the structural equation shown in Fig. 1, and the model fit was assessed by the following measures: Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Standardised Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA) (Field 2013).

Findings and Analysis

Group Green Advocacy (GGA)

The four encouraging colleagues' items were used to define the between groups and within groups VWGB and the leader VWGB from Fig. 1. The loadings were constrained to be the same for these VWGBs. The three items were used to define the between and within groups GGA in Fig. 1, with the loadings being constrained to be the same for these GGAs. The five items were used to define RMA in Fig. 1.

Figure 3 shows the fitted SEM along with the standardised weights and their significance levels (p values). The main between groups path of interest, i.e. between VWGB and GGA, has a small p value, but the within groups path of secondary interest, i.e. between GGA and the leader's VWGB, has a p value of 0.087.

The SEMs goodness of fit values revealed a CFI value of 0.969, a TLI value of 0.964, an SRMR value for within groups of 0.070, an SRMR value for between groups of 0.116 and an RMSEA value of 0.043. Therefore, the measures of fit are in the good or very good categories, apart from the SRMR value for between groups. This result is in line with the within groups model often fitting better than the between groups model because of the smaller sample size at the between groups level detailed earlier. Consequently, the between groups model was altered by deleting the leader's VWGB latent variable. The new SEM with standardised weights and p values is shown in Fig. 4.

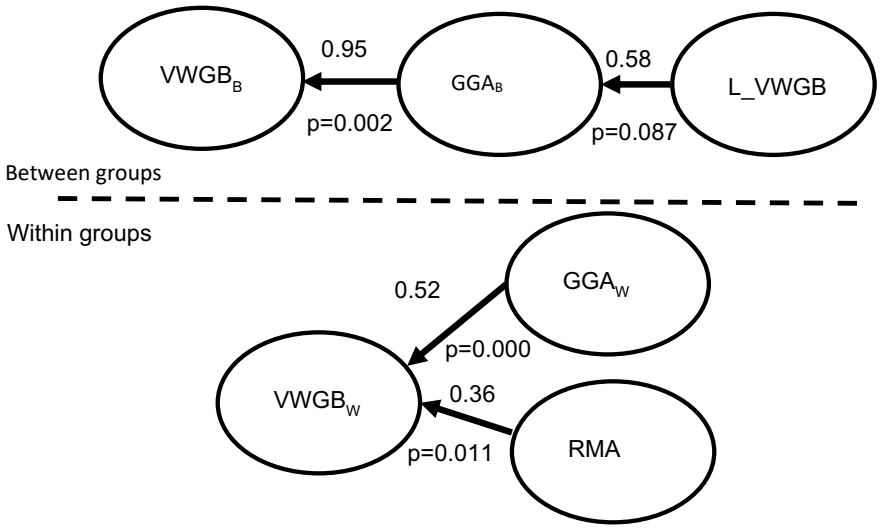

Fig. 3 The fitted path model for analysing the components of VWGB showing the standardised weights and their p values

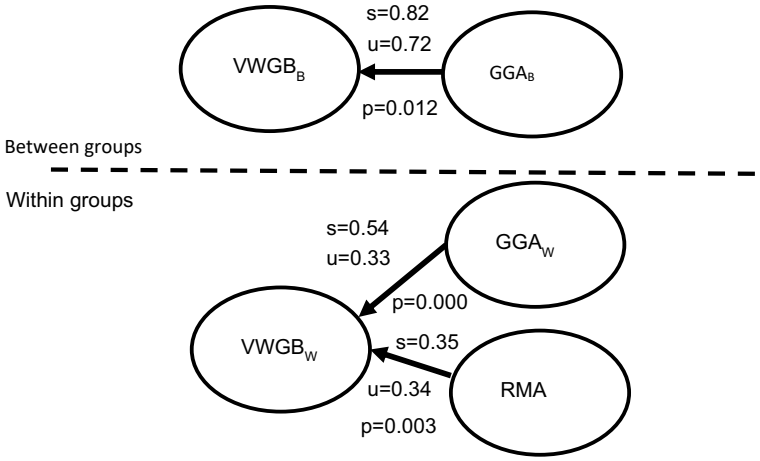

Fig. 4 The fitted path model for analysing the components of VWGB showing standardised weights (s), unstandardised weights (u) and p values

The SEM in Fig. 4 gave a CFI value of 0.958, a TLI value of 0.950, an SRMR value for within groups of 0.072, an SRMR value for between groups of 0.066 and an RMSEA value of 0.054. Therefore, the measures of fit are all in the good or very good categories.

Assessing the standardised weights (see e.g. Grace and Bollen 2005), this model in Fig. 4 above indicates that the variation in self-assessed VWGB **inside a group** is *substantially affected by* how high each group member rates their individual moral outlook (RMA), and by how high they each assess the group's green culture (GGA_W), i.e. a high $VWGB_W$ correlates with a high GGA_W, and a high $VWGB_W$ also correlates with a high RMA.

At the between groups level, the average views of a group's green culture (GGA_B) *has a significant correlation with* the average VWGB of the group ($VWGB_B$). However, the linkage between the group leader's self-assessed VWGB and the group member's assessment of its green culture (GGA_B) was inconclusive as the SRMR model fit value was 0.0116 and so exceeded the target range of 0.08 or less, and the p value of 0.087 was not significant at the 95% level.

Discussion

Three main research findings constitute original contributions from our research. First, VWGBs inside a group tend to be substantially positively affected by how high each group member rates their RMA and by how high they assess the group's green culture (GGA_W). Hence an individual's perception of a group's green culture encourages higher VWGB compared with an individual who experiences the same

green culture but rates it lower. Our results highlight how subjective the green transformation of groups can be, and are aligned with findings by previous research (e.g. Jackson et al. 2019). Second, at the between groups level, we found the average views of a group's green culture (GGA_B) have a very strong correlation with the average VWGB of the group ($VWGB_B$), following previous research reports (e.g. Kim et al. 2017). Third, we cannot suggest a significant link between group leader's self-assessed VWGB and group member's assessment of its green culture (GGA_B), which was not expected, and should be further investigated during future research.

Limitations and Future Research Ideas

While this study adds a number of original findings to the literature on VWGBs, it is limited by: geography, as our data is from companies located in Brazil; an emerging economy; a small sample size; and quantitative enquiry. To deal with these limitations, we suggest that future research explores new data from other countries, larger samples and qualitative data (cases, diary studies and interviews).

Conclusions

Based on empirical data collected from Brazil-based firms, we offer a number of original contributions to the state-of-the-art literature on VWGB, including that VWGB inside a group is substantially affected by how high each group member rates their individual moral outlook, and by how high they each assess the group's green culture; and that from a group level perspective, the average views of a group's green culture have a significant relation with the average VWGB of the group.

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Green Organizational Culture and Competitive Advantage in Indonesian Higher Education: The Mediation Roles of Green Human Capital Management and Absorptive Capacity

Astadi Pangarso, Retno Setyorini, Taufan Umbara, and Hengky Latan

Abstract Higher education institutions play a pivotal role in sustainable development, serving as both knowledge producers and exemplars of environmentally responsible practices. These "green" universities are increasingly assessed and ranked based on their sustainability efforts. This study investigates the impact of green organizational culture (GOC) on competitive advantage (GCA), with a particular focus on the mediating roles of green human capital management (GHCM) and absorptive capacity (GAC). Our research collected and analyzed data from a sample of 103 employees representing of Indonesia's best private universities using SmartPLS 4. The results underscore the significance of GOC, GHCM, and GAC in elevating GCA within the context of higher education institutions.

Introduction

The growing public concern regarding the natural environment has significantly altered the competitive dynamics, compelling organisations to embrace eco-friendly strategies (Ali et al. 2023; Muisyo et al. 2021; Wang 2019). The notion of a green economy (GE) is an overarching concept aimed at reconciling economic, social, and environmental elements to enhance human life sustainably on our planet (Pangarso

A. Pangarso · R. Setyorini · T. Umbara
Business Administration Department, Telkom University, Bandung 40257, West Java, Indonesia
e-mail: astadipangarso@telkomuniversity.ac.id

R. Setyorini
e-mail: retnosrini@telkomuniversity.ac.id

T. Umbara
e-mail: taufan@telkomuniversity.ac.id

H. Latan (✉)
FTD Institute, Jl. Ir. Putuhena, Ambon 97234, Indonesia
e-mail: latanhengky@gmail.com

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et al. 2022a, b). A green organization, grounded in the principles of a green economy, is characterized by a fusion of four key components that are all underpinned by the principles of green economy: human resource management (HRM)/human capital management (HCM), corporate social responsibility management (CSRM), competitiveness, and supply chain management (SCM) (Mishra 2017).

In the context of higher education, institutions must embrace sustainability and incorporate green practices into their operations. Higher education institutions, commonly called universities or campuses, can be an organization that initiates GE practices in the health of its activities to be a role model for all stakeholders. Therefore, it is appropriate for the campus to be the initiator of the idealism of this GE concept so that the campus can produce sciences and even graduates who contribute to the harmony between humans, economic life and the environment.

If a campus implements a good green management strategy, this becomes a green sustainable competitiveness/GCA (Chen 2011). To the best of our knowledge, based on a document search of Scopus-indexed scientific publications until July 2023, there still needs to be research related to GCA in the context of higher education institutions. Knowledge and capability management in the dynamic organisational environment are two things that are essential factors for GCA (Lin and Chen 2017). The capability to manage resources, especially knowledge by humans, is represented by the green absorptive capacity (GAC) (Chen et al. 2014a, b) and green human capital management (GHCM) (Jackson et al. 2011). People needing value guidance are characterised by the green organizational culture (GOC) (Fineman 1996). From a GE perspective, culture, HCM and absorptive capacity can logically be understood as organizational resources and capabilities to realise GCA.

GAC refers to an organization's ability to acquire, assimilate, and apply knowledge and information related to environmental sustainability (Albort-Morant et al. 2018a, b; Chen et al. 2014a, b; Martelo-Landroguez et al. 2018). More research is needed to understand the connection between GAC and GCA. To the best of our knowledge, the study pertains to GAC in the realm of higher education and not about GCA. Mazon et al. (2023) highlights the importance of conducting further research on how GAC can act as a mediator between GOC and GCA. By filling this gap; the study can provide higher education institutions with practical strategies for achieving GCA. GCA is an essential capability for absorbing GE-related knowledge from outside the campus environment to be further filtered and diffused with existing knowledge within the organization to form a new understanding. This is relevant to higher education institutions considering that the campus is an institution that produces and distributes knowledge.

GHCM refers to the management practices and strategies that focus on developing and leveraging employees' knowledge, skills, and abilities related to environmental sustainability (Maaz et al. 2021; Song et al. 2020). GHCM has also been researched in the context of higher education (Aboramadan 2022; Anwar et al. 2020; Asfahani 2023; Bahmani et al. 2023; Fawehinmi et al. 2020a, b; Fernandez and Ganesan 2023; Gilal et al. 2019; Jehan et al. 2020; Muhammad Ali and Nisar 2022; Yafi et al. 2021) and its effect on GCA in various setting (Kim et al. 2023; Mishra 2017; Muisyo et al. 2021, 2022; Rehman et al. 2023) but no one has examined the effect of

GHCM and GCA in the context of higher education. In addition, Ren et al. (2018) proposed an organising framework for GHRM research that highlights GOC as an independent variable influencing GHRM practices. The existing literature tends to focus on developed countries, and there needs to be a greater understanding of the applicability and effectiveness of GHRM practices in different cultural settings. There is a gap in research when it comes to understanding the specific connections between GHRM practices and green dynamic capabilities. These connections are essential for improving GAC because GAC is a dynamic capability (Soares et al. 2022). How campuses manage people as vital resource producers and distributors of knowledge is a priority for organisational management to be sustainably competitive.

GOC refers to an organization's values, beliefs, and norms that promote and support environmentally sustainable practices (Roscoe et al. 2019; Wang 2019). The effect of GOC on GCA has been investigated by Wang (2019) and Hendarjanti and Nawangsari (2023). In the context of higher education, there has been research that examines the GOC (Pereira et al. 2014). There needs to be more research examining the impact of GOC on GCA within higher education. Higher education institutions need a guide of values for the people they serve daily to realise sustainable competitiveness.

While previous research has explored the influence of GOC (Chen et al. 2019; Chen 2011; Wang 2019), GHCM (Jia et al. 2018; Malik et al. 2020; Song et al. 2020) and GAC (Albort-Morant et al. 2018a, b; Chen et al. 2014a, b) on various industries, there is a lack of research focusing on the higher education sector related to GCA. This research also seeks to fill the research gap of Raut et al. (2020) and Moktadir et al. (2020), which suggests the need for empirical testing for the effect of GOC on GHRM. Several studies highlights the need for more comprehensive research on GHRM in undeveloped countries and across different cultural contexts. Organizational culture and HRM practices have a reciprocal relationship, where each can influence and shape the other. HRM practices can impact organizational culture by influencing employees' beliefs, values, and behaviours. At the same time, the dominant culture within an organization can also influence the HRM policies and practices adopted. This research complements research conducted by Roscoe et al. (2019), suggesting that implementing GHRM practices can promote the development of GOC in the reverse direction of influence.

Developing a theoretical framework consisting of GOC, GHCM, and GAC has the potential to theoretically become something new to complement the existing body of knowledge related to GCA. By understanding these influences, higher education institutions can gain valuable insights into enhancing their sustainability efforts. Empirical research is needed to explore a theoretical framework of sequential influences between GOC, GHCM, GAC, and GCA in higher education. This research is also crucial for practical decision-making related to increasing the GCA of a campus, as a higher GCA can lead to better growth and development with a positive impact on all stakeholders. Consequently, the primary objectives of the present research are to address the following research questions:

1. Does a direct effect exist between GOC, GHCM, and GAC in relation to GCA?
2. Is there an indirect linkage between GOC and GCA, mediated through GHCM and GAC?

This study explores the connections between GOC, GHCM, GAC, and GCA within higher education. Through this examination, the study intends to offer evidence-based insights into the factors contributing to attaining sustainable development goals within educational institutions.

The rest of this chapter commences with the theoretical framework and hypotheses, followed by research methods. Following these sections, results and empirical findings are presented. Theoretical and practical implications are provided in the last section.

Theoretical Framework and Hypotheses

Drawing from the works of Wernerfelt (1984) and Barney (1991), the resource-based view (RBV) theory posits that organizations require resources and capabilities to attain competitive advantage and ensure sustainability. Over time, RBV has evolved in different direction to address various aspects: it has expanded to encompass environmental concerns, resulting in the natural RBV/NRBV (Hart 1995). It has adapted to focus on knowledge as a critical resources for organizations to compete, leading to development of the knowledge-based view (KBV) (Grant 1996). Specifically, in response to the need for organizations to navigate dynamics environment, RBV has evolved into dynamic capability (Teece et al. 1997), and then future into a contingent RBV framework that combines NRBV, contingency factors and dynamic capability (Aragón-Correa and Sharma 2003). In this study, we present a conceptual framework that builds upon the contingent RBV and KBV theories. GOC and GHCM represent inherent organizational resources (NRBV), while GAC embodies the organisation's ability to manage the absorption of knowledge (encompassing KBV and dynamic capability) as an organizational resource for sustainable competitiveness. To achieve sustainable competitiveness, it is essential to provide guidance on values, enabling individuals within the organization to effectively absorb and integrate new knowledge with existing knowledge.

Green Organisational Culture (GOC)

GOC has gained significant attention in the literature as organizations strive to integrate environmental sustainability into their operations. Research has demonstrated that a firm's culture can improve sustainable competitive advantage and growth, as long as that culture is both valuable and distinctive (Barney et al. 2021). Several studies have explored the relationship between GOC and various organizational

outcomes, such as GHCM, GAC and GCA but have yet to be in one theoretical framework exploration. According to prior research, GCA is a result of GOC (Fang et al. 2022; Hendarjanti and Nawangsari 2023; Wang 2019). GOC encompasses the attitudes and behaviours of employees towards environmental issues and sustainability (Roscoe et al. 2019). A solid GOC is characterised by a commitment to environmental responsibility, resource conservation, and integrating sustainability principles into decision-making processes (Roscoe et al. 2019). GOC involves integrating environmental concerns into various aspects of the organization, including human resource management (Latan et al. 2022; Saeed et al. 2019). According to Roscoe et al. (2019), GOC is a consequence of GHCM, but this contradicts Fang et al. (2022) statement that GHCM has a significant effect on GOC. This contradiction is interesting to be re-examined with the logic of the hypothesis that GOC affects GHCM. A set of values is needed for people in the organisation to behave and then managed by the management system. Organisations with a strong GOC are more likely to develop the capacity to absorb and utilise environmental knowledge. Creating and maintaining a company culture where employees actively acquire new skills and knowledge, while also having the chance to evaluate and uncover existing and emerging knowledge (Martelo-Landroguez et al. 2018). A firm's competitive advantage in sustainability can be attained through its corporate culture (Cao et al. 2021). Based on these arguments and previous research, we can formulated the following hypotheses:

H1: GOC has a direct effect on GHCM.
H2: GOC has a direct effect on GAC.
H3: GOC has a direct effect on GCA.

Green Human Capital Management (GHCM)

GHCM involves recruiting, training, and retaining employees with the necessary competencies and attitudes towards sustainability (Maaz et al. 2021). GHCM is crucial for organizations to implement and maintain environmentally sustainable practices (Maaz et al. 2021). Organizations can improve their ability to absorb and implement environmentally-friendly practices by implementing GHRM strategies. This can lead to the development of skills and capabilities that are necessary for sustainable performance improvement (Soares et al. 2022). Malik et al. (2020) highlighted how GHRM practices play a crucial role in gaining a competitive advantage. It was emphasised that such practices help organisations obtain valuable and unique resources that are necessary for sustainable competitive advantage (Malik et al. 2023). Organizations can foster an environmentally conscious and devoted workforce by implementing GHCM practices. This can heighten their potential for achieving competitive advantage and sustainability. Investing in GHCM practices could potentially result in a competitive edge for higher education institutions. Based on these arguments and previous research, we can formulated the following hypotheses:

H4: GHCM has a direct effect on GAC.
H5: GHCM has a direct effect on GCA.

Green Absorptive Capacity (GAC)

Environmental management capabilities are crucial in improving sustainable development (Demirel and Kesidou 2019; Rehman et al. 2020). It involves the processes and mechanisms organizations learn from their internal and external environments and use that knowledge to develop and implement green practices (Martelo-Landroguez et al. 2018). GAC is essential for organizations to adapt to environmental changes and adopt new technologies (Martelo-Landroguez et al. 2018). GAC plays a crucial role in facilitating the adoption and application of environmental knowledge, contributing to GCA (Lin et al. 2020). Absorptive capacity plays a crucial role in facilitating the adoption and application of environmental knowledge, contributing to sustainable competitive advantage (Pangarso et al. 2020a, b). Implementing a GAC can give organizations a competitive edge and help them embrace sustainability. Based on these insights, a hypothesis can be formulated:

H6: GAC has a direct effect on GCA.

Green Competitive Advantage

GCA refers to the unique and sustainable advantages that organizations gain by adopting and implementing environmentally sustainable practices (Cao et al. 2021). It involves differentiating products and services based on environmental attributes, reducing costs through resource efficiency, and enhancing reputation and brand image (Cao et al. 2021). GCA is crucial for organizations' long-term success and sustainability (Cao et al. 2021). Based on these arguments and previous research, we can formulated the following hypotheses for the indirect effects based on the previous belief regarding the direct impact of GOC, GHCM, and GAC on GCA.

H7: GOC has an indirect effect on GCA through mediation by GHCM.
H8: GOC has an indirect effect on GCA through mediation by GAC.
H9: GOC has an indirect effect on GCA through mediation by GHCM and GAC.

After reviewing the literature and developing hypotheses, we can create a theoretical framework, depicted in Fig. 1, based on exploring contingent RBV and KBV theories. This framework includes the concepts of GOC, GHCM, GAC, and GCA and considers the mediating effects of GHCM and GAC on the relationship between GOC and GCA. In the context of higher education, these concepts are relevant for promoting sustainability and responsible management practices. GOC, GHCM, GAC, and GCA can help higher education institutions integrate environmental sustainability into their operations, curriculum, and research activities. This framework also supports developing environmentally-friendly solutions to address

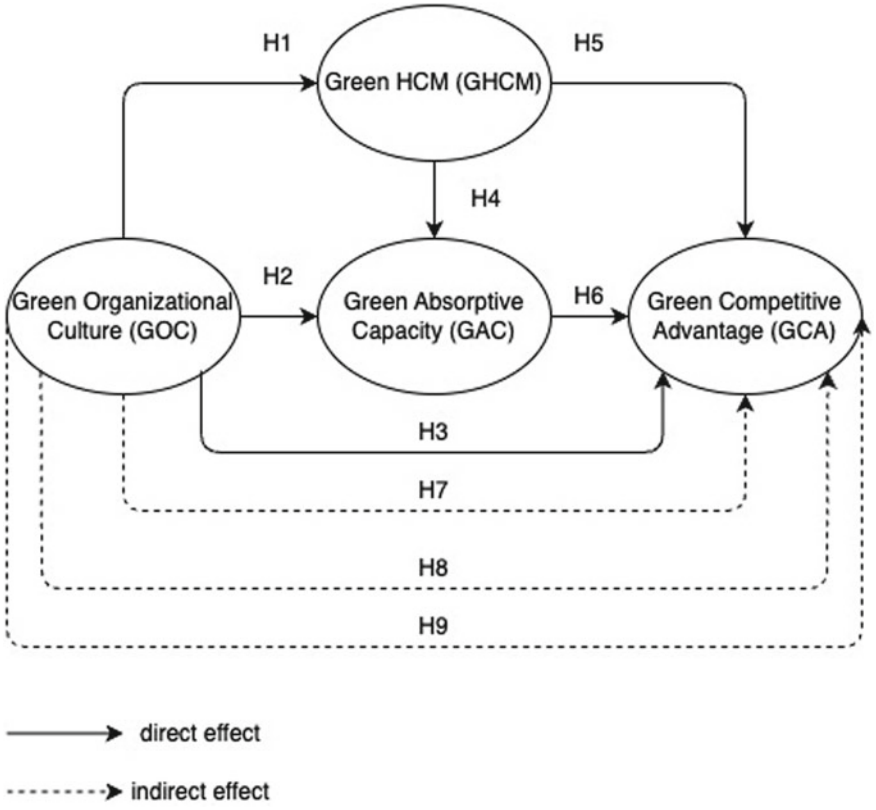

Fig. 1 Theoretical framework

global environmental challenges (Albort-Morant et al. 2018a, b; Chen et al. 2014a, b). When implementing and integrating this framework into their practices and strategies, higher education institutions must consider the unique context and challenges they may encounter (Agyabeng-Mensah and Zheng 2021; Wang 2019).

Research Methods

Competitive advantage in higher education institutions hold significant importance, particularly in Asian countries like Indonesia, which is anticipated to transition into a developed nation by 2045. As part of this transformation, there is a growing need for effective management in higher education to cultivate a skilled workforce aligned with green economy principles (Pangarso et al. 2022a, b). In Indonesia, campus sustainability is assessed through the UI Green Metric, a ranking system that evaluated GE initiatives (*UI Green Metric* 2020). These rankings play a pivotal role in

fostering healthy competition among Indonesian universities with respect to their GE efforts. This quantitative empirical research is centered on higher education institutions in Indonesia.

This quantitative research uses a questionnaire to collect primary data obtained directly from research respondents through the survey. The research instrument in questionnaire items has passed the pre-test (face validity, content validity/ expert judgement) and pilot test (validity and reliability tests and normality using IBM SPSS 28 version). The questionnaire consists of two sections: Section A and Section B. Section A consisting of respondent characteristics such as gender, age, formal education, work experience, structural position, and status. Section B consisting of statements reflecting respondent perceptions regarding various variables. Prior to survey participation, informed consent and employment status were prerequisites (Pangarso et al. 2022a, b). This questionnaire was administered online via Google Forms and was self-administered voluntarily by respondents. Respondents rated the research variables using a Likert scale with options ranging from 1 (strongly disagree) to 7 (strongly agree). This research primarily focuses on reflective unidimensional aspects, and the survey questions was translated from Indonesian to English to ensure unbiased interpretation (Brislin 2016). A detailed breakdown of the operational research variables is provided in Table 3.

To mitigate common method variance (CMV) (Miller and Simmering 2023), various measures were implemented. The questionnaire incorporated several elements, including a clear statement of the study's purpose (strictly for scientific research), emphasizing data security through anonymization, ensuring ease of questionnaire completion and providing clear instructions for filling out the questionnaire correctly. In term of respondents' perceptions of research constructs, it was explicitly communicated that there are no inherently correct or incorrect answers, and no interconnections exits between questionnaire items (Podsakoff et al. 2012). Data collection was conducted cross-sectionally during the late 2022 to early 2023 period. The distribution of variables involved two distinct waves or collection times: Wave 1 focused on the GOC and GHCM constructs, while Wave 2 centered on GAC and GCA. Licenced enumerators were responsible for distributing the questionnaires to minimize potential CMV bias (Ali et al. 2023; Bokhari et al. 2023). Respondents were informed about the significance of their contribution in completing the questionnaire, as per recommendation of Bougie and Sekaran (2020).

This research focused on the examination of the best private university/PTS in Indonesia, specifically one that secured a position within the top 10 of the 2020 UI Green Metric ranking. Its noteworthy that PTS institutions attract a significant portion of Indonesian students (Pangarso 2019). The research population encompasses a total of 933 permanent employees. The unit of analysis is the organization represented by relevant respondents, which include permanent employees, encompassing both lecturers and academic support staff. The research employs a non-probability sampling, specifically purposive sampling with the condition that employees must have held permanent positions for more than a year (Bougie and Sekaran 2020). The determination of the minimum number of feasible sample size (free from outliers) is based on the inverse square root method, setting a minimum

path coefficient value ranging from 0.21–0.3, at a 5% significance level, which results in a sample size of 69 (Kock and Hadaya 2018). The amount of data collected and eligible for processing (free of outliers) is 103 (response rate = 11.03%). For analysis of data, Structural Equation Modeling (SEM) is employed as the most robust technique. In this research, the SEM type utilized is the variance type, specifically Partial Least Squares SEM (PLS-SEM) facilitated by SmartPLS 4. The rationale for choosing PLS-SEM aligns with the research questions' focus on theory explanation and exploration (prediction). Additionally, the study's configuration exhibits a greater number of predictors (exogenous variables: GOC, GGHCM and GAC) compared to the consequent variable (endogenous: GCA). This choice is reinforced by the relatively modest sample size (Latan et al. 2023; Henseler 2021).

Results

In this study, we will employ the PLS-SEM methodology following the guidelines provided by Latan et al. (2023), Hair et al. (2022) and Henseler (2021). Table 1 presents a summary of the demographic profile of the respondents. Here is a summary of the covariance matrix, construct correlation matrices, and important descriptive statistics presented in Table 2. Table 3 displays constructs operationalisation, measurement of research constructs, HTMT, VIF, adj.R^2, Q^2.

We evaluated the reflective measurement model by analysing item reliability, construct reliability, convergent validity, and discriminant validity. All questionnaire items met or exceeded the cut-off value of 0.708 for outer loading except GCA9, but it is still included in the data processing process with the consideration that the construct still fulfil validity and reliability. The construct reliability (rho_A) and convergent validity (average variance extracted—AVE) fall within the acceptable range of 0.700 to less than 0.950, with a minimum of 0.500. Our HTMT measure showed that all discriminant validity values were below the cut-off value of less than 0.850, as seen in Table 3 (Hair et al. 2022; Henseler 2021).

To evaluate the structural model, a bootstrapping procedure was conducted, involving the percentile method on 10,000 resamples. A two-tailed test with a 95% confidence interval (CI) level was applied. As indicated in Table 4, all hypotheses yielded statistically significant for direct and indirect effects. The positive and notable impact of GOC on GCA is exemplified by the enhancements in GHCM and GAC. In Fig. 2, it is evident that almost all path coefficients exhibit significant at a *p*-value of 0.05. However, the direct effect of GHCM on GCA and the GHCM-mediated effect of GOC on GCA were found to be insignificant. GHCM and GAC collaborate in mediating the influence of GOC on GCA. In line with Table 5, the theoretical framework proves to be a suitable model, given that the SRMR, d_uls, and d_g values all fall within the 99% confidence interval (CI).

We assessed out-of-sample predictions following the guidance of Hair et al. (2022). The statistical predictions for Q^2 (Table 3) have been interpreted, which shows their importance. To ascertain the importance of these predictions, we applied the

Table 1 Respondent profile

Profile		Percentage (%)
Gender	Male	68
	Female	32
Age (years)	Less than 21	2
	21–<30	4
	30–<40	25
	40–<50	49
	50–<60	16
	More than 60	4
Formal education	Diploma	31
	Undergraduate	14
	Master	38
	Doctoral	17
Working experience (years)	1–less than 5	13
	5–less than 10	23
	10–less than 15	32
	15–less than 20	13
	20–less than 25	14
	Equal and more than 25	5
Structural position	Yes	75
	No	25
Status	Lecturer	51
	Academic support staff	49

PLSpredict method. Table 6 demonstrates that the Root Mean Square Error (RMSE) and Mean Absolute Error (MAE) values for the PLS model are lower than those of the PLS linear model across five items from GHCM, six items from GAC, and nine items from GCA. This indicates that GHCM, GAC, and GCA possess a moderate level of predictive relevance.

Table 2 Descriptive statistics, construct correlations and covariances matrix

Descriptive statistics								Construct correlations and covariances			
Construct	Mean	Median	Observed min	Observed max	Standard deviation	Excess kurtosis	Skewness	GOC	GHCM	GAC	GCA
GOC	0.000	0.123	−2.748	1.091	1.000	−0.139	−0.730	1.000			
GHCM	0.000	0.250	−3.273	1.299	1.000	0.089	−0.690	0.666	1.000		
GAC	0.000	0.084	−2.765	1.268	1.000	−0.444	−0.496	0.726	0.788	1.000	
GCA	0.000	−0.172	−2.432	1.325	1.000	−0.186	−0.505	0.744	0.640	0.746	1.000

Table 3 Constructs operationalization, measurement of research constructs, HTMT, VIF, adj.R^2, Q^2

Constructs operationalisation			Validity and Reliability Assessment					VIF	adj.R^2	Q^2
Construct	Item wording	Code	Outer loading	rho_A	AVE	HTMT				
Green organisational culture (GOC) (Chang 2015; Chen 2011; Pham et al. 2018, 2019)	The place where I work prioritises values related to environmental sustainability	GOC1	0.897	0.825	0.735	GOC <-> GHCM	0.756	1.000	–	–
	The place where I work conducts cooperation (agreement/MoU) related to environmental sustainability	GOC2	0.845			GOC <-> GAC	0.834	1.797		
	My workplace has a standard of conduct for members of the organisation related to environmental governance	GOC3	0.827			GOC <-> GCA	0.843	2.225		
Green human capital management (GHCM) (Pham et al. 2019)	My workplace often provides training related to environmental governance	GHCM1	0.924	0.931	0.984	GHCM <-> GCA	0.682	2.770	0.438	0.430
	My workplace often provides opportunities for employees to attend environmental sustainability training	GHCM2	0.924			GAC <-> GCA	0.000	3.261		
	My workplace has an assessment of the performance of training related to environmental governance that its employees have attended	GHCM3	0.895							
	My workplace publicises the achievements of its employees related to environmental sustainability	GHCM4	0.801							
	My workplace provides non-financial rewards for workers who excel in environmental sustainability	GHCM5	0.876							

(continued)

Table 3 (continued)

Constructs operationalisation			Validity and Reliability Assessment					VIF	adj.R^2	Q^2
Construct	Item wording	Code	Outer loading	rho_A	AVE	HTMT				
Green absorptive capacity (GAC) (Chen et al. 2014a, b, 2015; Lin et al. 2020)	My workplace can communicate knowledge related to environmental governance throughout its departments	GAC1	0.775	0.923	0.715				0.687	0.513
	My workplace can combine existing knowledge with newly acquired knowledge related to environmental sustainability	GAC2	0.873							
	My workplace can recognise essential knowledge related to environmental sustainability from external organisations	GAC3	0.893							
	My workplace can assess essential knowledge related to environmental sustainability from external organisations	GAC4	0.922							
	My workplace can acquire the necessary knowledge related to environmental sustainability from external organisations	GAC5	0.839							
	My workplace can commercialise new knowledge related to environmental sustainability successfully	GAC6	0.760							
Green competitive advantage (GCA) (Cao et al. 2021; Chen and Chang 2013; *UI GreenMetric* 2020)	My workplace has better infrastructure related to environmental governance than other campuses	GCA1	0.817	0.945	0.678				0.633	0.534

(continued)

Table 3 (continued)

Constructs operationalisation			Validity and Reliability Assessment					VIF	adj.R^2	Q^2
Construct	Item wording	Code	Outer loading	rho_A	AVE	HTMT				
	My workplace manages energy with better environmental governance than other campuses	GCA2	0.864							
	My workplace has managed waste by environmental governance better than other campuses	GCA3	0.840							
	My workplace has managed water with better environmental governance than other campuses	GCA4	0.859							
	My workplace has managed transport with better environmental governance than other campuses	GCA5	0.832							
	My workplace manages the tri dharma of higher education related to environmental sustainability with better quality than other campuses	GCA6	0.876							
	My workplace has a better image related to environmental governance than other campuses	GCA7	0.844							

(continued)

Table 3 (continued)

Constructs operationalisation			Validity and Reliability Assessment					VIF	adj.R^2	Q^2
Construct	Item wording	Code	Outer loading	rho_A	AVE	HTMT				
	My workplace receives appreciation related to environmental governance from stakeholders	GCA8	0.851							
	My workplace develops groundbreaking solutions for environmental management that surpass those of other campuses	GCA9	0.589							

Table 4 Results of the hypothesis test

Nexus	Hypotheses	Beta (β)	p-value	CI [2.5%; 97.5%]	f^2	CI [2.5%; 97.5%]
Direct	GOC → GHCM (H1)	0.666	0.000	[0.536; 0.760]	0.797	[0.430; 1.441]
	GOC → GAC (H2)	0.362	0.000	[0.198; 0.523]	0.238	[0.079; 0.551]
	GOC → GCA (H3)	0.422	0.000	[0.208; 0.589]	0.225	[0.043; 0.669]
	GHCM → GAC (H4)	0.546	0.000	[0.359; 0.713]	0.541	[0.178; 1.322]
	GHCM → GCA (H5)	0.032	0.768 (insignificant)	[−0.187; 0.228]	0.001	[0.000; 0.063]
	GAC → GCA (H6)	0.415	0.000	[0.188; 0.647]	0.148	[0.041; 0.368]
Indirect	GOC → GHCM → GCA (H7)	0.021	0.771 (insignificant)	[−0.127; 0.156]		
	GOC → GAC → GCA (H8)	0.227	0.009	[0.093; 0.435]		
	GOC → GHCM → GAC → GCA (H9)	0.151	0.013	[0.064; 0.303]		

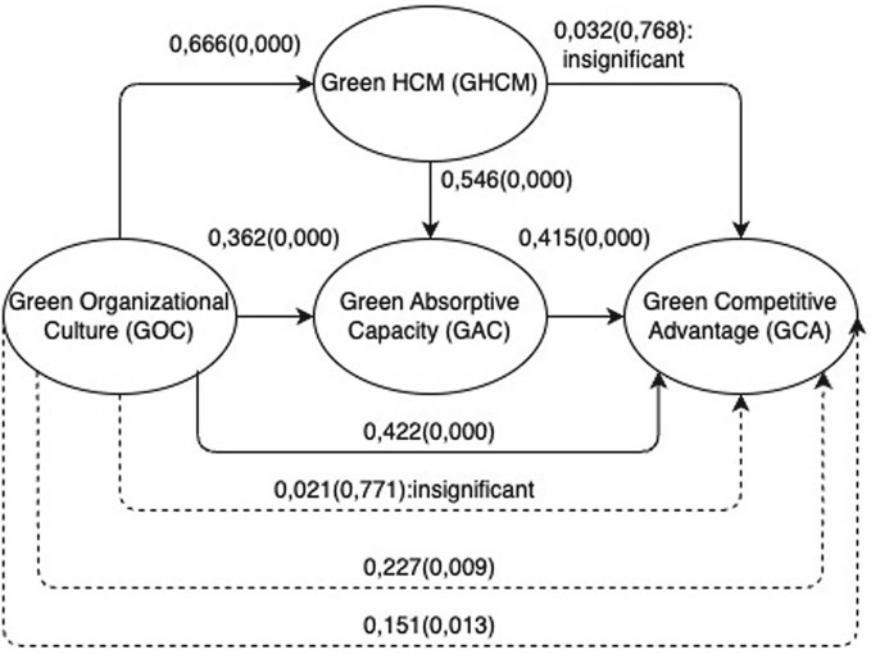

Fig. 2 Hypothesis test results

Table 5 Model fit

Original sample, estimated value		CI 99%
SRMR	0.068	0.069
d_uls	1.278	1.310
d_g	1.246	1.677

Table 6 Examination PLSpredict

Construct	Item	PLS		LM	
		RMSE	MAE	RMSE	MAE
GHCM	GHCM1	1.022	0.825	1.032	0.833
	GHCM2	1.140	0.875	1.161	0.912
	GHCM3	0.997	0.788	1.005	0.768
	GHCM4	0.904	0.698	0.924	0.698
	GHCM5	1.158	0.892	1.189	0.902
GAC	GAC1	0.991	0.677	0.982	0.669
	GAC2	0.917	0.644	0.943	0.656
	GAC3	0.711	0.555	0.716	0.544
	GAC4	0.669	0.534	0.688	0.545
	GAC5	0.713	0.562	0.732	0.581
	GAC6	0.897	0.632	0.917	0.667
GCA	GCA1	0.626	0.477	0.624	0.482
	GCA2	0.672	0.497	0.684	0.506
	GCA3	0.622	0.459	0.641	0.475
	GCA4	0.662	0.474	0.673	0.477
	GCA5	0.717	0.528	0.731	0.511
	GCA6	0.666	0.512	0.677	0.517
	GCA7	0.560	0.416	0.568	0.412
	GCA8	0.565	0.425	0.582	0.438
	GCA9	0.862	0.533	0.885	0.557

Discussion of the Results

The study successfully identified GCA's root causes, including GOC, GHCM, and GAC in a specific path sequence. According to the findings of this study, an organization's GCA is enhanced by having a GOC, GHCM, and GAC in place. The implementation of GOC has a positive and significant impact on GHCM. In turn, GHCM has a positive and significant impact on GAC. Finally, GAC has a positive and significant impact on GCA.

This study makes several contributions, both theoretical and practical implications. It specifically explores the impact of GOC in higher education institutions on

GCA. Previous research has indicated that GCA is a result of GOC; Wang (2019), Fang et al. (2022) and Hendarjanti and Nawangsari (2023) revealed that GOC significantly and direct affect GCA. This study also answers the contradiction regarding whether GOC affects GCA or vice versa, so the results of this study are more likely to be in the same direction (Fang et al. 2022; Hendarjanti and Nawangsari 2023; Wang 2019) than in the opposite direction (Roscoe et al. 2019). This study has confirmed empirically that a noteworthy rise in GOC will increase GCA and fulfil potential future research by Ren et al. (2018). This study has successfully addressed the research gap identified by Raut et al. (2020) and Moktadir et al. (2020) by conducting empirical testing using PLS-SEM. The findings indicate that GOC has a significant impact on GHCM. Additionally, this research proves to initiate a significant influence of GOC on GCA.

In this study, the impact of GAC on GCA is examined and analysed through the lens of dynamic capability theory, which suggests that an organization's ability to acquire and apply knowledge is crucial for remaining competitive (Teece et al. 1997). As far as we knows, according to Mazon et al. (2023), little research explores how GAC and GCA are related in the context of higher education institutions. The main argument of this research is that GAC has a significant impact on GCA in these institution.

Finally, our results prove that GHCM has no direct effect on GCA. Thus, this is a novelty that states that to achieve GCA, GHCM must go through GAC first. This means that the management of people in GE-oriented higher education institution must produce an organizational ability to absorb knowledge from the organization's dynamic external environment to be blended with existing knowledge and form new knowledge. Thus, people in the organization must be willing to learn from the organization's dynamic external environment to create new knowledge. In this case, the capability to absorb knowledge supports the NRBV and KBV theories. The practical contribution of this research lies in its explorations or predictions (Latan et al. 2023; Hair et al. 2022). PLS prediction results show that GHCM and GAC has medium power to predict GCA. The managers of higher education institutions are expected to pay serious attention to developing and practising organizational values related to the GE in daily life.

Conclusion

As per this study, enhancing the green competitive advantage of a higher education institution entails a sequential process that involves the progression from establishing a green organizational culture, green human capital management and green absorptive capacity. When view through the lens of GE's, this process commences with the present of organizational values that serve as guiding principles in day-to-day operations. It then extends to the governance of individuals within the organization, enabling them to assimilate knowledge from the external environment, which is subsequently integrated with the existing internal knowledge to create new

knowledge, thus ensuring competitive edge. The limitation of this study is that it focuses solely on examining the impact of green organisational culture, green human capital management, and green absorptive capacity within a private higher education institution located in Indonesia. Green organisational culture, green human capital management and green absorptive capacity may differ depending on the institution or organization. To further explore this topic, future research could focus on surveying respondents from various types of higher education institutions, including public institutions, across different countries. There is potential to include green innovation as one of the constructs on the future research agenda, considering that many previous studies related to green organisational culture, green human capital management and green absorptive capacity also link green innovation as one of the outputs that become a green competitive advantage.

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Understanding Employee Ecological Behavior in Malaysian Higher Educational Institutes Through Green HRM Practices

Khalid Farooq, M. Y. Yusliza, and Abdur Rachman Alkaf

Abstract Academics' employee ecological behavior (EEB) has emerged as the most critical element in assisting universities in transitioning to sustainable organizations. This analysis aimed to determine how green human resource management practices affect EEB to enhance employees' ecological behavior to improve environmental efficiency. The research employed a qualitative approach. Data collection methods included semi-structured face-to-face interviews of academics from Malaysian universities. According to the interview transcripts, green human resource management strategies significantly affect employee ecological behavior. Green training, green rewards and compensation, and green empowerment are the more influential factors shaping EEB at the workplace. This study contributes to the current literature by discussing how Green human resource management practices of academics influence EEB. The high EEB of academics will facilitate universities in becoming more sustainable and environmentally friendly.

Introduction

Promoting a green culture and practices that prevent or minimize environmental damage has been found to be good for businesses and essential for society (Rayner and Morgan 2017). Universities are referred to as "little towns" due to the volume and variety of dynamic events on campus, which significantly affect the community both explicitly and indirectly (Alshuwaikhat and Abubakar 2008). On the other side, the principal responsibility of universities is training next-generation leaders,

K. Farooq (✉) · M. Y. Yusliza · A. R. Alkaf
Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia
e-mail: khalid.farooq@umt.edu.my

M. Y. Yusliza
e-mail: yusliza@umt.edu.my

A. R. Alkaf
e-mail: alkaf518@gmail.com

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decision-makers, and managers (Alshuwaikhat and Abubakar 2008). In the struggle to achieve low carbon emission and proper resource utilization, higher educational institutes must develop an environmentally friendly atmosphere through academician ecological behavior (Fawehinmi et al. 2020). Employee behavior, which supports environmental initiatives' protection and management, refers to employee ecological behavior (Zhang et al. 2019). Employees show different opinion levels for in-role and extra-role behavior in the workplace (Dumont et al. 2017). In addition, organizational sustainability policies shape employees' in-role and ecological behavior differently through different psychological and social processes (Norton et al. 2014). Researchers must focus on behavioral changes of employees rather than just recycling and upgrading technological advancements (Anwar et al. 2020).

To the best of our knowledge, no study has examined the role of green HRM practices for EEB of academicians. In addition, Cho (2019) said that the behavior of faculty from higher educational institutes must be investigated as staff and students have different behaviors related to environmental management. Dumont et al. (2017) called for research to investigate organizational level factors related to EEB. Understanding employee ecological behavior in higher educational institutes through green HRM practices is crucial for promoting sustainability and reducing the negative impact on the environment (Farooq et al. 2023, 2022a, b). By implementing green HRM practices, higher educational institutes can encourage employees to adopt eco-friendly behaviors and contribute to the protection and preservation of the environment (Farooq et al. 2023, 2022a, b).

In recent years, there has been a growing trend among higher education institutions across the globe to integrate environmental management and sustainable practices into their operations. As providers of education and research, it is expected that these organizations will take a leading role in addressing environmental challenges (Farooq and Yusliza 2023). This means that all members of the institution, including faculty, administrative staff, and researchers, should incorporate environmentally friendly practices in their daily work (Anwar et al. 2020). As agents of change for sustainability, higher education institutions have an important responsibility to encourage low-carbon practices among students, who are often influenced by the attitudes and actions of their instructors.

The current study advances knowledge of EEB in three ways. First, this study extended understanding of the concept of EEB by examining the role of academicians at Malaysian top green universities ranked in Ul GreenMetric. Different universities can implement this research framework to get better environmental management. Second, the study filled a research gap by investigating the impact of different Green HRM practices in performing EEB. By focusing on green HRM practices, an organization can focus on different strategies to achieve targeted outcomes from EEB. Third, this is the first known research to measure Green HRM practices' role to foster EEB employing a qualitative technique in Malaysian top-ranked research universities, which required further attention (Anwar et al. 2020; Fawehinmi et al. 2020).

Literature Review

Employee Ecological Behavior

Employee ecological behavior is described as "scalable acts and behaviors that employees take or initiate that are connected to and contribute to environmental sustainability" (Ones and Dilchert 2012, p. 456). Employee ecological behavior also termed as "green behavior" refers to the actions and behaviors of individuals within an organization that contribute to the protection and preservation of the environment (Dumont et al. 2017). These behaviors can include actions such as reducing energy consumption, using eco-friendly products, and participating in recycling programs. Workplace behavior is distinct from overall pro-environmental behavior, often referred to as general behavior or at-home behavior (Stern 2000). Ones and Dilchert (2012) suggested a model for workplace EEB research. Although different techniques have emerged for shaping environmental behaviors, limited interventions by factors have been studied in workplace behavior (Dumont et al. 2017; Fawehinmi et al. 2020; Kim et al. 2019; Norton et al. 2015). Environmental behaviors of individuals differ at home and work. Changing contextual and contingencies means antecedents for environmental behaviors differ at home and work (Davis et al. 2019). This phenomenon means that factors that influence behavior in the home may not be effective in the workplace.

There are several factors that can influence EEB, including individual values, beliefs, and attitudes towards the environment, as well as the organizational culture and policies in place (Norton et al. 2015). One way to encourage EEB is through the implementation of green HRM practices, which are environmentally responsible policies and practices within the field of human resource management (Farooq et al. 2023, 2022a, b). These practices can include initiatives such as recycling programs, green procurement policies, and the promotion of telecommuting and other forms of flexible work arrangements (Yong et al. 2022). In addition, providing education and training on eco-friendly practices, as well as offering incentives for EEB, can serve as positive reinforcement for employees to adopt and maintain eco-friendly habits. Overall, EEB is important for promoting sustainability and reducing the negative impact on the environment. By encouraging and supporting employees to adopt EEB, organizations can contribute to the protection and preservation of the environment and play a role in creating a more sustainable future (Yusliza et al. 2021).

Green HRM Practices

Valued green recruitment process of organization enables to become more sustainable and environmental friendly (Fawehinmi et al. 2020). Through green training processes, they acquire more abilities and skills to understand environmental initiatives better (Ren et al. 2018). Green compensation, performance management, and

involvement boost behavioral intentions for environmental sustainability (Saeed et al. 2019). GHRM practices are essential for aligning the environmental behaviors of employees with organizational objectives (Anwar et al. 2020). The findings of GHRM practices on Employee ecological behavior have been contradictory. For example, Fawehinmi et al. (2020) and Kim et al. (2019) found no direct relationship between GHRM and EEB, while Anwar et al. (2020) and Dumont et al. (2017) found a positive relationship. This qualitative study will help determine the actual role of GHRM practices on academicians regarding their ecological behavior.

Green Recruitment and Selection

In the recruiting and hiring procedures, an organization expresses its corporate values and objectives to potential employees, stating that the work description may represent the relevance of environmental reporting (Renwick et al. 2013). In comparison, an interview can be organized to identify applicants who are likely to adopt the organization's green stance. Additionally, prospective hires should be educated about the organization's practices, ideals, and dedication to environmental stewardship (Yusliza et al. 2017). The importance of green recruiting is founded on internal attribution criteria. By implementing these measures, workers become more receptive to environmental values and demonstrate more ecological behavior (Ojo et al. 2020).

Green Training and Development

Training is critical in establishing and fostering an organization's green consciousness and culture. Training has been shown to significantly improve workers' attitudes about and interest in pro-green activities (Bissing-Olson et al. 2013). Nonetheless, without an adequate understanding of the requirements and future use of the expertise and skills in the workplace, the environmental training curriculum can be unsuccessful at stimulating ecological activity within an organization (Jackson et al. 2011). Training is important for arming staff with the requisite knowledge and experience to make autonomous choices on sustainable activities. As a result, teaching exposes workers to pertinent environmental awareness, which can pique their interest in ecological behavior (Ojo et al. 2020).

Green Performance Management and Appraisal

An organization can develop appropriate metrics and performance indicators to monitor the impact and involvement of its employees in pro-green practices (Bissing-Olson et al. 2013). Environmental benchmarks help to hold workers responsible

for environmental stewardship. Environmental metrics are a critical component of performance improvement in GHRM because they allow workers to gain timely input on their pro-environmental conduct (Masri and Jaaron 2017). Thus, an employee may compare his or her results to the ideal environmental performance on an individual basis. According to Ojo et al. (2020), getting timely input on employees' pro-environmental success will pique their curiosity and motivation to participate in the required conduct. Employees will adjust their behaviors following the key indicators for assessing task performance.

Green Reward and Compensation

According to a holistic strategy to salary administration, green incentives and compensation are a scheme of financial and non-financial benefits aimed at recruiting, encouraging, and maintaining workers to contribute to environmental objectives (Jabbour et al. 2013). Incentives can be more effective at aligning workers' success with the organization's priorities than most human resource management strategies. However, most scholars agree that a combination of monetary and nonmonetary incentives motivates workers more effectively (Jackson et al. 2011). Green appreciation is a scheme of nonmonetary incentives for workers, including companywide public recognition, compensated holidays, and gift cards. These green appreciation incentives foster a sense of belonging among co-workers and successfully promote ecological behavior (Saeed et al. 2019).

Green Empowerment

Employees will be given chances to engage in environmental protection, which encourages them to contribute to waste control and identify environmental opportunities. Employee empowerment is the mechanism by which managers delegate jurisdiction to resolve environmental issues to workers (Daily and Huang 2001). Numerous studies have shown that workforce interest in sustainability initiatives is critical for optimizing the efficiency of environmental management processes, such as eliminating waste and emissions in the workplace and maximizing resource use (Renwick et al. 2013). By different mechanisms, a company will improve its environmental efficiency by encouraging workers to engage in green initiatives. These procedures involve deepening employees' tacit awareness, encouraging and empowering employees to generate suggestions for resolving environmental problems, and cultivating an environment-friendly workplace (Ojo et al. 2020).

Theoretical Background

Individuals form associations with groups and identify with teams to cultivate a strong self, and social membership conditions a person's associations. According to social identity theory, individuals are comfortable and affirmative when they associate with constructive teams and communities. This feeling of identity contributes to the reinforcement of their self-concept of collective membership. Theoretical frameworks assist with explaining the interaction between the organization and its workers (Ashforth and Mael 1989). Researchers discovered that workers incorporated into an organization's constructive practices and ideals demonstrate a high level of corporate engagement (Scott 2007). Employees who have a favorable attitude toward an organization's sustainability policies demonstrate a strong degree of eco-friendly activity (Kim et al. 2019). Additionally, employee social identification theory postulated employee loyalty to the company by their actions (Su and Scott 2019). Studies have confirmed that an employee who is more environmentally conscious and identifies with his/her company's efforts for environmental sustainability is more devoted to extra effort for ecological behavior (Chaudhary 2019; Kim et al. 2019).

Methodology

Research Method and Sample

Interview were conducted with academicians. This qualitative method is suitable due to the nature of drivers under consideration, based on perceptions of informed individuals (Jabbour et al. 2020). Moreover, Jabbour et al. (2020) argued that qualitative research was appropriate for finding the nuances of respondents.

The data are collected through open-ended interview questions since the respondents get the opportunity of expressing their opinion about their problems, experiences, and support during their environmentally friendly practices (Farooq et al. 2023, 2022a, b). The prior preparation of sample question provides the direction and initiation to start the conversation with the respondents keeping in mind the research objectives (Shannon 2005).

The four selected universities are recognized for their good reputation for sustainability efforts and low carbon emission by green metrics ranking as well as ISO certifications and also ranked on top in Ul GreenMetric from Malaysia. After this research phase, non-probability convenience sampling was carried out. The study's sample included 17 faculty members.

Data Collection

Each respondent was delivered with an interview protocol that the ethics committee of each university approved. The anonymity of all participants and universities was ensured. The duration of the interview was between 60 and 90 min, which were conducted between 2019 and 2020.

Data Analysis

Interviews were recorded and subsequently transcribed in full for further analysis. Content analysis, defined as "research method for subjective interpretation of the content of text data through the systematic process of coding and identifying themes or patterns," was used (Shannon 2005). The analysis comprised two steps. First, the coders distributed relevant passages as suggested in the research framework. After that, the coders deductively analyzed these extracts to different factors with quotations to analyze behaviors, and different factors emerged as drivers of ecological behaviors in the workplace.

Results

Each category's results are presented in Table 1, which summarizes relevant responses obtained from interviews, which are then interpreted and discussed.

Green HRM Practices

Green HRM has rapidly developed in the business and academic fields over the past decade. The role of GHRM has become a major factor for environmental sustainability because of the vital role of employees regarding environmental initiatives in an organization (Anwar et al. 2020). Increasing environmental practices through GHRM-derived employees allows for the more efficient utilization of natural resources.

Table 1 Respondent feedback and quotes

University	GHRM practices	Respondents	Quotations
University A	Green recruitment and selection	Respondent 1	"For me, it is voluntary because it is my personality. I could say from my perspective that it is more of a personal effort. I mean, lecturers are busy doing research and meeting students. When we have the policy, the Sustainable Campus, we are more aware of that"
	Green training	Respondent 4	"There was training for the administrative staff. I did not remember when, but I had to go to that place, organized by a professional team. They make series and courses for lecturers and staff, a mixture between environment and sustainability"
	Green performance management	Respondent 5	"We will try to do it. There will be people who monitor and give out penalties"
	Green rewards and compensation	Respondent 4	"I think the university should give rewards"
		Respondent 2	"We have the Excellent Service Award, but I don't know the criteria as you mentioned"
	Green empowerment	Respondent 4	"Even during Orientation Week, they have one of the segments. I was involved in it once. They held a campus explorer, where students identified recyclable things. There is a visit to Lestari for new students"
University B	Green job description	Respondent 2	"I do them voluntarily, not because of my job descriptions. I do them because I want to. I want to save paper; I want to go paperless"
		Respondent 7	"We do them voluntarily. They are also emphasized following some instructions which came from the top, to make sure that everybody does them. From now on, everybody has the awareness"
	Green training	Respondent 8	"I have never participated, but I'm sure that they have the training"

(continued)

Table 1 (continued)

University	GHRM practices	Respondents	Quotations
		Respondent 7	"There is CPD, but it is not stress. There is no green training at all. There has never been any specific green training. At least there is CPE, but no green technology"
	Green performance management	Respondent 9	"When they designed the blueprint, they should include these kinds of things. They did not encourage people to do that. I wish they did because many lecturers do research related to green practices"
	Green pay and rewards	Respondent 1	"No, University B does not do that. It is different compared to University A"
	Green involvement	Respondent 10	"Sometimes, we also hold "gotong-royong" (communal work), involving students and staff. It is a program under the school"
University C	Green training	Respondent 1	"EMS covers the environment, so it is done by the responsible centers. I am with the committee for energy, and every six months, we have to submit a report. We have several activities"
	Green pay and rewards	Respondent 5	"Responsibility centres are given points. We will email the details on the total points for each center to the Ministry of Higher Education. At the end of the year, the faculty that wins will get some money"
	Green involvement	Respondent 6	"If we want to enforce students to go green, it must involve the lecturers"

(continued)

Table 1 (continued)

University	GHRM practices	Respondents	Quotations
University D	Green training	Respondent 11	"We are a training center, so we normally serve food and beverages. We have to think about how to get rid of them. At the office, there are many Tupperware containers. In terms of traveling, I own two bicycles"
	Green involvement	Respondent 3	"We ask for support from the development unit since it involves premises. We communicate through announcements. Every month, we encourage the faculties to reuse paper. Announcements are made through circulars. Some of the items involved are paper, bottles, and cooking oil"

Discussion

The results reveal the need to coordinate resources and capabilities to meet challenges and opportunities for environmental change. The findings highlighted the interdependent relationship among individual, organizational, and environmental factors and their capabilities for adopting EEB. Among four universities, EEB is the most important factor in overcoming environmental issues, which can be achieved by developing capabilities and efficient resource utilization. In addressing the adoption of EEB, it was observed that universities feel the need to invest in environmental forces and capabilities like attitude, awareness, consciousness, and knowledge.

The results indicate that GHRM practices influence EEB, aligning with Dumont et al. (2017) and Saeed et al. (2019). This study found that rewards and training of employees directly promote EEB but have no direct effect on other practices. This may be because workplace behaviors are monitored in organization systems and policies. Further, other major reasons may be that rewards and training enhance employee intrinsic motivation to involve in ecological behavior. As one respondent noted,

> As a research Centre, we can do the training on awareness or conduct studies. But then, you […] You can enforce all you want, […] (Respondent 5).

In terms of employee ecological behavior, the results show the positive effect of behavior on three dimensions of sustainability. The finding reveals that ecological behaviors enhance environmental commitment, which contributes to saving energy, utilization of natural resources, and the well-being of society.

> Well, we tried to minimize the use of paper in this office. Sustainability encompasses everything; it is about the way of life. Sustainability actually is the branding, not focusing on religion (Respondents 4).

Educational institutes and universities can align strategies and sustainable goals; henceforth, resolving carbon emissions can be managed through this mechanism of prioritizing and coordinating management for low carbon emission. Universities can make investments in EEB practices despite expenses if management and stakeholders can show interest in environmental management (Fawehinmi et al. 2020). By adopting EEB practices, these universities strengthen their image as institutes that are more committed to environmental and social responsibilities.

Conclusion

The study extended the current state of knowledge of employee ecological behavior by investigating how universities deal with green HRM practices to adopt ecological behavior. It proposed a framework for institutions to guide management to utilize resources and capabilities to meet the challenges and opportunities for being green. Institutions can gain advantages for sustainable development by focusing on the EEB of academicians.

Academic Contribution

This paper contributed to the literature on employee ecological behaviors and strategies to enhance EEB by focusing on Green HRM practices and addressing the call for additional research (Dumont et al. 2017). Moreover, previous study by Fawehinmi et al. (2020) called for future qualitative research on the green HRM and EEB relation to in-depth understandings. A new analytical approach was proposed to gain a managerial framework for institutions to orchestrate employees to meet challenges and opportunities for low-carbon campus.

Managerial Implications

This research will help management to identify and explore utilizing organizational capabilities to develop EEB. It also outlined a process for establishing low-carbon campuses. The study highlighted the role of green HRM practices for low carbon emission targets. In this scenario, Malaysian universities may help policymakers and government institutions deal with environmental degradation.

HEIs can encourage employee ecological behavior through green HRM practices by providing employees with the knowledge and skills needed to adopt EEB, moreover, institutes and management can encourage them to make changes in their daily

habits. HEIs can establish policies and procedures that encourage the use of eco-friendly products and practices. For example, institutes could adopt green procurement policies that prioritize the purchase of environmentally responsible products and services. HEIs can encourage employees to work remotely or on a flexible schedule, higher educational institutes can reduce the negative impact of commuting on the environment. Moreover, HEIs can offer incentives such as rewards or recognition to employees who adopt EEB. This can serve as a positive reinforcement for employees to continue their eco-friendly practices.

Research Limitations

The findings were understood deductively, and the data gathered from academicians were compared to the pertinent literature. The research was undertaken in a particular national sense, with data obtained from four of Malaysia's largest public universities. As a result, considering the cultural background is important. Additionally, because EEB is a novel term developed by interviews and concentrated group dialogue, academicians could have varying perceptions.

Future Research

Future studies can concentrate on and apply the answer mechanisms identified in this study to comprehend in various contexts. Future studies can perform empirical research on human, organizational, and environmental variables. Qualitative research is needed to determine the outcomes of EEB in low-carbon institutions, such as resilience (Yong et al. 2020) and competitive advantage (Malsha et al. 2020), as this will improve the willingness to pursue green campuses.

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Exploring Corporate Social Responsibility Research in the Era of Sustainable Development Goals in Malaysia

Juhari Noor Faezah, M. Y. Yusliza, Wan Zulkifli Wan Kassim, Zikri Muhammad, and Erna Sofriana Imaningsih

Abstract The purpose of this study is to highlight how corporate social responsibility (CSR) is perceived in Malaysian higher education institutions (HEIs), and how it can contribute to sustainability. The study was qualitative, utilizing semi-structured, in-depth interviews with 11 stakeholders, comprising top-level management staff, academicians, and support staff from four public universities in Malaysia. The views of the stakeholder group were analysed to identify the contribution of CSR programmes to HEIs' green development. The findings revealed that CSR engagements have an impact on sustainability at the HEIs. Since the research subjects in this study were Malaysians, different findings may be obtained when the research subjects are from the neighbouring countries in the ASEAN (Association of South-East Asian Nations) region. Successful implementation of CSR programmes may raise ecological behaviour ideology throughout HEIs. This study contributes to a greater understanding of the role of CSR programmes in contributing to the SDGs at HEIs and to the implementation of green campus.

J. Noor Faezah (✉) · M. Y. Yusliza · W. Z. Wan Kassim · Z. Muhammad
Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, 21030, Kuala Nerus, Terengganu, Malaysia
e-mail: faezahjuhari95@gmail.com

M. Y. Yusliza
e-mail: yusliza@umt.edu.my

W. Z. Wan Kassim
e-mail: wanzul@umt.edu.my

Z. Muhammad
e-mail: zikri@umt.edu.my

E. S. Imaningsih
Faculty of Economics and Business, Universitas Mercu Buana, Jl Meruya Selatan No. 1, Kembangan Jakarta Barat, Indonesia
e-mail: erna.imaningsih@mercubuana.ac.id

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Introduction

During the decade of UNESCO Education for Sustainable Development (2005–2014), universities' roles in sustainability performance were especially emphasized. However, its existence in higher education institutions (HEIs) began in the early 1990s when the "greening of the universities" concept was first introduced (Atici et al. 2021). Universities need to engage in their function as providers of the pertinent knowledge, evidence-based solutions, and innovations, and the supposed way of doing this is through research (Mawonde and Togo 2019). As crucial influencers and agents of change, universities must be more involved in bringing about the change inspired by SDGs (Leal Filho et al. 2019). By investing in sustainability, universities may potentially enjoy additional benefits, such as significantly reduced cost in the long term (Atici et al. 2021). At the same time, CSR's contributions to the achievement of sustainable development (SD) have been heavily discussed at the global scene (Xia et al. 2018).

CSR has become a global trend, and it has also been practised in most sectors and organizations of all kinds (Asrar-ul-Haq et al. 2017). CSR and related concepts under the "sustainability" umbrella are strong areas of interest for academics (Xia et al. 2018). CSR comprises activities conducted by businesses as they attempt to make an impact on the society and/or the environment positively (Su and Swanson 2019). Abdelhalim and Eldin (2019) highlighted that, with regards to SD, the role of CSR is to change stakeholders' responsibilities. As a social event, CSR is greatly acknowledged in several sectors, including financial, resources, trade, and retail, in which the commercial undertakings spur sizeable interests from stakeholders (Xia et al. 2018). CSR is indeed a great agent for developing stakeholders' synergies, and the model takes advantage of the private sector's role to attain SD (Abdelhalim and Eldin 2019).

Universities are the gates to innovation and development (Zhu et al. 2020), which includes the innovative concept of green campus. According to Atici et al. (2021), green campus is an up-to-date concept involving implementing sustainable and environmentally friendly strategies within university campuses, as well as amending the programme syllabuses to incorporate courses relating to environment and Green Metric sustainability. It cares about the technology's constant transformation that will help promote and revive the concept of sustainability (Zhu et al. 2020). In Malaysia, the interest in SD has been gradually growing (Jnr 2020). However, despite sustainability being on the agenda of HEIs since 1992 Earth Summit in Rio, most universities in Malaysia still lag behind in their implementation of green practices as part of their policy to achieve sustainability (Jnr 2020). Abdelhalim and Eldin (2019) added that CSR and SD have an important relationship, and this requires an in-depth study, especially in developing countries, as voluntary CSR practices do not provide positive long-term benefits such nations need. Universities, being proponents of CSR practices, need to cater to three main stakeholders, namely employees, students (customers), and society. If they do not focus on any of these stakeholders, it is impossible for universities to sustain themselves (Asrar-ul-Haq et al. 2017).

Thus, studying SD from a green campus aspect becomes necessary to discover new ideas and directions regarding how to achieve SDGs. To predict future research direction for CSR at HEIs, pertinent research can be explored in the general management field. The studies' findings may add to the current understanding new knowledge of CSR at HEIs. They may also help different stakeholders at HEIs such as employees, students (customers), and society contribute to the achievement of the SDGs. A number of literature reviews have been written that provided an extensive overview of the execution of SD initiatives and commitments and HEIs' motivations to be involved with the initiatives. The present research addressed the question of how SD can be achieved through CSR programmes or other means, and how to increase stakeholders' participation in CSR programmes at HEIs.

Therefore, the purpose of this study is to explore the perceptions of employees about CSR activities in Malaysian HEIs and how it can contribute to sustainability. To achieve this research objective, the specific research question to be answered is:

RQ1. Does CSR initiatives predict sustainable?

RQ2: How can Malaysian HEIs encourage the CSR initiatives among employees to achieving the green campus?

The rest of this paper will review the current literature on SD at HEIs, discuss the impact of CSR on ecological behaviours at HEIs, detail the employed research methodology, present and subsequently discuss the study's findings, and offer a conclusion.

Literature Review

Sustainable Development Research on Green Universities

An increased interest in environmental issues throughout the world has led to a line of research focussing on sustainability on university campuses (Atici et al. 2021). There has been a global discussion about the role played by HEIs in today's society and that of the future (Dzimińska et al. 2020). To help achieve SD, SDGs provide clear directions and requirements SD, whether at the national or global level (Zhu et al. 2020). HEIs have been designated as one of the key players to assist in the implementation of Agenda 2030, and to this end, SDGs are being infused into sustainability strategies, research, teaching, pedagogy, and campus practices (Paletta et al. 2019). According to research, employees must spend 70% of their time at work in order to fulfil their responsibilities in their different organizations. As a result, they engage in a number of activities that may directly or indirectly undermine environmental sustainability (Gao et al. 2017). Therefore, it is crucial for employees to go green and display environmentally friendly behaviours to support organizations in their efforts to advance the realization of the SDGs (Ogbeibu et al. 2020).

Universities play a fundamental role in supporting the SD agenda, and using their multi-research capabilities, they can provide the required knowledge, evidence,

solutions, and innovations (Paletta et al. 2019). The activities HEIs engage in to create greener campuses or infrastructures are part of the attempts to achieve SD to tackle growing environmental issues, such as climate change and air pollution (Atici et al. 2021). To align the curricula with SDGs, universities can offer training to all course coordinators and curriculum developers (Mawonde and Togo 2019). Green universities would have the most impact on the sustainability performance because they are becoming more widespread (Dagiliute et al. 2018). HEIs now have more responsibility than ever to include in their systems the SD concept. Universities must help create a more sustainable future, and they are able to do this by influencing the culture of the society and the actions of its members, which universities can accomplish through all their three missions—teaching, research, and service to society and also by setting themselves as an "inspiring example" in the everyday operations (Dzimińska et al. 2020).

Corporate Social Responsibility and Ecological Behaviour

The creation of Corporate Social Responsibility (CSR) literature is still happening (AlSuwaidi et al. 2021; Hoque et al. 2018; Khattak et al. 2021). From socially responsible actions, CSR has expanded to incorporate sustainability (Ait Sidhoum and Serra 2018; Marco-Fondevila et al. 2018). The benefits of CSR in attaining SD are also a hot topic on the international stage (Xia et al. 2018). According to Su and Swanson (2019), it is worthy to explore the social well-being that CSR programmes bring to employees and the level of green behaviour that employees return to the organizations. It has been noted that CSR has become ingrained in many organizations' daily operations, and as a result, businesses are now reaping both direct and indirect advantages from its beneficial effects on employee well-being (Ahmed et al. 2020). Shah et al. (2021) highlighted that CSR develops green behaviours among employees, which lead to the sustainability of the organizations' environment. Consequence awareness and ascribed responsibility to enact CSR play a factor in generating moral values, thus compelling employees to participate in pro-social and pro-environmental behaviour (Afsar et al. 2018).

As prior research has revealed, CSR is a prime determinant of employees' ecological behaviour (e.g., Afsar et al. 2018; AlSuwaidi et al. 2021; Shah et al. 2021). Afsar et al. (2018) state that embedding more CSR values in employees is possible, provided that their superiors have positive reputations among the community, are role models for green behaviours, and promote as well as acknowledge the employees' pro-environmental contributions to the organization and the community. Furthermore, through CSR activities, a high concern for employees and their needs is reflected (Afsar et al. 2018). Numerous studies have looked into how employees' opinions of organizations' CSR initiatives tell them how to behave at work, which leads to beneficial behaviours (De Roeck and Farooq 2017). Recent work by Shah et al. (2021) emphasized that employees who are more concerned with CSR will be more involved, voluntarily or non-voluntarily, in activities that promote a sustainable environment,

thereby improving organizational performance. Numerous studies have looked into how employees' opinions of organizations' CSR initiatives tell them how to behave at work, which leads to beneficial behaviours (De Roeck and Farooq 2017). Furthermore, it is suggested by Farooq et al. (2014) that an organization that promotes CSR activities shows its investors that it cares about society, the environment, and its employees.

Research Methodology

Procedure and Participants

This qualitative, descriptive study involved 11 stakeholders, comprising top-level management staff, academicians, and support staff from four public universities in Malaysia. The sample was selected purposively to consist of individuals prequalified to provide data that helps to answer the research questions (Charmaz 2014). The examination of these public research institutions is required to determine their intellectual potential, with EMS serving as a model for other Malaysian universities (Sheriff and Abdullah 2017).

Data Collection

Emails were sent to the interviewees in January 2020, requesting them to take part in a face-to-face interview. The selected interviewees were those who are recognized as being the most conversant with their particular fields. The conditions for a critical and integrated exchange of experiences between stakeholders were achieved by inviting a diverse group of participants with a mixture of female and male members. Academicians were also included in this pool because their contributions were based on their deep theoretical knowledge, which could bring new insights into how self-initiated behaviours could be encouraged within organizations. Other participants contributed by sharing their perceptions, feelings, and experiences from their organizations.

After the interviewees gave their agreement to be involved in the research, they were then emailed several documents, including one that explained the study's objectives and another that contained the interview questions. The documents were emailed roughly 2 weeks before the face-to-face interviews were conducted. This would give the interviewees ample time to prepare their responses to the interview questions. After the agreement was obtained from the interviewees, visits were made to four universities in February and August 2020, and 11 interviews were conducted with the interviewees at their particular universities. After the preliminary interview responses were analysed, it was found that there was a need to gather more interview

responses. Thus, face-to-face semi-structured interviews were conducted. The interviews adhered to the formal interview guidelines, so as to ensure that interviewees understood the research purpose clearly. In all of the interviews, the language used was English.

Approval for the study was obtained from Universiti Malaysia Terengganu Research Ethics Committee (UMT/JKEPM/2020/46). The interviewees were informed that their interview responses would be kept confidential. The interviewees were given the freedom to share their thoughts on CSR initiatives and their nexus with SD at universities. Also, they were reminded that they may withdraw from the interview, without any repercussion, whenever they so choose. During the interview sessions, the questions asked included the following:

1. Do you carry out the practices voluntarily or because of your job duties?
2. Are there any CSR events or activities that lecturers can be involved in?
3. Are there any activities that support the effort to protect the environment?
4. What are the factors leading the university's staff to implement green practices?
5. What are the initiatives that the university has provided to support green practices?
6. Did you receive any specific training on green practices?

Before the interviews, written consent was obtained from each interviewee. The interviews lasted between 30 min and 1 h, and the sessions were recorded. The interview data were then reviewed and analysed. Several themes were identified, and interview responses were organized into these themes.

Data Analysis

Data analysis was intended to answer the research questions concerning the role of CSR programmes in contributing to the sustainable at HEIs and to the implementation of green campus. These factors encourage EEB in the universities and implement CSR initiatives in the universities. The study data were collected from both primary and secondary sources based on two methods: face-to-face interviews and focus group discussion sessions.

All recorded conversations and presentations in the face-to-face interviews and focus group discussion sessions were transcribed. Next, a descriptive coding process was performed to identify relevant data for this study, which mainly focused on the work and personal experiences of the participants in light of the environmental sustainability domain. Recording interviews and document analysis enhances a study's reliability and validity (Patton 2002; Agarwal et al. 2020). Since the authors' involvement was varied throughout the data collection phase, their relationship to the research topic and organization was also varied. After agreeing to the descriptive codes among the team members, interpretative coding was performed to identify a smaller number of codes. As a result, two preliminary themes were determined within the EEB literature. Manual coding and thematic process were carried out.

Table 1 Interviewees' profiles

Interviewee	Job title	Code	Stakeholder group
1	Senior Lecturer	SL1	Academicians (AS)
2	Deputy Director	TLM1	Top-level management (TLM)
3	Lecturer	L1	Academicians (AS)
4	Senior Lecturer	SL2	Academicians (AS)
5	Lecturer	L2	Academicians (AS)
6	Senior Lecturer	SL3	Academicians (AS)
7	Senior Lecturer	SL4	Academicians (AS)
8	Architect	SS1	Support staff (SS)
9	Senior Lecturer	SL5	Academicians (AS)
10	Director of Institute	TLM2	Top-level management (TLM)
11	Senior Lecturer	SL6	Academicians (AS)

Table 2 summarizes the two key themes that emerged from these interviews. The outcomes were thematically organized to reflect the two overarching themes, which amplified the similarities and variances across the selected HEIs. The participants' responses were applied to portray the identified themes and illustrate their individual experiences at varying HEIs.

Findings

Interviewees' Profiles

Interviewees' job titles and stakeholder groups are shown in Table 1. Most interviewees belonged to Academicians group, and most were senior lecturers (Table 2).

CSR Initiatives in Institutional Contexts

Previously, CSR was regarded as activities voluntarily held by businesses to make social, environmental, and economic impacts (Hatipoglu et al. 2019). However, from the responses, CSR was found to also be adopted by HEIs. One respondent stated:

> Tree planting is a programme at my school. Every year there must be a landscape day. Sometimes, they did the CSR, either outside or on campus. […] some administrative staff at Institute F planted a tree in the parking lot. There is a small area, and they used it to plant the tree, just for the enjoyment. [Respondent L2, university C].

Table 2 Summary of key findings

Key findings	Quotes from respondents
CSR initiatives	"We planted a lot of trees in the campus […] we have to do that to encourage people to do the same." [Respondent L1, University C]
	"I think green campus just looks green, more trees, and flowers. And then no pollution, no rubbish everywhere." [SL6, University A)
	"Many activities that involved the students, such as planting the trees, recycling." [Respondent TLM2, University A]
	"Tree planting is a programme at my school." [Respondent L2, University C]
	"Sometimes, we also hold communal work, involving students and staff. It is a programme under the school." [Respondent SL2, University C]
	"They do many things, go to […], then they clean the river, the beach." [Respondent L1, University C]
Sustainability centres' contributions to sustainability	"Loreal planted trees in University A. We monitor because want to sustain the in long term. They organized many talks before this. We have a sustainability centre at University B." [Respondent SL3, University A]
	"[…] She is part of Ecology Volunteers in University A, so every week she will collect our paper or anything that will be recycled." [Respondent SS1, University A]
	"[…] They also invited figures from outside to give talks about recycling under community programmes." [Respondent SL4, University B]
	"Collecting paper is a very common practice in Institute G. It is a very common practice." [Respondent SL1, University A]
	"[…] The Japanese government also has offered scholarship for doing research the production of electricity. Their concern is climate change, so they wished to see if for example hydro dams can help reduce the production of carbon." [Respondent SL5, University A]

Another respondent stated, "Sometimes, we also hold communal work, involving students and staff. It is a programme under the school." [Respondent SL2, university C]. Therefore, this empirical evidence supports the argument by Asrar-ul-Haq et al. (2017) that CSR efforts are not carried out only by corporations but are also being implemented by HEIs, in their capacity as developers of national human resource and as employers.

The respondents further suggested ways of using a CSR project to fit into their subject area. For instance, in Business Ethics, the concept was viewed as an important professional part, and students are encouraged to include it in their research planning. Integrating more CSR in courses is justified because it is expected by students, as

they consider business ethics or CSR will provide them with a useful extra skill in the real world. One of the respondents explained:

> We have many activities, some embedded in the courses. For example, we have Business Ethic, and we did many CSR projects as part of the course. Recently, I think, they did the mudball, they mixed the sponge and chemicals and gave to an agent, who put it in the river. They do many things, go to […], then they clean the river, the beach. [Respondent L1, University C].

The respondents believed that, for CSR initiatives to be sustainable, there must be an involvement from various universities' partners including the community and stakeholders. Through creating a more 'green' campus environment for their students, universities are able to address their educational quality and also gain a competitive advantage (Atici et al. 2021). This view was also supported by the respondents from other universities. In addition, one of the respondents from University A also acknowledged that the collaboration between the university and Loreal brought positive impact, and this had led to a transformation of good works, where stakeholders are encouraged to contribute in one way or another to the community they live in and improve the condition of the community members. She stressed:

> There is a collaboration between the university and Loreal as part of CSR. Institute G as an institute is involved. Loreal planted trees in University A. We monitor because want to sustain the in long term. They organized many talks before this. We have a sustainability centre at University B. It handles the sustainability cluster that goes beyond environmental. It deals with schools and communities. [Respondent SL3, University A].

Respondent SS1 from University A revealed that the university's sustainability centre pays plenty of attention to community programmes such as Ecology Volunteer. This is part of the effort to create an environmentally responsible organization and a green campus. The following statement supported this point:

> And as far as I know, Institute G also provides modules for Ecology Volunteers. There are water model, energy model, land model for students […] This is to train teachers about water control. We have a staff at […]. She is part of Ecology Volunteers in University A, so every week she will collect our paper or anything that will be recycled. [Respondent SS1, University A].

This is similar to the findings by Mawonde and Togo (2019), in which various SDGs can be addressed by different faculties at universities, such as agriculture, education, science and technology, health and epidemiology, and ecology, through the faculties' missions and roles at the institutions. The aim of SDGs is to ascertain that by 2030 all students will have been equipped with the needed knowledge and skills to improve SD, and this may be achieved by educating them on sustainable lifestyles, encompassing human rights, gender equality, global citizenship, and cultural diversity (Annan-Diab and Molinari 2017). Thus, at HEIs, CSR is implemented under a specific platform, and one example is the employee-led Community Programme that involves figures from outside coming to intervene and help the communities meet their needs. A respondent divulged the following:

> I think before this there was New Student Orientation Week. They also invited figures from outside to give talks about recycling under community programmes. [Respondent SL4, University B].

A respondent from university A stated:

> The only one I know is SDGs. I took them there. There was a winner. Their comment was University A is the best. As for recyclable materials, we won the Coca-Cola award. When there are awards, there will be efforts. A lot of people went to Green RNR […], a project for highways. To me, it is about fulfilling SDGs, impacting the green development. [Respondent TLM2, University A].

Based on the responses, the interviewees agreed with CSR activities, policies, and practices and believed that these helped the attainment of SDGs. In particular, the interviewees claimed that CSR activities and practices helped realize the green development. This made the CSR successful, even without direct involvement from top management. These findings lent support to the assertion that CSR concept is very much adopted by stakeholders, including employees, students (customers), and society. As per the results obtained from the respondents at Malaysian HEIs, SD practices are implemented through the use of advanced and eco-friendly materials and practices such as planting of trees, communal works, water control training, and recycling of paper.

Sustainability Centres' Contributions to Sustainability

In making contributions to the community and the society, HEIs attempt to improve their infrastructure and produce graduates who have more awareness of sustainability (Atici et al. 2021). These are in addition to finding the best approaches on how to educate the students (Li et al. 2018; Paletta et al. 2019). Recent work by Farooq et al. (2021) highlighted that organizations including universities could encourage their employees' green practices by implementing in their offices' design pro-sustainability strategies, such as using energy-efficient materials. Some interesting findings regarding this were pointed out by the interviewees. A respondent said:

> Because we are from Institute G, so we do that. We have recycled a lot of things here. We have CSR, a company which is very common here. It kind of brings the environment part. Collecting paper is a very common practice in Institute G. It is a very common practice [Respondent SL1, university A].

In the previous studies, it has been reported that employees' behaviours and attitudes are predisposed by the organization's identity, structure, and culture (Faezah et al. 2022; Lasrado and Zakaria 2020). At HEIs, programmes are held whereby students and employees encourage their peers and colleagues to advocate sustainability and conservation efforts (Dzimińska et al. 2020). Through these kinds of programmes, universities attempt to emphasize that each individual is responsible

for protecting the environment. One such programme is Ecology Volunteers, as was discussed by a respondent:

> Ecology Volunteers is a big project that involves the students and staff, and it is also involved in environmental research. At the faculty of social sciences, we called it as green rose. R is for reduce and substitute. It is like a project where researchers go to schools nationwide, teach them about recycling and composting things, talk about environmental projects [Respondent TLM1, University A].

At HEIs, sustainability is important, and it is the role of sustainability centres to contribute to sustainability, and they must address how they can achieve that (Soini et al. 2018). Achieving an equitable and ecologically sound future is possible when leaders of HEIs establish sustainability as a central academic and organizational focus (Paletta et al. 2019). Collaborative investments in conservation of nature can be established when the research environment is attractive. With highly integrated research centres, the research capacity may be enhanced through the sharing knowledge, specialist equipment, and facilities. A respondent noted:

> I want to add my centre was in partnership with World Bank for SDGs to focus on the conservation of nature, and I have worked with World Bank. The Japanese government also has offered scholarship for doing research the production of electricity. Their concern is climate change, so they wished to see if for example hydro dams can help reduce the production of carbon [Respondent SL5, University A].

Activities held at sustainability centres need to be aligned with the goal of achieving sustainability (Soini et al. 2018). From this, the university's national and international profile will rise. Thus, due to their growing awareness on sustainability and environmental issues, higher institutions are presently attempting to improve environmental sustainability, including conducting related research, making their campus infrastructures more environmentally friendly, and amending the curricula to incorporate courses that discuss environment and sustainability (Atici et al. 2021). In terms of sustainability, a campus is a practical reference for larger areas such cities or countries, as a campus has its own complete life system, where students experience various social activities (Zhu et al. 2020).

Discussion

This section discusses the findings in reference to the reviewed literature.

The findings showed that the universities are focusing on CSR programmes not only within the academic area but also within the local public and the community. For example, the community programmes on campus such as Ecology Volunteers provide students undertaking sustainability research with a learning opportunity, as these programmes include state-of-the-art sustainable education model. Through these programmes, universities are able to compile and formulate relevant curricula and course plans that can make students become more aware of sustainability, thus setting an example to other institutions (Dagiliute et al. 2018). The same view was

shared by Hamid et al. (2017), which stated that universities can tailor their education system, curriculum, syllabus, practices and Green University vision to educate younger generations, particularly students, on environmental sustainability. Universities also contribute to the establishment of a civil society, in fact more than the rest of the social institutions (Dzimińska et al. 2020).

Universities, through their faculty members, are actively making an effort to improve their students' awareness of environmental sustainability, so that universities' daily business activities will have only a minimal contribution to environmental degradation (Hamid et al. 2017). As for the universities involved in the present study, the findings showed that, during the Ecology Volunteers programme, landscape day, communal works, collaboration between the university and Loreal and partnership World Bank for SDGs, students were expected to gain real-world experience and at the same time improve their understanding of sustainable concepts. Universities have several means of raising the awareness of sustainability, which include helping students and employees understand the main environmental issues and how to tackle them, implementing recycling programmes on campus, preparing guidelines on greening of the workplace, and encouraging purchasing of green cleaning supplies (Dzimińska et al. 2020). Universities with attractive research environment may gather future research fellows to enhance research in the area of sustainability.

The findings showed that sustainability activities at universities focus on various aspects, including administration, teaching, student accommodation, research, waste management, and community outreach programmes. For example, the focus of the Ecology Volunteers programme is to establish for the campus community a physical and social space that is favourable to working, learning, and leisure. To achieve this, universities attempt to preserve green areas on campus by encouraging a healthy and sustainable lifestyle, a love for nature, and commitment to society. From the interviews, it was found that Institute G is environmentally friendly, pedestrian-friendly, work-friendly, and people-friendly. The findings agreed with the concept of a sustainable campus that often focuses on decreasing costs, saving energy, recycling materials, and influencing people to adopt a green behaviour (Li et al. 2018). In general, HEIs have been acknowledged a being significant contributors to sustainability (Karatzoglou 2013). According to Sady et al. (2019), universities do this by promoting societal, economic, and political change, which are supported by professional leaders and specialists.

The findings revealed that CSR projects are embedded into the existing subjects taught at universities. For example, in the Business Ethics subject, theories on CSR and SD are combined to allow students to taste the practical "real world" experience. Based on the findings, it is imperative that the programme is prepared accordingly so that students can learn the core concepts and principles of inter- and trans-disciplinary research, which ready them for the empirical practice. According to the literature, educational programmes need to consider what the labour market expects and what the current socio-economic and civilizational challenges are, which can be found out when academia and business carry a dialogue together (Sady et al. 2019). Embedding SD activities into the current academic curriculum and administrative activities greatly increases the probability of the programme being successful both in the short

term as well the longer term. The findings indicated that CSR activities influenced students' environmental performance. As per the literature, ensuring SD to meet the needs of the present and future generations is possible by equipping all individuals with proper knowledge and skills, which in turn can lead to a system consisting of values related to sustainability (Sady et al. 2019).

The findings also indicated that universities also leveraged the link and involvement with other parties. For instance, a sustainability centre collaborated with Loreal as part of a corporate social responsibility. The goal of this cooperation was to instil among young students an entrepreneurial attitude, by having the company work together with the students and early-stage researchers. In addition, the collaboration with Loreal led to many professional and personal benefits whether from international exchanges or different work cultures. In another instance, industry players are invited to the universities to share their experiences. For example, research partnerships with World Bank (business, community organizations, stakeholders, etc.) for SDGs focused on the conservation of nature, and this represents the most significant impacts institutions have in relation to the environmental sustainability of surrounding communities. This is in agreement with the literature, which stated that universities can use a variety of tools to bridge the skills with expert knowledge, thus enabling students to explore new ideas, theories, and products that evolve around SD theme (Sady et al. 2019).

Theoretical Implications

The relationship between CSR, individual ecological behaviour, and workplace pro-environmental conduct has been overlooked in the setting of a developing nation. According to Saleem et al. (2020), environmental issues should be dealt with through "employees' volunteering, human, and selfless efforts". In other words, CSR efforts might hold the key to protecting and maintaining the environment. Su and Swanson (2019) pointed out that this initiative is similar to "efforts to enhance the environment." Employees are thought of as a pivotal stakeholder since colleges serve as a platform that promotes CSR activities (Asrar-ul-Haq et al. 2017). Findings strengthen our understanding of the prominent role that the employee-university relationship has in explaining the impact of CSR initiatives on contributing to sustainability.

Practical Implications

This study on the CSR implementation at HEIs has several important implications. First, the findings showed that CSR activities at HEIs have been impactful in terms of achieving sustainability. Therefore, the top management of universities and other organizations should be encouraged to implement CSR programmes to receive the benefits. It will not only improve employees' morale and increase their productivity

but also help organizations retain high performers and attract quality job applicants. Ultimately, their organizational performance will be improved, and so will their competitive edge.

Secondly, the findings showed that there is lack of coherence between sustainability policy at the institutional level and the SD work of HEIs set at the national level. Therefore, considering the impact that universities have on the development of sustainability, the governments, funders, and others that understand and share the SD idea need to support universities in their efforts on this concept. Policymakers should take the relevant steps to enable universities to carry out this important role that can benefit the society. With proper support, universities can help protect the environment by consuming resources, such as energy, efficiently.

The findings also showed that CSR activities may include more than one category of stakeholders, be they academicians, administrative staff, students, or members of the community. Therefore, every stakeholder should be encouraged to engage in CSR activities so that the programmes may provide maximum impact. The literature has identified that CSR programmes have the potential to be a vehicle that can be used to drive the SDGs agenda.

The findings indicated that university graduates have been equipped with the concept of SD only to a lesser extent. While it is important to develop the skills to be competitive in the labour market, it is as important to make graduates competent in sustainable development. Thus, universities must play a vital role in developing competencies in students not only for their future careers but their future involvement in environmental protection activities. To this end, universities need to encourage green practices to promote ecological behaviour among stakeholders, including students, which will significantly cultivate environmental awareness.

The findings also showed that there was high interest among university stakeholders in SD. Therefore, universities should be urged to include SD activities in their strategic plan. For this purpose, universities can adopt green practices such as using reusable utensils instead of disposable ones, reducing the use of paper, placing recycling bins in offices, and going paperless where possible. These strategies can lead to positive impacts, such as improved public image and greater potential to be recognized as Green Universities. If every stakeholder accepts that his or her role is important in preserving the environment, achieving a more sustainable future is possible (Ahmad et al. 2021).

Limitations and Future Direction

In this study, there exist several limitations. One of the limitations, caused by budget and time constraints, is that the sample size was quite small, with only eleven respondents interviewed. In future studies, the samples may be increased in size and may also include respondents from more universities in Malaysia, including private universities, so as to enhance the current findings' validity. Another limitation is that the

context of the study was Malaysian universities. Therefore, the findings are not generalizable to universities in other countries in the region. In future studies, the scope may be widened to also include universities in neighbouring countries or even the ASEAN (Association of South-East Asian Nations) countries. As another limitation, it was not possible to gauge in real-time CSR programmes' contributions to sustainability. The findings, therefore, were based only on interviewees' responses. However, to ensure a comprehensive view of the subject matter, information was gathered from more than one source or interviewee.

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Green Transformational Leadership, Green Human Resource Management, Big Five Personality Traits, and Hotel Employees' Green Behavior in Vietnam

Hung Trong Hoang, Nga Thi Thuy Ho, and Nhat Tan Pham

Abstract This paper aims to examine the impacts of organizational factors (green HRM practices and green transformational leadership) and individual factors (big five personality traits) on employees' green behavior in the hotel industry. We collected data from employees working in 4- and 5-star hotels in central Vietnam. The study employed multiple regression to test the hypotheses. The research findings revealed that green HRM fully mediates the link between green transformational leadership and employees' green behavior. Of the five personality traits, only conscientiousness affects employees' green behavior. The study provides valuable insights for hotel managers in developing policies to enhance their employees' green behavior. The study also contributes to limited studies on employees' green behavior in Asia's emerging economies.

Introduction

The tourism industry is booming worldwide, and one of the burdens created by tourism is environmental problems (Hoque 1999). In the tourism industry, hotels have contributed to a large proportion of resource consumption and waste, resulting in undesirable carbon emissions (Hu et al. 2015). In order to solve this problem, hotels and companies operating in the tourism sector have changed their strategies

H. T. Hoang
Faculty of Business Administration, University of Economics, Hue University, 99 Ho Dac Di Street, Hue City, Vietnam
e-mail: hthung@hueuni.edu.vn

N. T. T. Ho
Faculty of Accounting and Finance, University of Economics, Hue University, 99 Ho Dac Di Street, Hue City, Vietnam
e-mail: hothuynga@hueuni.edu.vn

N. T. Pham (✉)
School of Business, International University, Vietnam National University Ho Chi Minh City, Linh Trung Ward, Thu Duc City, Ho Chi Minh City, Vietnam
e-mail: ptnhat@hcmiu.edu.vn

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and policies toward environmental protection (Renwick 2013). This is an effective tool to arouse the spirit and responsibility of employees and is the key to leading the way to business success (Opatha and Arulrajah 2014). Meanwhile, employees' green behavior positively impacts the environment towards sustainable development, which is also a common goal of businesses worldwide today (Ones and Dilchert 2012). Green or pro-environmental behavior refers to voluntary behavior toward the environment, not officially described in their job tasks. This behavior demonstrates citizenship behavior toward the environment (Luu 2019b) or extra-role green behavior (Dumont et al. 2017).

From a management perspective, while prior studies (e.g. Kim et al. 2019; Pham et al. 2019, 2022a, b) have emphasized the role of different organizational factors (e.g. green human resource management, green organizational support) in promoting employees' green behavior, the role of green transformational leadership has received far less attention. Green transformational leadership refers to a leadership style in which leaders guide their followers to commit to organizational green goals with their clear green vision, inspiration, and motivation (Chen and Chang 2013). Studies on green transformational leadership have mainly focused on its effect on green creativity (e.g. Jia et al. 2018; Li et al. 2020; Chen and Chang 2013). The study of Robertson and Barling (2013) is among a few research on the influence of green transformational leadership on employees' green behavior through an individual factor of employees' green passion. Thus, this chapter extends the prior studies by investigating how green transformational leadership affects employees' green behavior via an organizational factor of green human resource management (GHRM).

From a psychological perspective, one of the dominant personality models, the big five factors have received attention in examining employees' green attitude and behavior (Soutter et al. 2020). The big five factors (Costa and McCrae 1992) refer to five distinct personality traits that are psychological differences between individuals. Personality traits influence one's thinking, thus, affecting their attitude and behavior. These factors include openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Prior studies (e.g. Soutter et al. 2020; Sung and Choi 2009; Hirsh 2010) have shown the drivers of the big five factors in predicting green attitudes and behavior; however, their results are mixed for different research contexts (Soutter et al. 2020). For example, Hirsh (2010) found that while extraversion did not influence German adults' environmental concerns, the opposite was true for other factors. Pavalache-Ilie and Cazan (2018) proved the significant effects of openness to experience, conscientiousness, extraversion, and agreeableness on students' pro-environmental behavior, except for neuroticism. Nevertheless, previous studies have not explored the role of big five personality traits in the hospitality sector in an emerging economy such as Vietnam. This chapter, thus, extends prior studies by highlighting the association between personality traits and employees' green behavior in the hotel industry in an emerging economy context.

Hence, the research question for this study is:

To what extent and how do transformational leadership and big five personality traits influence hotel employees' green behavior?

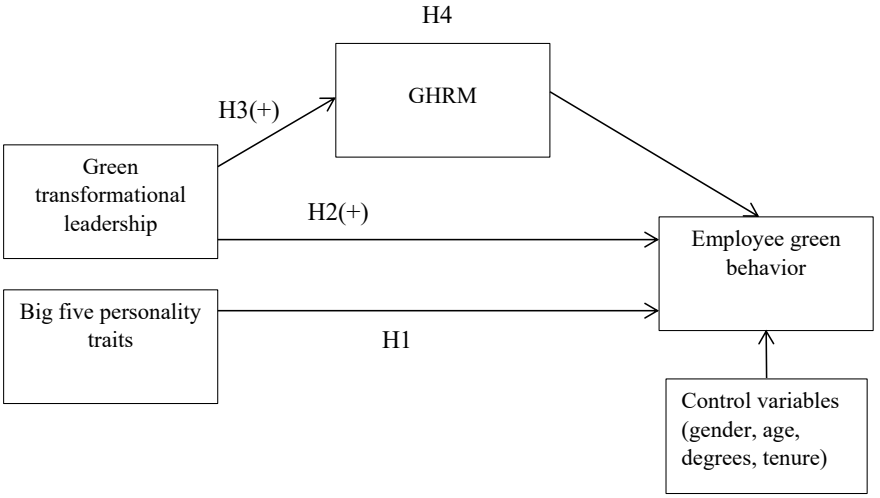

Fig. 1 Conceptual framework

This chapter is structured as follows. It begins with a theoretical background and research hypothesis development. In the following section, methodologies and results are presented and discussed. This chapter concludes with a discussion and implications.

Theoretical Background and Research Hypotheses

Conceptual Framework

The conceptual framework (Fig. 1) is obtained from factors influencing employees' green behavior. Independent variables include green transformational leadership and big five personal traits. GHRM is a mediator of the relationship between green transformational leadership and employees' green behavior. The dependent variable is employees' green behavior. Control variables include gender, age, degrees, and tenure.

Development of Hypotheses

Direct Linkages

Big Five Personality Traits and Employees' Green Behavior

A personality trait refers to the psychological difference between one person and another that makes this individual have distinct psychological characteristics. Personality traits influence an individual's attitude and behavior (James and Mazerolle 2001) as an individual personality affects his/her thinking, thereby guiding their attitude and behavior. This study examined the effects of the Big Five personality factors (Costa and McCrae 1992) on employees' green behavior. These factors include factors such as openness to experience, extraversion, conscientiousness, neuroticism, and agreeableness.

Openness to experience is positively related to green behavior because of some aspects. First, green behavior requires intelligence to carry out new behavioral strategies, which needs cognitive abilities (Soutter et al. 2020), while openness displays a positive relationship with these abilities (Giluk and Postlethwaite 2015). High-open individuals are often curious about new things and are willing to overcome obstacles (Soutter et al. 2020). Thus, openness often refers to intelligence (Bhatti et al. 2018), which is associated with greater awareness of environmental pollution or degradation consequences. Furthermore, openness is also related to resilience, reflecting a more extraordinary aesthetic appreciation of nature (Hirsh 2010; DeYoung et al. 2005). In contrast, less open people are more conservative about ecology and natural beauty. Highly open people have greater self-transcendence, referring to a high sense of self and care about others (Olver and Mooradian 2003). They take more care about the detrimental effects of environmental problems on human beings and other creatures; thus, they have more green behavior than their counterparts. Hence, we proposed the following hypothesis.

H1a: Openness to experience is associated to green behavior positively.

Conscientiousness is associated with goal-directed behavior such as planning, clear goals, and following rules, schedules, and norms. Conscientiousness is positively related to conformity, reflected by self-discipline and obedience (Parks-Leduc et al. 2015). Conscientious individuals make more ethical judgments in dishonest scenarios (Giluk and Postlethwaite 2015). These people pay attention to complying with social guidelines and norms and being consistent with environmental behavior (Hirsh 2010). Hence, we suggested the following hypothesis.

H1b: Conscientiousness is associated to green behavior positively.

Extraversion refers to the degree to which individuals are sociable, energetic, and enthusiastic. The high-extraversion individuals may be associated with green behaviors as they are more likely to actively participate in environmental groups or organizations, increasing their environmental awareness (Soutter et al. 2020). These employees also have high self-expression, which is related to more green behavior (Leung et al. 2015; Soutter et al. 2020). Hence,

H1c: Extraversion is associated to green behavior positively.

Agreeableness includes traits such as altruism, gentleness, dependability, and humility. People with this personality are usually cooperative and enthusiastic (Ashton et al. 1998), which is thought to support green behavior (Schultz 2002). These individuals are more concerned about other people's welfare (Hirsh 2010), the

future generation, and other creatures (Soutter et al. 2020). Therefore, the following hypothesis is proposed.

H1d: Agreeableness is associated to green behavior positively.

Neuroticism is the opposite of emotional stability, characterized by negative emotions such as anxiety and stress. Individuals with psychological instability often have negative emotions, so they are more likely to commit acts that violate social rules or practices because they have low self-control (Giluk and Postlethwaite 2015). Meanwhile, green behavior requires enthusiasm and energy to actively join in environmental protection activities. People with a high score in neuroticism may be more frustrated about environmental degradation (Hirsh 2010); however, they lack the energy or confidence to undertake their environmental tasks (Sung and Choi 2009). Therefore, we developed the following hypothesis.

H1e: Neuroticism is associated to green behavior negatively.

Green Transformational Leadership and Green Behavior

Green transformational leadership is viewed as a leadership style in which leaders guide their followers to commit to organizational green goals with their clear green vision, inspiration, and motivation (Chen and Chang 2013). Leaders' green behaviors often represent a company's environmental goals as they play. This behavior often reveals a company's strategic ecological objectives. Hence, leaders can be important in assisting employees in deepening their understanding of the social importance of corporate eco-friendly goals.

Moreover, leaders' moral commitment to the environment can stimulate employees' green behavior, resulting in their acceptance of the leader's environmental merits (Robertson and Barling 2013; Jones Christensen et al. 2014). Leaders also inspire their employees via their passion, optimism to protect the environment, and organizational goals about environmental sustainability (Graves et al. 2019; Pham et al. 2023). Leaders' encouragement and recognition motivate their subordinates to engage in green tasks (Chen and Chang 2013). Leaders' intellectual green stimulation improves employees' confidence and willingness to tackle environmental issues innovatively, leading to green creativity (Chen and Chang 2013; Le and Lei 2018). Thus, leaders may influence their employees' green behavior through their green transformational leadership, and the following hypothesis is developed.

H2: Green transformational leadership is positively related to employees' green behavior.

Green Transformational Leadership and GHRM Practices

GHRM practices refer HRM approaches and policies aimed at motivating a company's employees to involve in green behavior and make a green work environment (Darvishmotevali and Altinay 2022, p. 2). GHRM is the most crucial part of environmental management (Darvishmotevali and Altinay 2022; Kim et al. 2019). HRM can affect employees' green attitudes, behavior, and motivation (Anwar et al. 2020). It creates a green culture that fosters commitment among employees to the organization's environmental goals (Darvishmotevali and Altinay 2022). It influences employees' green behavior through recruitment strategies, training, and performance

management (Dumont et al. 2017; Darvishmotevali and Altinay 2022; Kim et al. 2019; Pham et al. 2019).

In addition, green transformational leadership is a significant driver of GHRM practices. When leaders pursue environmental objectives, they transform them into human resources goals and policies, as HR functions are practical means to accomplish organizational strategies and visions (Jia et al. 2018; Kim et al. 2019). They use HRM practices to communicate environmental policies and plans to their employees (Kim et al. 2019). The leaders signal employees about their values by building green norms in recruitment, training, reward, and performance management (Tang and Tang 2012). The leaders also play role models that facilitate the transformation of HMR practices into daily life (Luu 2019a). Thus, we propose the following hypothesis.

H3: Green transformational leadership is positively related to GHRM practices.

Mediation Linkages

HRM literature indicates that employees' behavior and performance highly rely on HRM attributions (Dumont et al. 2017; Nishii et al. 2008). Appropriate HRM practices enable employees to perceive and interpret the same HR objectives, exerting designed influences on employees' green behavior (Nishii et al. 2008). Therefore, GHRM practices are established to align employees' behavior toward their green goals. For instance, the HR department can attract employees with the same green motivation and beliefs via its green recruitment strategies (Muisyo et al. 2021). Training programs not only provide knowledge about environmental protections but also signal companies' green vision, improving employees' environmental awareness, knowledge, and attitudes (Pham et al. 2022a, b). Rewards can motivate employees to be involved in protecting the environment (Kim et al. 2019). Green performance management provides information and guides the evaluation of employees' green activities and competencies, aligning employees' behaviors with the organization's environmental goals (Pham et al. 2019; Pinzone et al. 2016).

The hypothesized relationships and argument noted above imply partial mediation of the role of GHRM practices in the link between green transformational leadership and employees' green behavior. Green transformational leadership influences GHRM practices, which affect employees' green behavior. Green transformational leadership also directly affects employees' green behavior through the leaders' green vision, behavior, inspiration, and intellectual green stimulation. Hence, we propose the following hypothesis.

H4: GHRM practices mediate the link of green transformational leadership on employees' green behavior.

Methods

Sample and Procedures

Our study sample includes employees working at 4- or 5-star hotels in central Vietnam, including Hue and Danang. We used a convenient method to apply a non-random sampling technique in the study. We approached the human resources department of the hotels and asked them to send the survey link to employees working at their hotels. We approached 28 hotels out of a total of 84, ranked at 4 or 5 stars in Hue and Da Nang.

We originally adapted scales in prior studies in English to develop the questionnaire. We employed backward translation to check the consistency between the English and Vietnamese versions. We conducted a pilot study with five academies to revise the questionnaire to fit the Vietnamese language and culture.

We collected 195 valid questionnaires from 28 hotels after removing invalid questionnaires due to missing important information, selecting only one rating level for all questions, or by reverse questions. This sample size is more than five times the total number of items (26 items) of the variables in the model, so this sample size is sufficient to run the regression model (Hair et al. 2010).

Table 1 describes the respondents' profiles. Of the 195 survey employees, females accounted for more than half (58.5%). The typical age of respondents is from 26 to 35 years old (49.7%) and under 26 years old (41.5%). The 36–45 accounted for a relatively small proportion (8.2%). Most of the respondents gained bachelor's degrees (61.5%), followed by those with associate degree (24.1%), and the rest had other degrees. Regarding tenure in the current hotel, 41.1% have worked 3–5 years, 35.3% have worked from 6 to 10 years, 13.3% have worked for more than 10 years, and 10.3% have had less than 2 years of working experience. More than half worked in 4-star hotels (51.8%), and the rest (48.2%) worked in 5-star hotels.

Measures

Based on the existing literature, an English questionnaire was developed. Two bilingual experts were then invited to independently translate the questionnaire into Vietnamese and back-translated it into English. A pilot study was performed to discover the applicability of the measures. We used a 7-point Likert scale for all constructs, ranging from strongly disagree (1) to strongly agree (7).

Green transformational leadership was adapted from Chen and Chang (2013). This scale has six items. Examples of the items are "(1) The leader provides a clear environmental vision for the employees to follow; (2) The leader inspires employees with the environmental plans; (3) The leader gets the employees to work together for the same environmental goals."

Green human resource management has six items adapted from Dumont et al. (2017). Example items are "(1) My company sets green goals for its employees; (2) My company provides employees with green training to promote green values; (3) My company provides employees with green training to develop employees' knowledge and skills required for green management."

Table 1 Respondents' profile

		Number	%
Gender	Female	114	58.5
	Male	81	41.5
Age	Under 26	82	42.1
	From 26 to 35	97	49.7
	From 36 to 45	16	8.2
	Over 45	0	0.0
Degree	High school diploma or intermediate degree	20	10.3
	The degree of associate	47	24.1
	Bachelor	120	61.5
	Postgraduate	8	4.1
Tenure	Under 2 years	20	10.3
	From 3 to under 5 years	80	41.1
	From 5 to under 10 years	69	35.3
	From 10 years	26	13.3
Number of employees in different star hotels	Four stars	101	51.8
	Five stars	94	48.2

The big five personality traits' measures were adapted from John and Srivastava (1999). This scale includes five factors describing the five personality traits with 44 items. Examples include "I see myself as someone who: 1. Is talkative; 2. Tends to find fault with others."

Employees' green behavior was adapted from Bissing-Olson et al. (2013), including three items. Examples items include "(1) Today, I took a chance to get actively involved in environmental protection at work; (2) Today, I took initiative to act in environmentally-friendly ways at work."

For control variables, we controlled for gender (0 = female; 1 = male), age (1 = under 26; 2 = from 26 to 35; 3 = from 36 to 45), tenure (absolute years of experience in current companies) and educational degree (1 = high school diploma or intermediate degree; 2 = the degree of associate; 3 = bachelor; 4 = postgraduate) as these demographic variables would influence employees' green behavior (Dumont et al. 2017).

Assessment of Common Method Variance

We used Harman's single-factor test (Podsakoff et al. 2003) to check common method variance. The results indicated that while the single factor explained only 41.48% of the total variance, eight factors had eigenvalues higher than 1.0. We also applied the full collinearity assessment approach of Kock (2015) and found that all variance inflation factors (VIFs) had values of less than 3.33. Therefore, both tests revealed that the model was free from common method variance (Podsakoff et al. 2003).

Results

In Table 2, the study presents means, standard deviations, bivariate correlations, and Cronbach's alphas. The results indicated that all correlation coefficients were below 0.70, and the Cronbach's alphas were above 0.70, indicating that all measures were appropriate for further analysis (Tabachnick and Fidell 1996). Moreover, the results pointed out that variance inflation factors (VIFs) were lower than 2, suggesting that multicollinearity is not a problem.

We applied hierarchical multiple regressions to test the hypotheses developed for this study. The control variables were entered in all three regression models. Table 3 provides the regression results of the models. In Model 1, the dependent variable is GHRM, and the independent variables are five personality traits, green transformational leadership, and control variables. In Models 2 and 3, the dependent variable is employees' green behavior, and the independent variables are five personality traits, green transformational leadership, and control variables. GHRM was an additional independent variable included in Model 3. Hypotheses 1 and 2 were tested based on Model 2, hypothesis 3 was tested based on model 1, and hypothesis 3 was assessed based on all three models.

Table 3 shows the regression results. All adjusted R^2 are higher than 0.6, indicating that the predictors explained more than 60% of the variance of independent variables in the three models. Model 2 shows that only conscientiousness out of five personality traits significantly affected employees' green behavior ($\beta = 0.39$, $p < 0.01$), supporting hypothesis 1b. Model 2 also indicates that green transformational leadership was positively significantly related to employees' green behavior ($\beta = 0.37$, $p < 0.01$); thus, hypothesis 2 was supported. Model 1 shows that green transformational leadership significantly positively affected GHRM ($\beta = 0.55$, $p < 0.01$), supporting hypothesis 3.

Hypothesis 4 proposed that GHRM mediates the relationships of green transformational leadership with employees' green behavior. We followed Baron and Kenny's (1986) approach to test the mediation. In model 1, the independent variable (Green transformational leadership) was significantly related to the mediator (GHRM) ($\beta = 0.55$, $p < 0.01$), supporting condition 1. In model 2, the independent variable (Green transformational leadership) significantly affected the dependent variable (Employees' green behavior) ($\beta = 0.37$, $p < 0.01$); thus, condition two was met. In model 3, the effect of the independent variable (Green transformational leadership) on the dependent variable (Employees' green behavior) became insignificant ($\beta = 0.09$, $p > 0.05$), supporting full mediation.

Regarding control variables, none of them significantly affected employees' green behavior and GHRM.

Table 2 Descriptive statistics

	Mean	Standard deviation	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12
Gender (V1)	0.4	0.49	1											
Age (V2)	1.7	0.63	0.02	1.00										
Degree (V3)	2.6	0.73	−0.03	0.18**	1.00									
Tenure (V4)	5.4	2.91	−0.06	0.66**	0.21**	1.00								
GHRM (V5)	5.3	1.28	0.00	0.06	−0.09	0.08	1.00							
Green transformational leadership (V6)	5.3	1.50	−0.01	0.16*	−0.02	0.14	0.78**	1.00						
Conscientiousness (V7)	5.5	1.33	−0.02	0.09	−0.01	0.12	0.70**	0.67**	1.00					
Neuroticism (V8)	4.4	1.29	0.08	−0.18	−0.12	−0.09	0.37**	0.28**	0.39**	1.00				
Agreeableness (V9)	5.4	1.35	−0.01	0.12	0.03	0.18*	0.69**	0.66**	0.72**	0.43**	1.00			
Extraversion (V10)	5.3	1.31	0.01	0.09	0.01	0.11	0.67**	0.63**	0.77**	0.48**	0.80**	1.00		
Openness to experience (V11)	5.5	1.41	0.02	0.11	0.04	0.18*	0.65**	0.64**	0.79**	0.40**	0.79**	0.75**	1.00	
Employees' green behavior (V12)	5.4	1.27	0.01	−0.02	−0.06	−0.02	0.82**	0.71**	0.69**	0.36**	0.73**	0.73**	0.71**	1.00

Notes **. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed)

Table 3 Regression results

	GHRM		Employees' green behavior			
	Model 1		Model 2		Model 3	
	Beta	Sig	Beta	Sig	Beta	Sig
Gender	0.00	0.99	0.01	0.83	0.01	0.81
Age	−0.04	0.49	−0.07	0.22	−0.05	0.31
Degree	−0.07	0.10	−0.02	0.65	0.02	0.66
Tenure	0.01	0.83	−0.08	0.17	−0.09	0.09
Openness to experience	−0.07	0.55	0.04	0.69	0.08	0.42
Conscientiousness	0.19	0.13	0.39	0.00	0.30	0.01
Extraversion	0.06	0.60	0.13	0.28	0.10	0.35
Agreeableness	0.13	0.32	−0.02	0.91	−0.08	0.47
Neuroticism	0.07	0.16	0.01	0.78	−0.02	0.62
Green transformational leadership	0.55	0.00	0.37	0.00	0.09	0.14
GHRM					0.51	0.00
Adjusted R^2	0.66		0.67		0.75	
F	39.23	0.00	40.19	0.00	54.97	0.00

Discussion and Implications

Prior studies (e.g. Muisyo et al. 2021; Pham et al. 2019; Tosun et al. 2022; Jia et al. 2018) have found associations between green transformational leadership and green creativity (e.g. Jia et al. 2018; Li et al. 2020; Chen and Chang 2013). However, limited studies have investigated the influence of green transformational leadership on green behavior (Robertson and Barling 2013). Further, little is known about the mediation role of GHRM in the link between green transformation leadership and employees' green behavior. Meanwhile, the big five personality traits have been well validated in green behavior literature; however, their results are inconsistent and may not applied to the case of employees in hotel industry in emerging economies such as Vietnam. This study examined these issues by examining how transformational leadership influence employees' green behavior via GHRM. It also extended the organizational factors with personality traits in explaining employees' green behavior.

Prior studies (e.g. Hirsh 2010; Soutter et al. 2020) found that all five personality traits were significantly associated with green behavior. In this study, only conscientiousness significantly affected employees' green behavior, while the other four traits did not have significant influences. In the context of the hotel industry in an emerging economy such as Vietnam, people are still more concerned about economic development than the environment. Thus, only highly conscientious individuals, who have a high level of social investment and take obligations to protect the environment seriously, have strong green behavior.

The results confirmed the significant effects of green transformational leadership and GHRM on employees' green behavior. The findings indicate the essential role of GHRM in undertaking leaders' green vision, inspiration, and motivation and in stimulating employees to achieve leaders' goals. Particularly, GHRM fully mediated the link of green transformational leadership to employees' green behavior. Therefore, HR functions are indispensable means for leaders to communicate their green strategies and visions to employees and promote their employees toward environmental sustainability. Regarding practical implications, this study suggests that the government and hotel industry should invest in practices to raise employees' consciousness and commitment to environmental sustainability. Managers should provide clear visions, strategies, and practices to guide low-consciousness employees to conduct environmental protection activities. In addition, managers should apply transformational leadership to guide GHRM and stimulate employees' green behavior. Managers should act as messengers or representatives of corporates' green visions. Companies must also align their green vision with their long-run strategies and GHRM practices (Jia et al. 2018).

This study is subject to some limitations. First, this study only uses cross-sectional data; future research should conduct a longitudinal analysis to deeply understand the process of organizational factors affecting employees' green behavior. Second, the influences of organizational strategies and practices on employees' behaviors do not always yield desired outcomes as it depends on employees' perception of these strategies or practices (Nishii et al. 2008). From a psychological research, people perceive reality differently; therefore, not all employees have the same interpretation of leaders' directives and human resource practices (Nishii et al. 2008). Thus, personal factors may change perceptions about the association between organizational practices and employees' green behaviors (Dumont et al. 2017). Future research should examine the moderation effects of the personality traits on the link between GHMR and employees' green behavior, as the strength of this link may be different with different scores of employees' personality traits. Finally, although the sample size of 195 respondents is appropriate for regression (Hair et al. 2010), future research should test the model with a larger sample size to better generalize the population.

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Sustainability Starts with HR: Exploring Green HRM Practices in the UAE

Nitin Patwa and Daisy Mui Hung Kee

Abstract This book chapter highlights the significance of incorporating green human resource management (GHRM) practices to create value for stakeholders. Specifically, it focuses on identifying and evaluating factors that contribute to the successful implementation of GHRM in the United Arab Emirates (UAE). To examine the relationship between GHRM pillars and its adoption, we employed structural equation modeling (SEM) and assessed model fitness using ADANCO 2.1. The five pillars of GHRM—green recruitment, green reward, and benefits, green performance management, green training and development, and green employee relations—were found to be strongly related to the adoption of GHRM. The results suggest that implementing GHRM can have a significant impact on stakeholders' value creation, underscoring the importance of adopting sustainable HR practices in the workplace.

Introduction

Green human resource management (GHRM) is an innovative approach to stakeholder management aimed at promoting environmental sustainability and maintaining ecological balance (Malik et al. 2020). It is a key enabler of organizational sustainability (Rubel et al. 2021a; Yong et al. 2020; Dumont et al. 2017), and recent adverse impacts of development on the environment have highlighted the need for GHRM.

According to Renwick (2012), employee engagement is critical for the sustainability of GHRM. This book chapter aims to establish the relationship between HRM practices and environmental management to identify the critical role of customers

N. Patwa (✉)
SP Jain School of Global Management Dubai, Mumbai, Singapore, Sydney, Dubai, United Arab Emirates
e-mail: nitin.patwa@spjain.org

D. M. H. Kee
School of Management, Universiti Sains Malaysia, 11800 Penang, Malaysia
e-mail: daisy@usm.my

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as significant stakeholders in environmental sustainability. Employees tend to align their behavior toward the environment with the organization's commitment to green management (Ye et al. 2022), and several studies are underway to understand the significance of maximizing employee involvement in environmental management (Rubel et al. 2023, 2021a, 2021b). Rubel et al. (2023) also found that socially responsible HRM practices positively influence hotel employees' environmental performance through the mediating roles of green knowledge sharing and environmental commitment. To achieve environmental sustainability, organizations require a committed workforce to GHRM.

GHRM is a relatively new area that requires further research, especially in developing economies in Asia. Studies are ongoing in Malaysia, India, and China to examine the relationship between GHRM practices and employee engagement in environmental and ecological matters (Stahl et al. 2020). Sustainability is a significant challenge for all organizations today, irrespective of their market concentration, to remain competitive and create value in their respective sectors (Dutta 2012). Research has shown that GHRM is vital in managing stakeholder relationships, attitudes, and behavior through predetermined policies and practices grounded in sustainability, reflecting the organization's culture (Sudin 2011).

Recent studies have explored the factors that affect the adoption of GHRM practices in organizations. For example, Hu et al. (2022) investigated the role of top management support in promoting GHRM practices in Chinese firms. Similarly, Meng et al. (2021) examined the influence of organizational culture on the implementation of GHRM practices in Malaysian firms. Another emerging area of research is the potential of circular economy and solidarity economy approaches in GHRM to promote sustainability and environmental justice (Lombardi et al. 2022; Singh et al. 2021).

Given the importance of integrating environmental management (EM) with HRM, it is imperative to examine the organizational readiness for adopting GHRM practices. This study aims to identify how adopting GHRM influences value creation and examine the driving factors for its implementation in an organization. The study will also explore the potential of circular economy and solidarity economy approaches in GHRM to promote sustainability and environmental justice and investigate the role of top management support and organizational culture in facilitating the adoption of GHRM practices.

Literature Review

Organizations take action to demonstrate several values and corporate images, which affect how they are perceived by existing and potential employees and implicitly display what it would be like to work for them (Shen et al. 2016). In contemporary research, global concern and environmental awareness have increased attention to GHRM. The development of GHRM includes not only awareness of environmental concerns such as waste reduction, resource management, and health and

safety but also improvement in the economic and social well-being of employees and organizations (Mariappanadar et al. 2022).

Academic scholars have suggested four forms of sustainable HRM that can effectively contribute to solving today's sustainability challenges (Aust et al. 2019). The four types of HRM include GHRM, socially responsible HRM, triple bottom-line HRM, and common good HRM (Stahl et al. 2020). This research focuses on GHRM, which focuses on environmental sustainability in business organizations. GHRM can contribute to achieving sustainability goals, enhancing human and corporate sustainability goals, and has drawn the attention of business organizations (Ehnert 2009; Hartog et al. 2008; Pfeffer 2010). Socially responsible HRM is the first type of sustainable HRM, which aims to mitigate negative business impacts and risks. Sustainable HRM designs activities that lead to positive environmental and social outcomes, intending to achieve economic outcomes (Yong et al. 2020).

The second type of sustainable HRM is GHRM, which increases the organization's and employee's understanding of environmental and social problems and economic well-being (Ahmad 2015). In addition to the four forms of sustainable HRM mentioned, there is growing recognition of the importance of incorporating solidarity economy principles in HRM practices. The solidarity economy is an alternative economic model that prioritizes social and environmental objectives over profit maximization and promotes collaboration, cooperation, and mutual aid among individuals and communities (Moulaert 2005). GHRM is the use of HRM policies to encourage organizations to use sustainable resources and to support the causes of environmental sustainability (Marhatta and Adhikari 2013).

The third type of sustainable HRM is triple bottom-line HRM. Connecting HR values to the organization's triple bottom line can establish a sustainable market advantage and develop the capacity for positive change—in economic, social, and environmental terms. The fourth type is common good HRM. It uses HRM expertise, skills, information, and behaviors to contribute to the common good and help solve significant challenges. Common Good HRM offers resources for all stakeholders to engage and represents a competitive workforce to attain locally oriented HR solutions to complex global challenges.

Categorizing sustainable HRM types based on specific dimensions allows scholars to systematically address significant sustainability challenges and develop design principles for a Common Good HRM (Renwick et al. 2012). Given the critical role of 'greening' functions in improving environmental performance, aligning HRM activities with environmental management is vital (Ambec and Lanoie 2008). Local cultural approaches may influence this alignment, including value-based, strategic, or defensive routes based on business conditions (Cohen et al. 2012). Therefore, there is a need for greater consistency in the alignment and positioning of the environmental and HR functions. Studies have shown that HR directors' commitment to the environment can accelerate employee engagement without recognizing trade unions, while close collaboration with unions is essential to ensure full employee engagement with new initiatives (Renwick et al. 2012).

The growing awareness of the importance of sustainability has prompted management to prioritize eco-friendly operations. To this end, GHRM practices recommend

utilizing green teams to tackle environmental concerns, generate innovative ideas, and facilitate environmental learning (Haddock-Millar et al. 2016). By challenging conventional approaches, employees with a sustainability-focused mindset who support the organization's environmental values can play a crucial role in branding companies as 'Green Organizations.' Therefore, it is imperative for companies to attract and retain employees who are passionate about sustainability and capable of contributing to the achievement of sustainable HRM practices (Renwick et al. 2012).

Green Recruitment

The main goal of recruitment and selection is to attract potential applicants and hire them as employees for a given organization (Jabbour and Santos 2008). To achieve this goal, the organization should focus on building a green reputation to attract highly qualified employees with a sustainable mindset. Before starting the recruitment process, the organization must brand itself as a green organization, which will primarily inspire the image that the organization is environmentally responsive.

Recruitment practices can support effective green management by ensuring that recruits understand the organization's green culture and share their environmental values (Jackson and Seo 2010). An essential benefit of human resources and sustainability is recruitment and satisfaction (Baruch and Holtom 2008). According to John Sullivan, "Green Recruitment is an innovative idea through which companies leverage their environmental stance, using it as an important recruitment strategy." Green recruitment is the process of hiring individuals with knowledge, skills, approaches, and behaviors that identify with environmental management systems within an organization (Wehrmeyer 2017). The recruitment process influences the quantity and diversity of candidates for a specific vacancy (Jabbour and Santos 2008). Attracting high-quality employees is crucial for firms that want to achieve specific performance. Graduates and other job applicants pay attention to the company's environmental management practices and performance and use such information when deciding where to apply. Organizations have started to recognize that gaining a reputation as a green employer is an effective way to attract new talent (Phillips 2007). Rubel et al. (2021a) found that green HRM practices, such as green recruitment, have a positive impact on green service behaviors, and this effect is mediated by green knowledge sharing.

Building a Green Reputation: The organization should build a green reputation to attract highly qualified employees with a sustainable mindset (Yong et al. 2020). The thought should primarily inspire the image that organizations build in the market that these organizations are environmentally responsive (Kapil 2015). The study identified how organizations attracted responsible employees. Their study adopted a theoretical approach and arrived at a model that indicated that when there is an equilibrium between socially responsible and socially irresponsible firms, then motivation among recruits to join the companies would be higher towards green firms

(Brekke 2008). The organization's environmental commitment adds to its company profile (Grolleau 2012). Their primary survey found that professionals were more concerned about the company's environmental strategy. Organizations can consider adopting solidarity economy principles alongside their green reputation-building efforts to attract and retain responsible employees who prioritize environmental and social responsibility.

Employee Participation: Organizations must focus on selecting and hiring employees who support and show interest in the environment (Renwick 2012). Recruitment practices can support effective green management by ensuring that recruits understand the organization's green culture and share their environmental values. Employee participation in green initiatives increases the chances of better management by aligning employees' goals, capabilities, motivations, and perceptions with green management practices and systems. Several workers in their study concluded that individual empowerment positively influences productivity and performance and facilitates self-control, individual thinking, and problem-solving skills (Renwick 2012).

Green Experience: Green experience means selecting applicants who have engaged in greening as consumers under their private life domain. During the shortlisting of candidates, the employee selection process should grant higher chances of being selected for environmentally committed candidates who were involved in previous related green initiatives earlier than those who were not involved in such initiatives in the past (Jabbour and Santos 2008).

Hypothesis H1: *Green Recruitment influences the adoption of GHRM*.

Hypothesis H6*: Green Recruitment influences the Development of Green Relations Among Staff*.

Hypothesis H7*: Green Recruitment influences the process of Green Performance Management*.

Green Training and Development

Green Training and Development (Green T&D) aims to improve employees' awareness and knowledge of environmental issues, build a positive attitude, take a proactive approach toward environmental concerns, and develop competencies to conserve energy and reduce waste (Zoogah 2011). The Green Training Program includes all the knowledge, activities, and skills needed to teach employees how to reduce wastage, efficiently use organizational resources, and minimize elements that negatively affect the environment. The training program should consist of workshops, master classes, sessions, or simulations so that employees obtain knowledge regarding environmental management in their organization. Rubel et al. (2021b) suggest that Green HRM practices and supervisor pro-environmental behavior can enhance employees'

perception of a green work climate, which in turn can foster a positive attitude and behavior towards the environment.

The Green Orientation Program should be developed and aimed at all organizational levels. The proper education program should be provided to all members of the organization, not only those related to the environmental departments, to boost employees with enough green knowledge and skills through a training program to be more responsible and attached to environmental issues (Wehrmeyer 2017). Moreover, it pursues green initiatives activities and motivates employees to participate responsibly in environmental projects. At the same time, trained knowledge and skills help employees understand how to participate effectively in green opportunities at work. Thus, Green Training can enhance employees' awareness of pro-environmental activities in the workplace.

Stewardship is a mutual learning culture that helps employees think about green behavior and awareness among themselves, creating a supervising atmosphere and increasing awareness of environmental issues (Saeed et al. 2019). In addition, many formal and informal communication channels between employees can spread green culture and provide a relaxed context for developing their green attitudes and knowledge. For example, GHRM helps employees develop potential solutions to environmental problems through supervisor attitudes toward employee engagement (Ramus 2001). Furthermore, it creates eco-friendly managers through this training session so workers under supervision can reach them without hesitation. Employees can educate customers about the advantages of becoming Earth-friendly and purchasing green products (Deepika 2003).

Increasing employee competency is vital in understanding and enhancing the green competency of individuals, which can significantly improve the GHRM role in its functions, such as hiring and training employees towards the green objectives of firms. In addition, green competency always motivates individuals to ensure they only engage in resource-conserving and environmentally friendly activities. Knowing people's green competencies will be especially useful not only for developed countries but also for developing economies such as China, which are now ready for a green movement in the face of long-term environmental degradation (Tan and Lau 2010; Tantawi et al. 2009; Zhao et al. 2014).

Hypothesis H2: *Green Training and Development influences the adoption of GHRM*.

Hypothesis H8: *Green Training and Development influences Green Relations among Staff*.

Hypothesis H9: *Green Training and Development influences Green Performance Management*.

Hypothesis H10: *Green Training and Development influences Green Rewards and Benefits.*

Green Performance Management

Green Performance Management (Green PM) is a system that helps organizations understand and evaluate their employees' environmental performance activities

(Jabbour and Santos 2008). Research shows that transforming environmental goals into action plans for all employees through Green PM is essential (Milliman 2017). Clear Green PM indicators are crucial, which means setting green standards for all employees in their performance assessment, addressing environmental thinking, environmental responsibility, carbon emissions reduction, environmental issues, and policy delivery (Farooq et al. 2022). Assessing managers' Green PM results highlights their role in environmental management, which can lead to their increased responsibility for Environmental Management (EM) performance. Research suggests identifying Green PM results and encouraging managers to take responsibility for EM performance (Tang et al. 2018).

The most critical aspect of PM is performance evaluation. In addition to meeting the reliability, feasibility, and fairness criteria, practical performance assessment provides valuable feedback to employees and supports the continuous improvement of the organization's environmental results (Jackson and Seo 2010). Job descriptions should align with Green tasks and goals.

Environmental Responsibility involves green employee engagement, which gets described as "creating an environment in which people influence decisions and actions affecting their work". It also involves collecting feedback from employees to improve existing practices, acting as a motivation tool to make employees more responsible and improving their cooperation in greening the organization. Employee involvement in organization greening has been reported to improve critical environmental management outcomes such as efficient resource use, waste reduction, and pollution reduction in workplaces (Florida and Davison 2001). Sharing appraisal outcomes with employees on their progress toward environmental targets is crucial for their motivation and increases their engagement in EM responsibilities (Govindarajulu and Daily 2004).

Communication of Environmental Policy is also crucial. Ramus and Steger (2000) examined the relationships between environmental policy and direct supervisory support behaviors in promoting employee-led environmental initiatives. The authors revealed that organizational and supervisory encouragement factors are necessary for employee environmental creativity. If supportive management behaviors and company communication of a corporate vision of sustainable activity were present, more environmental initiatives from employees were found. Other ways to encourage employees are to pursue green commuting habits, such as allowing flexible work weeks, establishing a carpool program, discounted free transportation passes, and adding car sharing as an employee benefit.

The Green Information System is a structural model that depicts the impact of such systems on environmental, economic, and operational performance. The findings indicate that Green Information Systems have a positive and direct impact on environmental, economic, and operational performance. Furthermore, Green Information Systems also indirectly impact operational performance through environmental performance. The evidence suggests that manufacturers need to develop Green Information System capabilities to improve environmental and operational performance. The results support the proposition that Green Information Systems are necessary to achieve environmental and economic sustainability (Bhadauria 2014).

Hypothesis H3: *Green Performance Management influences the adoption of GHRM.*

Hypothesis H11: *Green Performance Management influences the Development of Green Relations among Staff.*

Hypothesis H12: *Green Performance Management influences Green Rewards and Benefits.*

Green Rewards and Benefits

Employee motivation plays a crucial role in the success of green HRM rewards and benefits (green R&B) programs. Bonus programs that recognize contributions to the organization's environmental values have proven to be effective in motivating employees to give their best efforts at work, as motivation directly influences performance. By offering better rewards, recognition, and environmental care, companies can encourage employees to participate more actively in eco-friendly activities (Ahmad 2015).

Furthermore, generating eco-initiatives can increase employee commitment to environmental management programs. When employees have the opportunity to take the initiative and receive rewards for their efforts, they become more engaged in environmental activities and are more likely to adopt eco-friendly behaviors.

To create a culture of sustainability and environmental responsibility in the workplace, organizations should focus on developing green R&B programs that motivate employees and incentivize them to take eco-friendly initiatives. Green HRM rewards and benefits play a critical role in supporting environmental activities, aligning individual interests with organizational goals and motivating employees to give their best efforts to achieve these goals. By incentivizing employees who achieve eco-friendly performance with promotions or higher pay for finding ways to reduce waste and pollution and adopt environmental values, organizations can encourage employees to embrace a green culture. Moreover, green performance management, in partnership with green R&B, can foster an environment in which employees feel motivated to take green initiatives, further contributing to the development of a green culture within the organization.

Employee rewards programs that offer bonuses to those who contribute to the organization's environmental values are effective in motivating employees to give their maximum attention and effort to work. By providing a range of incentives, firms can inspire green behavior, leading to maximum effort and attention from employees. Recognition and rewards for environmental care can encourage employees to participate more actively in eco-friendly activities, as motivation is an essential factor influencing performance (Ahmad 2015).

Moreover, when employees are given the opportunity to take the initiative and are rewarded for their efforts in fulfilling environmental responsibilities, their commitment to environmental management programs increases. Green rewards ensure the successful implementation of eco-friendly ideas, encouraging the development of a green culture within the organization. Stakeholders also favor CEOs who generate

eco-friendly performance and receive higher salaries than those who do not (Ahmad 2015).

While rewards and incentives are effective in motivating employees and promoting eco-initiatives, it is crucial to ensure that they are free from malpractice. A fair evaluation of employees' environmental behaviors forms the basis for developing monetary incentives. Aligning green rewards with green performance management can help foster a culture of sustainability within the organization (Ahmad 2015). Additionally, monetary incentives can be offered to encourage voluntary green behaviors that are not part of the formal performance appraisal process.

Hypothesis H4: *Organizations that offer green rewards and benefits to employees are more likely to adopt green HRM practices than those that do not.*

Hypothesis H13: *Green rewards and benefits are positively associated with the development of collaborative and supportive relationships among staff members in green HRM programs.*

Development of Green Relations Among Staff

The attitudes, capabilities, morale, and loyalty of employees are reflected in their behavior. Therefore, it is crucial to align these characteristics with the goals of an organization's management practices. GHRM can help employees improve their mindset towards sustainability principles, while organizations can focus on improving their environmental management systems (Yusliz 2022). By instilling a thought of sustainability, GHRM can keep employees motivated and create a platform for them to express their ideas and contribute to a greener world. This creates a greater sense of accountability and responsibility among staff, leading to a change in thought and a going concern principle towards sustainable practices.

Employee morale is highly dependent on their motivation levels, and GHRM can include HRM policies to boost employee morale, creating a sustainable mindset towards resource consumption in the organization (Mampra 2013). This leads to a more environmentalist approach towards society and increases employee satisfaction (Tolstoy n.d.). GHRM can help organizations read employees' minds, build a sustainable mindset among them, and increase employee retention.

Employee participation and empowerment activities increase the tendency of employees to engage and share responsibilities towards their personal and professional life, leading to proactiveness towards GHRM policies and practices (Liu et al. 2018). Monetary rewards can also increase employees' commitment to an organization (Dumont et al. 2017). GHRM practices help attain a special status in society where the employee's mindset keeps them motivated, reducing the job strain and satisfying physiological needs (Liu et al. 2018).

Employee retention is vital in human resource management and planning, and GHRM can help organizations retain employees by creating a motivated work environment and fair pay. Additionally, ethical corporate behavior has become crucial in the business world, and GHRM can help implement the employer branding system

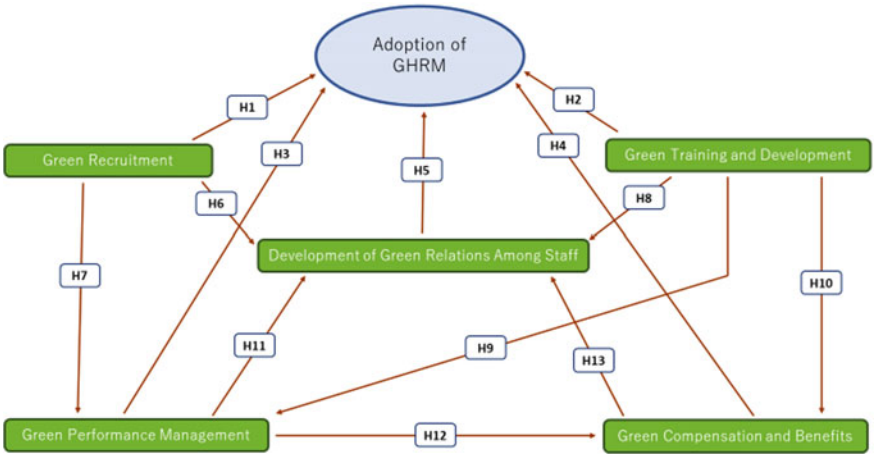

Fig. 1 Our research model

in the organization, delivering corporate social value and building the organization's goodwill (Ingram 2019).

In conclusion, GHRM plays a vital role in creating a sustainable mindset among employees and organizations. It empowers employees, increases motivation levels, improves employee morale, and helps retain employees. Moreover, it helps organizations build ethical corporate values, leading to a positive impact on society and the environment. Figure 1 below presents our research model.

Hypothesis H5: *The development of Green Relations among Staff influences the Adoption of GHRM*

Research Methodology

The research objectives of this study were to identify and evaluate the factors necessary for implementing Green Human Resource Management (GHRM) in an organization, to understand the readiness of organizations to adopt GHRM, and to examine the effect of GHRM adoption on stakeholder value development. The study targeted HR employees and middle to senior-level managers working in companies in the United Arab Emirates (UAE). We employed survey and questionnaire methods, which were adequate for a quantitative study and for examining the relationships between variables. Data were collected by distributing a structured questionnaire with closed-ended questions to the respondents. The final questionnaire consisted of 21 questions, including questions on green recruitment, green training and development, green performance management, green rewards and benefits, green relations,

and impact on value creation through GHRM adoption. Additionally, three demographic questions were included to collect information on age, gender, and management profile. The respondents were asked to rate their agreement with the statements on a five-point Likert scale anchored at one end by 'Strongly Disagree' (1) and at the other end by 'Strongly Agree' (5).

Out of the 500 questionnaires distributed, 150 usable ones were returned, resulting in a response rate of 30%. The sample used in this study comprised 150 full-time managers and executives currently working in manufacturing organizations in the UAE. The majority of the respondents were female (54%), while the remaining respondents were male (46%). Most respondents fell in the age group of 22–35 years old (33%). About 43% of the respondents were executives, followed by 25% as middle-level managers, 19% as top-level managers, and 13% as low-level managers.

Results and Discussion

The research model and hypotheses were developed and tested using structured equation modeling in ADANCO 2.1 to determine the model fitness. The hypotheses were evaluated through a t-test. The standardized root mean square residual (SRMR) was found to be 0.0564, which is considered a good fit as the criteria value of SRMR < 0.08. Construct reliability was assessed using Cronbach's Alpha and Jöreskog's rho, and all the constructs in the measurement model met the requirements with values of no less than 0.70, as depicted in Table 1. To evaluate convergent validity, the average variance extracted (AVE) was used, and a value of greater than 0.50 is recommended by Hair and colleagues (2014). The findings in Table 1 indicate that the convergent validity of all the constructs in this study is achieved as the AVE value of each construct is greater than 0.50. Discriminant validity was assessed using the Fornell-Larcker criterion, and the results presented in Table 2 demonstrate the discriminant quality of the model. There is no issue of multi-collinearity, as the square root of AVE for each construct is greater than each correlation coefficient obtained, as recommended by Hair et al. (2014). The hypothesis testing model is presented in Fig. 2, using the indirect bootstrapping method.

The findings of the path coefficient assessment for each hypothesized direct path relationship in the model are presented in Table 3. The results indicate that 11 out of 13 hypothesized relationships were supported.

The first research question examined the effects of green recruitment practices on the adoption of GHRM and revealed that green recruitment practices have a positive and significant impact. This is because implementing green recruitment practices can attract environmentally conscious employees who are more likely to support the organization's green initiatives. Additionally, providing environmentally focused training during the recruitment process can also help new employees develop a sustainable mindset from the start.

Table 1 Construct reliability and convergent validity

Construct	Jöreskog's rho (ρ_c)	Cronbach's alpha (α)	Average variance extracted (AVE)
GHRM adoption	0.9318	0.9083	0.7324
Green Recruitment	0.8974	0.8286	0.7448
Green T&D	0.8824	0.8002	0.7144
Green PM	0.8776	0.7909	0.7053
Green R&B	0.9012	0.8356	0.7526
Green relations	0.8934	0.8409	0.6770

Note GHRM Adoption = Green human resource management adoption; Green T&D = Green training and development; Green PM = Green performance management, Green R&B = Green rewards and benefits

Table 2 Discriminant validity (fornell and larcker criterion)

Construct	GHRM Adoption	Green Recruitment	Green T&D	Green PM	Green R&B	Green Relations
GHRM adoption	**0.7324**					
Green Recruitment	0.5680	**0.7448**				
Green T&D	0.6541	0.5519	**0.7144**			
Green PM	0.5577	0.5837	0.6390	**0.7053**		
Green R&B	0.5600	0.6303	0.5778	0.6148	**0.7526**	
Green relations	0.5709	0.6519	0.5629	0.5763	0.6092	**0.6770**

Note GHRM Adoption = Green human resource management adoption; Green T&D = Green training and development; Green PM = Green performance management, Green R&B = Green rewards and benefits

Values in diagonal and bold represent the square root of AVE, while those of off-diagonal values represent the simple bivariate correlations between the constructs

The second research question investigated the effects of green T&D practices on the adoption of GHRM. The study found that green T&D has a positive and significant effect on the adoption of GHRM. This is because green T&D enhances the employees' understanding of environmental issues and increases their awareness of the organization's commitment to sustainability. By providing green T&D opportunities, organizations can encourage employees to develop the skills and knowledge needed to support sustainable practices within the organization.

The third research question examined the effects of green PM on the adoption of GHRM. The results showed that green PM positively and significantly affects the adoption of GHRM. This is because green PM involves providing employees with regular feedback on their environmental performance and encouraging continued improvement. By implementing green PM practices, organizations can reinforce the importance of environmental sustainability and ensure that employees are held accountable for their environmental impact.

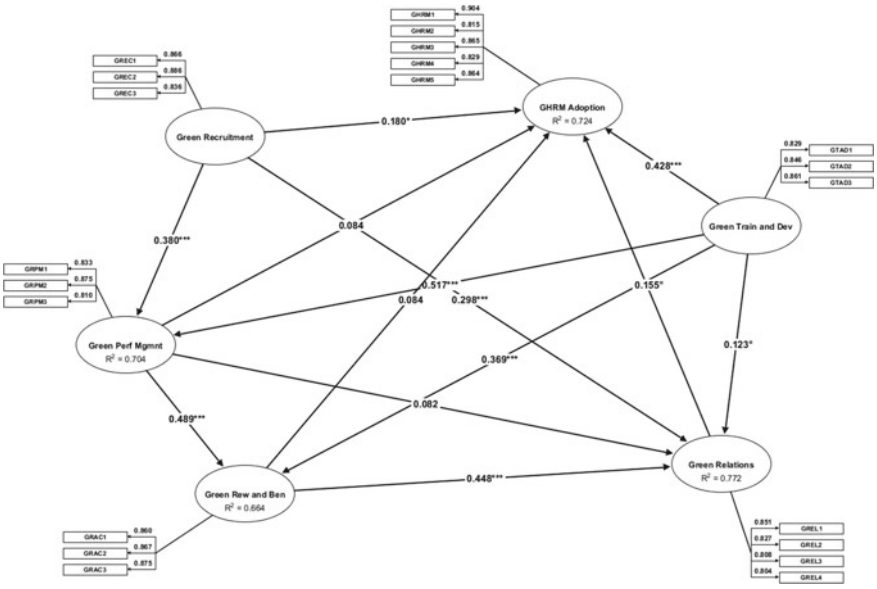

Fig. 2 Hypothesis testing model using the indirect bootstrapping method

The fourth research question investigated the effects of green R&B on the adoption of GHRM. The study found that green R&B positively and significantly affects the adoption of GHRM. This is because green R&B involves providing employees with incentives and recognition for taking environmentally friendly actions. By using compelling motivations to encourage employees to take green initiatives, organizations can create a culture of sustainability that supports the adoption of GHRM.

Finally, the last research question sought to determine the effects of developing green relations among staff on the adoption of GHRM. The study found that the relationship was weak. This could be because developing green relations among staff may not be a significant factor in directly impacting the adoption of GHRM. However, building positive relationships among staff can contribute to creating a culture of sustainability that supports the adoption of GHRM.

Table 3 Results of path coefficient assessment (N = 150)

	Path relationship	Direct effect (ß)	Standard error	T-statistic	p-value	Results
H1	Green Recruitment -> GHRM Adoption	0.2910	0.0735	3.9572**	0.0001	Supported
H2	Green Recruitment -> GPM	0.3797	0.0683	5.5607**	0.0000	Supported
H3	Green Recruitment -> Green Relations	0.4120	0.0621	6.6364**	0.0000	Supported
H4	Green T&D -> GHRM Adoption	0.5926	0.0725	8.1773**	0.0000	Supported
H5	Green T&D -> Green Perf Mgmnt	0.5173	0.0718	7.2008**	0.0000	Supported
H6	Green T&D -> Green R&B	0.6223	0.0776	8.0217**	0.0000	Supported
H7	Green T&D -> Green Relations	0.4442	0.0848	5.2369**	0.0000	Supported
H8	Green PM -> GHRM Adoption	0.1713	0.0737	2.3232*	0.0204	Supported
H9	Green PM -> Green R&B	0.4888	0.0837	5.8425**	0.0000	Supported
H10	Green PM -> Green Relations	0.3011	0.0846	3.5603**	0.0004	Supported
H11	Green R&B -> GHRM Adoption	0.1534	0.0786	1.9513	0.0513	Not supported
H12	Green R&B -> Green Relations	0.4478	0.0636	7.0370**	0.0000	Supported
H13	Green Relations -> GHRM Adoption	0.1548	0.0825	1.8766	0.0609	Not supported

* *Note* GHRM Adoption = Green human resource management adoption; Green T&D = Green training and development; Green PM = Green performance management, Green R&B = Green rewards and benefits

t-values > 2.33, **significant at $p < 0.01$; t-values > 1.645, * significant at $p < 0.05$

Conclusion

The research reported here investigates the adoption of GHRM and its role in enhancing stakeholder value. Previous research emphasized the need for HRM to embrace sustainable conduct, and this study aimed to understand the impact of GHRM on value creation. Our findings demonstrate that the five pillars of GHRM have a strong relationship with the adoption of GHRM, providing valuable insights for stakeholders and organizations. While expanding the sample size and gathering responses presented challenges, the development of green relations among staff was found to be statistically significant, though negatively correlated with adopting

GHRM. However, sustaining motivated staff can contribute to both the organization and society, helping to create value for both.

Our study highlights the importance of considering the environmental dimension of HRM, as it can provide a platform for organizations' stakeholders to shine and keep customers engaged. However, some research suggests a disagreement over the effectiveness of GHRM in addressing stakeholder concerns and making a positive environmental impact. This calls for a new understanding of the purpose of HRM and the need for effective, sustainable HRM systems. As the goodwill of this research, forthcoming studies can further explore and shed light on how GHRM can provide a competitive advantage over traditional HRM, with improved parameters and design. In conclusion, this research contributes to raising awareness among HR executives and scholars about the importance of embracing GHRM to enhance stakeholder value and build a sustainable future.

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Is There a Dark Side to Green Human Resource Management? Evidence from India

Richa Chaudhary and Mantasha Firoz

Abstract The present paper attempts to explain if the outcomes of green human resource management (GHRM) are always positive (as suggested by the past studies) or is there a dark side to it? Specifically, we intend to test if GHRM leads to the attribution of different motives on the part of employees and if these motives differentially affect their sense of meaningfulness. The data collected from 106 employees working in varied industries in India and analyzed using SPSS AMOS 24 revealed that employees attribute internal and external motives to the GHRM practices of the organization. GHRM was not found to have any direct effect on meaningfulness; rather, the influence occurred through employees' attribution of motives to observed GHRM practices. Attribution of internal motives contributed to the experience of psychological meaningfulness while the attribution of external motives failed to contribute to meaningfulness. The study makes a unique contribution to what we know about the phenomenon of GHRM by offering a framework that advances our understanding of how employees make sense of GHRM and seek and find meaningfulness through it. By establishing that employees' attributions underlie their ensuing attitudinal and behavioral outcomes, our research would carry significant implications for the selection, design, and communication of GHRM practices and policies.

Introduction

Given the potential of green human resource management (GHRM) for achieving environmental sustainability, a significant rise in GHRM research has been witnessed in the last few years. A number of studies have demonstrated the positive influence

R. Chaudhary (✉)
Department of Humanities and Social Sciences, Indian Institute of Technology Patna, Bihta 801106, India
e-mail: richa.chaudhary18@gmail.com; richa.chaudhary@iitp.ac.in

M. Firoz
Goa Institute of Management, Sanquelim 403505, Goa, India
e-mail: mantashaucer@gmail.com; mantashafiroz@gim.ac.in; 1821hs08@iitp.ac.in

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of GHRM on a range of voluntary as well as discretionary green and non-green employee attitudes and behaviors such as work engagement, organizational commitment, job performance, green innovation, turnover intentions, in-role and extra-role green behaviors (Bahuguna et al. 2023; Chaudhary 2020; Dumont et al. 2017; Kim et al. 2019; Shah and Sumroo 2023; Shen et al. 2018). These evidences from the literature clearly indicate that GHRM is beneficial for the organizations pursuing environmental sustainability. However, the past micro-level studies on GHRM have mostly treated employees as a passive recipient of the organizational actions rather than agentic actors who actively interpret and shape the world around them. As people are intuitive psychologists who are likely to care less about what people do than why they do it (Gilbert and Malone 1995), it is imperative to take into account subjective interpretive processes by which individuals make sense of GHRM practices of the organization to fully comprehend the consequences of GHRM (Martinko et al. 2011).

With this background, the present study attempts to challenge the dominant assumption in the literature that GHRM always produces favorable employee outcomes. We argue that the pattern of relationship between GHRM and employee attitudes and behaviors is likely to be more complex with employee attributions of GHRM practices preceding employee attitudes and behaviors in the causal chain (Nishii et al. 2008). We explain variability in GHRM outcomes based on variability in employees' sense-making and appraisal of the motives underlying GHRM practices. The effect of GHRM practices may not be automatically positive or always as expected, it is the way employees perceive the GHRM practices and the meaning that they attribute to these practices will determine the subsequent attitudes and behaviors. Based on attribution theory (Heider 1958), it is proposed that employees may attribute internal (i.e., GHRM is practiced out of genuine concern for environment or moral obligation to contribute to environmental sustainability) or external (i.e., GHRM is implemented due to managements' intent to cut cost or earn reputational benefits or competitive and institutional pressures) reasons to the GHRM practices of the organization, resulting in different positive as well as negative consequences. We attempt to develop and test a model that integrates attribution theory into GHRM and employee outcomes relationship to explain differential consequences of GHRM practices. Particularly, this study aims to develop and test an integrated process model focusing on how GHRM practices of the organization shape employees' attributions of motives underlying them which in turn affects the degree of psychological meaningfulness, an essential psychological condition for work engagement (Kahn 1990; Saks 2006), which is an antecedent to a range of desirable employee attitudes and behaviors such as innovative behavior, job satisfaction, job performance, organizational commitment, organizational citizenship behaviors, and voice behaviors (Bakker and Bal 2010; Bakker et al. 2004; Gierveld and Bakker 2005; Saks 2006; Slatten and Mehmetoglu 2011; Halbesleben 2010).

This research study aims to enhance theory building on GHRM by modeling the impact of employee attributions of GHRM practices on employee outcomes using attribution theory. The model attempts to explain if the outcomes of GHRM are always positive (as suggested by the past studies) or is there a dark side to it? The

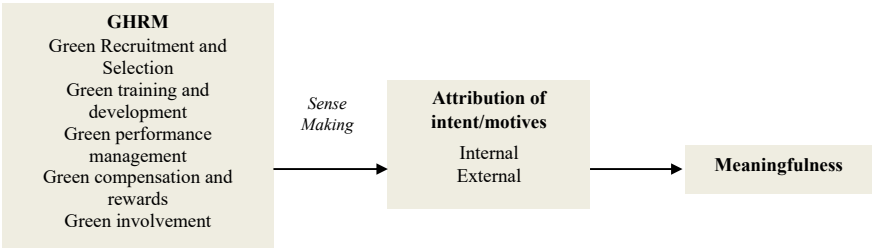

Fig. 1 Hypothesized research model

model offers a multi-faceted exploration of the attribution process. Figure 1 presents the hypothesized research model.

Theoretical Framework and Research Hypotheses

The present study employs the theoretical framework of attribution theory (Heider 1958), fairness theory (Ambrose 2002), and multiple needs model of organizational justice (Rupp et al. 2006) to develop the hypotheses. Borrowing from Nishii et al. (2008), we define GHRM attributions as the causal attributions that employees make with regard to the management's motivations behind implementing GHRM practices. It is argued that these causal attributions will have significant consequences for employees' sense of meaningfulness in the organization, which is a precursor to valued workplace outcomes.

In order to satisfy their basic need for control over the environment, individuals tend to attribute causes to the observed events or behaviors (Heider 1958), which, in turn, determine their attitudes and behaviors. As per the existing models of attribution theories, individuals tend to make two types of attributions to the observed behavior: internal and external, i.e., whether the behavior is a result of dispositional or environmental factors. A behavior that is caused by dispositional factors is asserted to be a stronger and more reliable predictor of observed behavior when compared to the situational factors. Applying Heider's attribution theory to the domain of GHRM attributions, we argue that employees' are likely to make sense of observed GHRM practices of the organization and attribute internal and external causation to these practices, which, in turn, will drive subsequent attitudes and behaviors. Internal GHRM attributions represent GHRM activities and practices carried out of organization's genuine concern for the environment and achieve their environmental sustainability goals, whereas the perceptions that GHRM activities are performed to reap reputational benefits, reduce cost or due to institutional pressures (competitive industrial pressures) represent external causal attributions. In line with the past research on HR attributions by Koys (1991) and Nishii et al. (2008) where internal causal attributions to HR practices were found to relate positively to employees' satisfaction and commitment, it is expected that internal attributions to GHRM practices

by the employees will more strongly relate to psychological meaningfulness while external attribution will have a neutral or negative impact on the sense of meaning.

Fairness theory (Ambrose 2002) and multiple needs model of organizational justice (Rupp et al. 2006) provide explanation for the underlying mechanism for these relationships. The fairness theory states that employees' attitudes and behaviors toward the organization are determined by the degree to which employees consider their employing organization's actions to be fair and just. The multiple needs model of justice by Rupp et al. (2006) suggests that employees' justice perceptions are not only influenced by the actions of the organizations directed toward them but also toward third party (other stakeholders). Therefore, it is expected that when employees' perceive their organizations engaging in GHRM due to internal reasons (their genuine concern for the environment), they are likely to find their job personally meaningful. Working for an organization involved in preserving environment, an important stakeholder, fulfills employees need for impactful and purposeful living. As per the multiple motives model of organizational justice, working for such an organization which cares for the well-being of others (environment) provides employees with an opportunity to contribute to a greater cause and hence, satiates their morality-based need for meaningful existence (Rupp et al. 2006). Such an organization that is making credible efforts to protect the environment through their GHRM practices earns a good reputation in the society. The feelings of pride and self-esteem that accompany membership in an organization which is well regarded by the external world assuage employees' relational needs of belongingness and consequently, enhance meaningfulness at work (Tyler and Blader 2003).

On the other hand, attribution of external motives (selfish intent to ultimately benefit the organization or institutional pressures) to GHRM practices is likely to undermine trust in organization. If employees see the GHRM activities of their employer as merely greenwashing to advance business interest, it will reduce their sense of justice, certainty, and value. When employees sniff manipulative instincts behind GHRM practices of the organization, their perceptions of meaningful living are adversely affected. As a result, attribution of extrinsic reasons to GHRM is expected to have no or detrimental effect on their sense of meaning at work.

GHRM practices have been identified in the past researches to positively influence employees' green as well as non-green attitudes and behaviors (Shen et al. 2018; Dumont et al. 2017). We expect that the effect of GHRM on employee outcomes will depend on the attributions that employees assign to such practices. Attributions of internal motives will enhance the sense of meaning whereas attribution of external motives will undermine psychological meaningfulness and consequent, attitudes and behaviors.

Therefore, it is hypothesized that:

Hypothesis 1: Perceptions of GHRM practices of the organization will make employees attribute two different motives (internal and external) to such practices.

Hypothesis 2: Internal GHRM attributions will relate positively to psychological meaningfulness.

Hypothesis 3: External GHRM attributions will have a negative or neutral effect on psychological meaningfulness.

Hypothesis 4: GHRM attributions will mediate the relationship between GHRM perceptions and meaningfulness.

Methodology

Sample and Procedure

The proposed model was tested on a sample of employees belonging to different industries in India using a cross-sectional non-experimental study design. The sample comprised individuals employed on a full-time basis at the junior, middle, and senior levels in a wide range of organizational settings in India. The respondents were selected using a purposive sampling technique based on their availability and suitability to participate in the study. The data were collected online using a self-administered survey questionnaire. The participation in the study was completely voluntary and no incentives in cash or kind were offered to the respondents. A total of 106 responses were received. Table 1 presents the detailed demographic profile of the respondents.

Measures

The survey data for this study was collected with the help of the following research instruments. The Cronbach alpha value for all the study instruments was found to be greater than 0.90, thereby, confirming the reliability of employed measures.

GHRM

Tang, Chen, Jiang, Paille, and Jia (2018)'s twenty-one items scale was employed to measure GHRM. All the responses were obtained on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). A sample scale item was "My company provides employees with green training to promote green values". $\alpha = 0.936$.

GHRM Attributions

Internal and external GHRM attributions were measured using a scale adapted from the HRM attributions scale by Nishii et al. (2008) with the help of 3-items each. The sample scale items were "My company implements green human resource

Table 1 Demographic details of the sample

Demographic variables	N (106)	Percentage (%)
Gender		
Male	64	60.37
Female	42	39.62
Age		
Less than 30 years	28	26.41
31–40 years	53	50
41–50 years	19	17.92
50 years	06	5.66
Educational level		
Under-graduation	25	23.58
Post-graduation	64	60.37
Doctorate	19	17.92
Position in the hierarchy		
Junior level	20	18.86
Middle level	45	42.45
Senior level	41	38.67
Length of the service		
Less than 1 years	10	9.43
1–5 years	63	59.40
6–10 years	19	17.92
Above 10 years	14	13.20

management practices because it is genuinely concerned about being environmentally responsible" (internal GHRM) and "My company implements green human resource management practices to produce a positive image in the marketplace and reap reputational benefits by engaging in green human resource practices" (external GHRM). $\alpha = 0.918$ (internal GHRM) and 0.921 (external GHRM).

Meaningfulness

Meaningfulness was assessed using a six-item scale by May, Gilson, and Harter (2004). The responses were obtained on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). A typical scale item was "My job activities are significant to me". $\alpha = 0.952$.

Control Variables

As literature suggests a possible linkage between socio-demographic variables and GHRM (Ansari et al. 2021; Chaudhary and Firoz 2022; Masri and Jaaron 2017; Roscoe et al. 2019), the influence of age, gender, educational level, position, and tenure in the current organization was controlled statistically while testing the proposed research model to screen the influence of extraneous variables on the results (Bernerth and Aguinis 2016).

Analytical Approach

We used various statistical techniques to test the proposed hypotheses with the help of SPSS (V.24) and AMOS (V.28). In addition to testing the nature of data and degree of association using descriptive statistics and correlation analysis, confirmatory factor analysis was conducted to verify the goodness of fit of all the measures. Finally, the proposed model with direct and indirect effects was tested using SPSS PROCESS (Model 4, Hayes 2013).

Results

Descriptive Statistics

Table 2 presents the mean, standard deviation, and inter-correlations among the study variables. As can be seen, the level of GHRM was found to be above average (M = 3.12; SD = 0.870) indicating the existence of GHRM practices in the organization. GHRM correlated positively with internal as well as external GHRM attributions.

Table 2 Mean, standard deviation, and inter-correlations

S. No	Study Variables	Mean	SD	1	2	3	4
1	GHRM	3.12	0.870	1			
2	Internal GHRM	2.82	1.225	0.647**			
3	External GHRM	2.69	1.275	0.662**	0.811**		
4	Meaningfulness	2.71	1.146	0.543**	0.654**	0.621**	1

Notes **. Correlation is significant at the 0.01 level (2-tailed). SD = Standard Deviation

Table 3 Confirmatory factor analysis

Models	χ^2	df	χ^2/df	IFI	CFI	RMSEA
Model 1: Four-factor model (GHRM; Int. GHRM; Ext. GHRM; Mean)	767.651	474	1.62	0.904	0.903	0.077
Model 2: Three-factor model (GHRM; Int. GHRM + Ext. GHRM; Mean)	790.258	477	1.657	0.898	0.896	0.079
Model 3: Two-factor model (GHRM; Int. GHRM + Ext. GHRM + Mean)	1023.04	479	2.136	0.822	0.820	0.104
Model 4: One-factor model (GHRM + Int. GHRM + Ext. GHRM + Mean)	1205.548	480	2.512	0.763	0.759	0.120

Notes χ^2 = Chi-square; df = degrees of freedom; CFI = comparative fit index; IFA = Incremental Fit index; RMSEA = root mean square error of approximation; Int. GHRM = Internal GHRM; Ext GHRM = External GHRM; MEAN = Meaningfulness

Preliminary Analysis

Before testing the hypotheses, the validity of the proposed four-factor model (GHRM; internal GHRM; external GHRM; meaningfulness) was examined using confirmatory factor analysis. As can be seen from Table 3, the four-factor model projected superior fit to the data ($n = 106$; $\chi^2 = 767.651$, $df = 474$, $p < 0.001$, $\chi^2/\text{df} = 1.620$, CFI = 0.903, IFI = 0.904, RMSEA = 0.077) compared to the three-factor, two-factor, and the one-factor models. This confirmed the discriminant validity of the model. Thus, the four-factor model structure was retained for further analysis, and other models were rejected.

The factor loadings for all the items in the four-factor measurement model were above 0.60 and the composite reliability value for each study variable was found to be above the minimum criterion, i.e., > 0.70 (GHRM = 0.930; internal GHRM = 0.918; external GHRM = 0.922; meaningfulness = 0.951), thereby, confirming the convergent validity of the model.

Common Method Variance

The results of Harman single factor test revealed that the factor analysis conducted over all the study items resulted in multiple factors and no single factor explained more than 50% of the variance, thereby, increasing our confidence that the results

were not affected due to CMV (Podsakoff et al. 2003). Further, the poor fit of the one-factor model, as obtained in the CFA results presented above, provided additional evidence against the CMV (Podsakoff et al. 2003).

Hypothesis Testing

The results of hypotheses testing are presented in Table 4. As evident from Table 4, GHRM exerted a significant positive impact on internal ($\beta = 0.646$, $p < 0.001$) as well as external GHRM ($\beta = 0.661$, $p < 0.001$). This suggests that employees' perception of GHRM led to the attribution of both internal and external motives to GHRM practices on their part. Thus, H1 was supported. Further, in line with the expectations, internal GHRM positively contributed to psychological meaningfulness ($\beta = 0.388$, $p < 0.05$) whereas external GHRM had no significant impact on experiences of psychological meaningfulness ($\beta = 0.181$, $p > 0.05$). Thus, H2 and H3 were supported.

Table 4 Total, direct, and indirect effects

Direct Effects	Beta	SE	t value	Boot LLCI	Boot ULCI	Two-tailed BC
GHRM --> Internal GHRM	0.646	0.105	8.647	0.701	1.119	0.000
GHRM --> External GHRM	0.661	0.107	9.000	0.756	1.184	0.000
Internal GHRM --> Meaningfulness	0.388	0.119	3.033	0.125	0.600	0.003
External GHRM --> Meaningfulness	0.181	0.117	1.548	−0.050	0.413	0.124
GHRM --> Meaningfulness	0.208	0.131	1.587	−0.052	0.469	0.115
Total Effects						
GHRM --> Meaningfulness	0.715	0.108	6.590	0.500	0.930	0.000
Indirect effects	**Effect**		**Boot LLCI**	**Boot ULCI**		
GHRM --> Internal GHRM --> Meaningfulness	0.330	0.116	0.115	0.573		
GHRM --> External GHRM --> Meaningfulness	0.175	0.159	−0.181	0.454		

Notes GHRM = Green Human Resource Management; SE = Standard error; LLCI = Lower limit of confidence interval; ULCI = Upper limit of confidence interval; 95% bootstrap confidence interval generated using 5000 bootstrap sample

Furthermore, it was found that GHRM exhibited no direct effect on meaningfulness ($\beta = 0.208, p > 0.05$). An examination of the indirect effects showed that internal GHRM significantly mediated the association of GHRM with meaningfulness ($\beta = 0.330$; CI: 0.115, 0.573). On the contrary, external GHRM failed to carry the effect of GHRM on meaningfulness ($\beta = 0.175$; CI: −0.181, 0.454). Therefore, hypothesis 4 was partially supported.

Discussion

In line with the expectations, the results confirmed that employees attribute two distinct motives (internal and external) to GHRM practices experienced by them in the organization. Although there are no studies in GHRM literature that have looked into the GHRM attributions of employees, these results can be compared to the studies in the HRM domain where employees were found to attribute internal and external reasons to HR practices of the organization (HR attributions) (Koys 1988, 1991; Nishii et al. 2008). Attribution of internal motives promoted psychological meaningfulness while external attribution had no impact on the sense of meaningfulness. Further, GHRM was found to exercise no direct effect on meaningfulness. The results demonstrated that internal GHRM attributions fully mediated the effect of GHRM on meaningfulness. These results support and extend the findings of past research on HR attributions where internal attributions more strongly predicted employee outcomes while external attributions contributed little to explain attitudinal and behavioral outcomes in the workplace (Nishii et al. 2008; Alfes et al. 2021; Fan et al. 2021; Guest et al. 2021). As GHRM is one of the strategies to execute corporate social responsibility (CSR), these results can be compared with some of the recent studies where attribution of intrinsic and extrinsic motives to CSR activities of the employer had differential impact on employees (Chaudhary and Akhouri 2018; Vlachos et al. 2013). Our findings can be further supported through the work of Aguinis and Glavas (2019) where they proposed that employees engage in a sense-making process leading to the ascription of multiple motives to CSR which, in turn, differentially affect their experienced meaningfulness.

Theoretical Implications

This study is novel as it provides answers to some of the most complex and extremely pertinent yet unaddressed questions on GHRM. Using the theoretical lens of attribution theory (Heider 1958), this research generates novel insights on employees' attitudinal response to GHRM practices of the organization by establishing that organizational engagement in GHRM may not always produce favorable employee outcomes. By establishing the paradoxical effects of GHRM on employee attitudes, our research deviates from the conventional GHRM research and uncovers the "dark side of

GHRM". By highlighting the pathways through which GHRM may lead to positive or negative/neutral outcomes, the study endeavors to create new knowledge and shift the debate from whether GHRM pays to when and under what circumstances. By illuminating the role of employees' sense-making process in determining their reactions to GHRM through the attributions of varied motives to GHRM practiced by the employers, this study uncovers the multi-faceted psychological processes explaining the linkage between GHRM and employee outcomes. In doing so, it addresses the black box surrounding the understanding on the pathways through which GHRM translates into favorable or unfavorable employee attitudes and behaviors. It makes a unique contribution to what we know about the phenomenon of GHRM by offering a framework that advances our understanding of how employees make sense of GHRM and find meaningfulness through it resulting in different positive as well as negative/neutral outcomes.

This research contributes to theory building in the area of GHRM by identifying that GHRM may not yield expected outcomes always but may have a negative side to it by providing empirical evidence from the cultural context of India. By analyzing the complex dynamics of nexus among GHRM practices, GHRM attributions, and meaningfulness, this research contributes to the literature on whether, why, and how different GHRM attributions influence employee outcomes. It attends to an important gap in the GHRM literature where little is known about the role of attribution processes in deciding how employees evaluate, judge, and react to GHRM by focusing on subjective interpretations of GHRM. The present investigation is one of the pioneer attempts toward exploring the role of attribution processes in understanding the consequences of GHRM for employee attitudes and behaviors. We established that the consequences of GHRM are not necessarily positive, rather, the impact is contingent on the motives that the employees attribute to GHRM practices. This is an important contribution to the nascent GHRM literature where little is known about why and when GHRM influences employees' job attitudes and performance behaviors.

Practical Implications

By establishing that employees' attributions underlie their ensuing and important attitudinal and behavioral outcomes, our research carries significant implications for the selection, design, and communication of GHRM practices and policies. It carries significant implications for designing appropriate interventions to manage the ramifications (minimize the negative effects and maximize the positive effects) of GHRM. It is recommended that employers implement GHRM out of their genuine concern to contribute to environmental sustainability to enhance the sense of meaning at work which would lead to the advantages in terms of favorable attitudes and behaviors on the part of employees. Implementation of GHRM practices out of competitive pressures or to gain reputational benefits may prove costly to the employers by reducing the sense of justice and fairness thereby eroding meaningfulness and subsequently,

inducing negative attitudes and behaviors. Also, it is important that this information is communicated to employees to clarify the real intent behind adopting GHRM to enhance the probability of them attributing internal causation to GHRM practices and maximize the human capital related advantages.

Limitations and Future Scope

The present study carries some limitations which provide important directions for future research. First, the cross-sectional nature of the survey poses constraints on the degree to which causality can be inferred. We encourage future researchers to replicate the proposed model utilizing more robust longitudinal study designs to establish the causal direction of the relationships. Second, the use of self-report measures raises the concern of CMV. Although Harman's single factor test provided evidence against CMV (Podsakoff et al. 2003), the results should be interpreted with caution. Third, since the attribution process is culturally sensitive, it is recommended to conduct the current study in culturally distinct samples to test the generalizability of the results beyond Indian settings. Further, our hypothesized model only looked at GHRM attributions as the underlying process to explain the impact of perceived GHRM on employees' perceptions of meaningfulness. Researchers may also look at the moderating influence of GHRM attributions and other contextual and dispositional factors on the relationship between GHRM and meaningfulness for deeper insights. Researchers are also encouraged to expand the model by including a range of attitudinal and behavioral variables in the model to understand the differential effect of different motives attached to GHRM by employees.

Conclusion

The current study establishes employees' GHRM attributions as an important mechanism to explain the effect of GHRM on employee attitudes (meaningfulness). It demonstrates the dark side of GHRM by highlighting that the impact of GHRM is not necessarily positive, rather, it depends on the "why" of the implementation of GHRM.

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Nexus Between Green Human Resource Management, Environmental Culture, Meaningful Work, and Organisational Pride: Empirical Evidence from Australia

Mehran Nejati and Azadeh Shafaei

Abstract While there is growing research evidence on how green human resource management (GHRM) helps organisations to realise their sustainability objectives, little is known on how GHRM impacts employees' sense of organisational pride. Employees have the tendency to be aware of cues that make them feel good about themselves. Using a sample of 508 employees from Australia, this research explores the role of GHRM as a positive cue for employees and presents the results of an empirical study which links GHRM to organisational pride through creating an environmental culture and a more meaningful work. Moreover, this study examines whether employees' perception towards CSR has any moderating effect in the proposed model. Implications of the study to theory and practice are discussed.

Introduction

Green Human Resource Management (GHRM), which involves aligning human resources practices with the environmental goals of a firm (Jackson and Seo 2010), has been associated with environmental sustainability in organisations (Renwick et al. 2008). The topic has gained prominence in the literature fuelled by major environmental problems of our time such as climate change, excessive production and consumption, and deforestation. GHRM can contribute to employees' well-being and enable an organisation to achieve a balance between its economic and environmental responsibilities (Amrutha and Geetha 2020). The role of human resources is crucial

M. Nejati (✉)
Centre for People, Place & Planet, School of Business and Law, Edith Cowan University, Joondalup, Australia
e-mail: m.nejati@ecu.edu.au

A. Shafaei
School of Business and Law, Mental Awareness, Respect and Safety (MARS) Centre, Edith Cowan University, Joondalup, Australia
e-mail: a.shafaei@ecu.edu.au

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for incorporating environmental behaviours such as improved attitudes, perceptions, cognitive judgment, and social values to amplify sustainability initiatives in firms.

GHRM includes traditional human resource practices such as recruitment, training, performance appraisal and rewards aimed at promoting an organisation's environmental stewardship. It emerges when general HRM practices are aligned with an organisation's environmental protection policies and preservation practices (Ren et al. 2018). GHRM equips organisations with "environmentally conscious, committed, and competent employees which can help them to minimise their carbon footprints through the efficient and effective use of existing resources, including telecommunication tools, less printing of papers, job sharing, and video conferencing" (Nejati et al. 2017, p. 2). Furthermore, GHRM practices align with the strategic HRM principles that support an organisation's business strategy. As the implementation of environmental management in an organisation relies on human capital, GHRM can be a catalyst in enhancing organisational effectiveness in its sustainability efforts. Besides, GHRM can positively contribute to long-term sustainable performance (Zaid et al. 2018) through fostering employees' involvement in sustainability initiatives (Jackson 2013).

The research to date has tended to focus on the environmental and economic sustainability dimension of organisations, creating an evident lack of studies relating to an organisation's social sustainability. A systematic review of the GHRM literature from 1995 to 2019 revealed GHRM-social sustainability gap within the state-of-the-art GHRM domain (Amrutha and Geetha 2020). Social sustainability refers to identifying and managing business impacts on people. As GHRM promotes environmentalism, it has the potential to impact an organisation's social sustainability through positively impacting employees' sense of meaningfulness at work and fostering a greater sense of organisational pride. Recent research by Nejati and Shafaei (2023) suggests that corporate social responsibility can foster meaningfulness through work among employees. Moreover, social responsibility practices have been linked with improved organisational pride (Ng et al. 2019).

The current research helps fill the GHRM-social sustainability gap by providing empirical evidence on the links among GHRM, environmental culture, meaningfulness through work, and organisational pride, and offering some important insights into how GHRM can help an organisation contribute to its social sustainability. In addition, when investigating the link between environmental culture and meaningful work, the study examines the boundaries of the relationship through investigating the moderating role of employees' perception towards corporate social responsibility (CSR). This study offers an explaining theory (Sandberg and Alvesson 2021) that explains logically related variables in explaining the green human resource management phenomenon. While this study examines the links between GHRM and meaningful work, given the links between GHRM and organisational sustainability, the study offers valuable insights to organisations and managers who are committed to sustainability and enhancing employee well-being.

Hypothesis Development

Green HRM and Environmental Culture

GHRM can raise environmental awareness, provide opportunities, and create the right skills for realising the sustainability agenda of an organisation (Ehnert 2009). It can therefore impact environmental culture of an organisation. Organisational culture focuses on employees' behaviours and beliefs and their alignment with the organisation's values. It refers to the values and practices shared by members within a firm. The facilitation of a culture focusing on environmental values would require the dissemination of information and practices related to sustainability (Banerjee et al. 2003). As such, GHRM initiatives can promote green behaviours and sustainability beliefs among employees (Chou 2014).

GHRM's focus on promoting environmental preservation will encourage environmentalism values and green behaviours by employees, further supporting organisational environmental ideologies. Green competencies and capabilities are essential for supporting environmental culture of an organisation (Jabbour and de Sousa Jabbour 2016). Therefore, GHRM can be a predictor of environmental culture within an organisation (Shafaei et al. 2020).

The pro-environmental activities as established by HR managers will provide necessary conditions to indicate the need and urgency for a culture that encourages the implementation of environmental policies. When employees are provided with necessary opportunities and skillset to engage in green behaviours and contribute to an organisation's environmental responsibilities, their beliefs, values, and behaviours towards environmental will be impacted contributing to a stronger environmental culture within the organisation. GHRM initiatives can therefore cascade into a culture focused on promoting sustainability (Arulrajah et al. 2016). Therefore, it is hypothesised that:

H1: *There is a positive association between GHRM and environmental culture.*

Environmental Culture and Meaningful Work

Environmental culture can be referred to as the glue that holds the organisation together in its attempt to realise its environmental objective. Environmental culture empowers employees' green innovation and can therefore foster perception of meaningfulness among employees. Research suggests innovative and supportive types of organisational culture foster perceptions of employee meaningfulness at work (Cardador and Rupp 2011). Meaningful work refers to work that is regarded as purposeful and significant by employees (Pratt and Ashforth 2003). It entails work that is personally meaningful to employees.

Meaningfulness through work can be regarded as subjective sensemaking (Aguinis and Glavas 2019) which involves identifying with the organisation's values

and/or individual job role. Environmental culture, propelled through GHRM, creates an alignment between employees' environmentalism values and those of the organisation, which can subsequently make work more meaningful. Therefore, when working within an organisation with strong environmental culture, employees are expected to find their work more important and meaningful, resulting in higher meaningfulness at work. Therefore, we hypothesise:

H2: *There is a positive association between environmental culture and meaningfulness through work.*

Meaningful Work and Organisational Pride

Pride is a self-conscious emotion caused by how individuals evaluate their internalised standards. Organisational pride is a sense of identification, self-respect and pleasure associated with the membership of one's employer (Ng et al. 2019). This self-evaluation is formed through evidencing social initiatives undertaken by the organisation and work characteristics. When employees perceive that they are engaged in a morally praiseworthy culture, they develop strong psychological orientation (Costas and Kärreman 2013) which can foster a greater sense of organisational pride.

We argue that organisational pride is an emotion that can be witnessed when employees undergo associated meaningfulness through work. The endorsement of associated group membership by the employees occurs when they are most likely to feel positive about the capability and resourcefulness of the organisation (Shariff and Tracy 2009). When employees feel a sense of meaning through work, they feel proud to be affiliated with the organisation, contributing to their sense of organisational pride. Therefore, employees are conjectured to think more highly of an organisation which provides them with meaningful work. Based on these arguments, we propose the following hypothesis:

H3: *There is a positive association between meaningfulness through work and organisational pride.*

Environmental Culture as a Mediator

Developing a new corporate culture focusing on sustainability through GHRM practices is vital to develop employees' psychological engagement. GHRM practices and processes play a significant role in transforming a company's policies. As organisations emerge themselves in an environmentally friendly workplace, employees are often motivated by such socially construed perception. Furthermore, through green competencies, skills, and motivation, focusing on creating an environmental culture can foster extra-role behaviour among employees. Environmental culture can be

seen as a strategic objective to translate GHRM practices into creating meaningfulness through work. GHRM policies and practices promote environmental culture of the organisation. These environmental-related values and beliefs can subsequently foster greater social identification with the organisation and enhance how important and meaningful employees find their work. Therefore, the following hypothesis is proposed.

H4: *Environmental culture mediates the relationship between GHRM and meaningfulness through work.*

Meaningful Work as a Mediator

Employees often experience a sense of contribution to the environment when their values, beliefs and behaviours towards the environment align with those of their organisation. Research suggests that work design and the associated altruistic values can enhance engagement in work (Saito et al. 2018). When employees perceive that their employer is working towards a greater purpose such as sustainability, is providing opportunities to strengthen environmental culture within the workplace, they find a connection between their own psychological expectations and the social structure of the organisation (Pratt 1998), and are more likely to feel a sense of organisational pride for being associated with the organisation. When employees perceive their organisation is taking a proactive role in addressing environmental issues not just at the product level but creating an active environment for the employees' participation, they develop sensemaking of positive emotion towards the organisation. Therefore, the following mediating hypothesis is proposed:

H5: *Meaningfulness through work mediates the relationship between environmental culture and organisational pride.*

Perception Towards CSR as a Moderator

Corporate social responsibility (CSR) refers to organisational actions and policies that consider expectations of various stakeholders and an organisation's economic, social, and environmental performance (Aguinis 2011). CSR represents an organisation's willingness to dedicate resources to positive societal impact. Research suggests that employees' self-concept and self-esteem will be enhanced when employees view their organisations as socially and environmentally responsible (Brammer et al. 2015). Perceived CSR will provide stimulus to employees' emotional experience, such as meaningfulness through work.

The emotional reaction to CSR is based on cognitive appraisal towards environmentally driven initiatives rather than the objective level of CSR. Corroborating emotional changes because of cognitive appraisals could eventually lead to behaviours such as meaningfulness through work that is congruent with

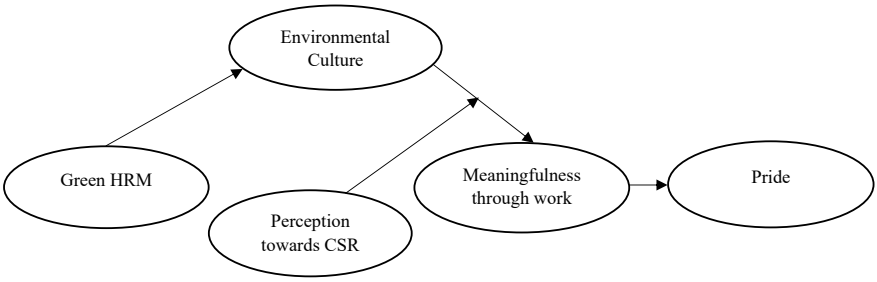

Fig. 1 Research model

environmental-related vision (Ng et al. 2019). While environmental culture fosters a positive perception about the significance of the work, this association is expected to be stronger for employees with a positive perception towards CSR. In other words, employees who consider CSR as a core responsibility of their organisation, are expected to attribute more significance to their organisation's engagement in sustainability practices and therefore will perceive a higher meaningfulness when working within an environmental culture that fosters organisational responsibility towards the environment. Therefore, we hypothesise that:

H6: *Perceived CSR positively moderates the relationship between environmental culture and meaningfulness through work.*

The following Fig. 1 depicts the research model of the current research which is empirically tested using data collected from employees in Australia.

Methodology

Survey and Data Collection

To test the research hypotheses, this study collected responses from 508 full-time employees across Australia in 2021. In terms of the respondents' profile, 53.5% of respondents were female. In addition, 67.5% of respondents were between 30 and 40 years of age, with the remainder aged between 41 to 50 years. Respondents worked in a variety of industries and sectors, including education and training (10.8%), financial and insurance services (9.6%), healthcare and social assistance (9.3%), and manufacturing (8.9%). Moreover, 47.6% of respondents held a managerial role in their organisation, with 55.3% of respondents having more than 5 years of working experience in their current organisation. The adequacy of the collected sample was verified through G*Power statistical to ensure the model achieves the statistical power of 0.80 based on the study's sample size.

Measurements

This study included four main constructs: GHRM, environmental culture, meaningfulness through work, and CSR perception. All the latent variables were measured using items adapted from earlier studies on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Green HRM was adapted from the study by Yusoff et al. (2020). Given its abstraction, the variable was measured as a higher order construct (reflective-reflective). comprising of three lower order constructs including green training (three items), green performance appraisal (three items), and green rewards (two items). Environmental culture was measured using three items adapted from Jabbour et al. (2010). Meaningfulness through work was measured using three items adapted from Spreitzer (1995). Pride was measured using four items adopted from the study by Ng et al. (2019). Lastly, we measured perception towards CSR through five items adapted from Turker (2009).

Common Method Bias

The current study was cross-sectional in its research, and therefore several approaches were used to avoid the issue of common method bias (CMB). Specifically, this study followed the suggestions by Schwarz et al. (2017) and reduced the possibility of using complex or ambiguous items to minimise CMB. Further, the study ensured that at the time of data collection, external factors did not impact study variables. The items on green HRM, meaningfulness through work, environmental culture and CSR perception were validated by experts in academia and industry. Moreover, this study used latent marker variable as suggested by Chin et al. (2013) to detect and control for any potential sources of CMB and found no evidence of CMB being a major problem in the current study.

Results

Data Analysis

This study seeks to offer a fresh perspective on the impact of green HRM on environmental culture and meaningfulness through work. Additionally, this study scrutinises whether environmental culture can mediate the relationship between green HRM and meaningfulness through work. Further, the impact of CSR perceptions on meaningfulness through work is measured. Partial least squares structural equation modelling (PLS-SEM) as a variance-based SEM method was applied in this exploratory study.

PLS-SEM is a preferred method to the traditionally used covariance-based structural equational modelling that is more restrictive. Further, PLS-SEM can predict accuracy more than other factor-based SEM in applied research (Evermann and Tate 2016). PLS-SEM predicts the dependant variable through a complex model based on the hypotheses. PLS-Sem is a popular variance-based SEM extensively used in the fields of education (Shafaei et al. 2018), accounting (Nitzl 2016), human resource management (Nejati et al. 2017) and sustainability (Svensson et al. 2018), among others. This study used SmartPLS software version 4.0.8.6 (Ringle et al. 2022).

A two-step approach was applied for the SEM analyse in the current study. First, the measurement model was analysed by examining the reliability, average variance extracted (AVE) and discriminant validity of the items in the constructs. Second, the structural model was analysed to test the study hypotheses.

Measurement Model

As the model contains a higher order construct, we first evaluated the relationships between lower order constructs and the higher order construct as measurement models using repeated indicators approach. In this step, we analysed the item loadings, average variance extracted (AVE), composite reliability (CR) and Cronbach's alpha. The measurement model also demonstrated sufficient individual indicator reliability as all items had a loading greater than 0.5. Table 1 reveals that all study constructs meet the requirement for Cronbach's alpha and CR, being greater than 0.70 (Hair et al. 2019, 2021), showing sufficient reliability. Additionally, the AVE values of the constructs range between 0.63 and 0.89, which are higher than the threshold value of 0.50, demonstrating convergent validity (Fornell and Larcker 1981; Hair et al. 2021). We used the latent variables scores (LVS) for the lower order constructs to calculate the relevant measures for the higher order construct (i.e. GHRM).

Table 1 Measurement model analysis

Construct scale	AVE	Composite reliability (rho_c)	Cronbach's alpha
*Green HRM	0.89	0.96	0.94
Green Training	0.89	0.96	0.94
Green performance Appraisal	0.88	0.96	0.93
Green Reward	0.89	0.95	0.90
Environmental Culture	0.82	0.93	0.89
Meaningfulness through Work	0.81	0.93	0.89
Organisational Pride	0.84	0.96	0.94
Perception towards CSR	0.63	0.89	0.85

* *Note* Green HRM was a higher order construct measure. Therefore, it's AVE, composite reliability and Cronbach's alpha were all measured after calculating and using the latent variable scores (LVS)

Table 2 Discriminant validity assessment using HTMT ratio

	1	2	3	4	5
(1) Perception towards CSR					
(2) Environmental Culture	0.44				
(3) Green HRM	0.33	0.83			
(4) Meaningful Work	0.38	0.35	0.29		
(5) Pride	0.35	0.44	0.39	0.70	

Using the heterotrait-monotrait ratio (HTMT) criterion (Henseler et al. 2015), discriminant validity of the constructs was established, as all HTMT values (Table 2) are below the threshold of 0.90 (Hair et al. 2019).

Structural Model

Before examining the structural model, we assessed collinearity and observed that there was no problem in the models as the values of variance inflation factor (VIF) was found to be below the recommended value of 3.3 (Hair et al. 2021). We tested the hypotheses proposed in the literature review through the PLS Bootstrapping approach. A bootstrapping with 5000 sub-samples, one-tailed and no sign changes was observed. Bootstrapping is used to test PLS-SEM estimates to draw sub-samples by replacing the original set of data as proposed by Hair et al. (2021). The path analysis (Table 3) provided support for all study hypotheses.

Specifically, we found that GHRM is positively associated with environmental culture, explaining 57.5% of the variation in environmental culture (R^2: 0.575), supporting H1. Environmental culture, subsequently, has a positive and significant

Table 3 Results of PLS-SEM

Hypothesis Pathways	Path Coefficient	t-value	p value	Decision
H1: Green HRM → Environmental Culture	0.76	33.06	0.00**	Supported
H2: Environmental Culture → Meaningful Work	0.15	2.12	0.01**	Supported
H3: Meaningful Work → Organisational Pride	0.64	18.29	0.00**	Supported
H4: Green HRM → Environmental Culture → Meaningful Work	0.11	2.11	0.02*	Supported
H5: Environmental Culture → Meaningful Work → Organisational Pride	0.10	2.07	0.02*	Supported
H6: Perceived CSR*Environmental Culture → Meaningful Work	0.07	1.65	0.05*	Supported

*Note:One-tailed level of confidence: * $p < 0.05$, (95%) $t = > 1.645$, ** $p < 0.01$, (99%) $t > = 2.33$*

association with meaningful work (R^2: 0.158), supporting H2. Meaningful work is also found to be positively linked with organisational pride (R^2: 0.403), supporting H3.

Results of the mediation analysis revealed the mediating role of environmental culture in the association between green HRM and meaningful work, supporting H4. In addition, meaningful work was found to be the mechanism through which environmental culture is linked with organisational pride, supporting H5. Lastly, we found support for the moderating role of employees' perception towards CSR in the link between environmental culture and meaningful work, supporting H6. As shown in Fig. 2, the positive link between environmental culture and meaningful work is stronger for employees with a high perception towards CSR.

To evaluate the predictive power of the proposed model, we ran the PLS predict algorithm (Dolce et al. 2017), allowing us to generate holdout sample-based point predictions for the constructs in our model and compare the prediction errors of the PLS path model against simple mean predictions. PLS predict analysis with ten folds and ten repetitions resulted in positive Q^2 value for all endogenous constructs, verifying the predictive power of the proposed model (Environmental Culture Q^2: 0.57, Meaningful Work Q^2: 0.14, Organisational Pride Q^2: 0.14).

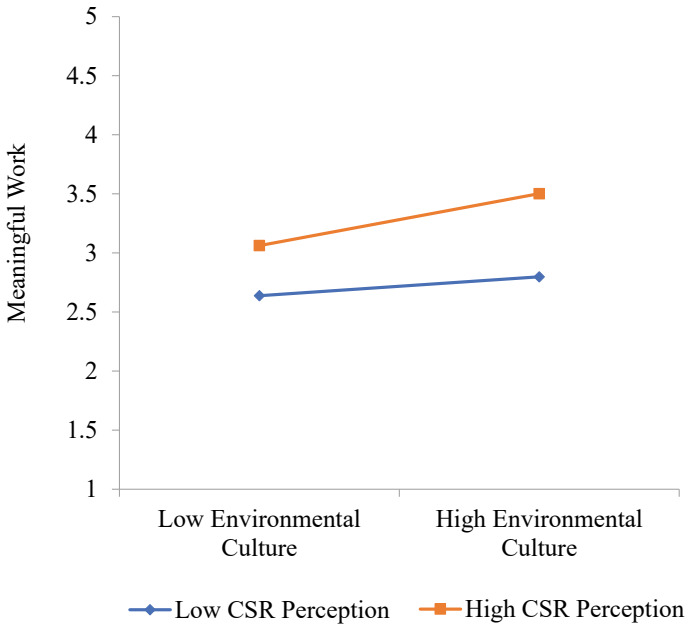

Fig. 2 Moderating role of perception towards CSR

Discussion and Conclusion

This study makes a unique theoretical and empirical contribution by examining the nexus between green HRM, environmental culture, meaningfulness through work, and organisational pride in the context of Australia. Our findings extend the current literature on the positive impacts of GHRM on employees' job-related behaviour and performance (e.g.Chuah et al. 2021; Shafaei and Nejati 2023) by demonstrating additional positive outcomes associated with GHRM. Our research revealed that GHRM is associated with improved environmental culture within the organisation, which in turn leads to meaningful work. Another important finding was that the positive relationship between environmental culture and meaningful work is stronger when employees have a higher perception towards CSR. In other words, employees who believe CSR is a core responsibility of their organisation will gain a greater sense of meaning from their work when their organisation improves its environmental culture. Moreover, improved environmental culture of an organisation creates a more meaningful work for employees which can result in a higher sense of organisational pride. Our findings offer valuable insights to managers in using GHRM and CSR as strategic imperatives to foster meaningful work and promote organisational pride among employees.

A note of caution is due here since findings of this research are limited to the current study context (i.e. full-time employees working in Australia). Therefore, these findings cannot be extrapolated to all contexts and should be generalised with caution. This is an important issue for future research. Further research should be undertaken to verify the study findings in other contexts. Moreover, in future investigations, it might be possible to use an experimental design to establish stronger causality evidence and minimise the risk of endogeneity.

While findings of the current study outline the positive impact of GHRM on employees, there is also growing body of literature suggesting the positive links between GHRM and organisational sustainability (He et al. 2021). Therefore, committing to and practicing GHRM benefits both employers and employees, creating a strong business case for organisations and human resources managers to prioritise that.

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Toward a Comprehensive Understanding of Green Human Resource Management: Theoretical Gaps and Emerging Themes

Paula Benevene, Ilaria Buonomo, and Martina Pansini

Abstract The book chapter analyzes and revises the existing Green Human Resource Management (GHRM) model by identifying theoretical gaps in four main themes: HR functions, organizational culture, organizational types and work arrangements, and normative approaches. An extended GHRM model is proposed that merges the individual and organizational dimensions with a recursive link between them to ensure the successful implementation of green initiatives. The chapter highlights the importance of considering top-down and bottom-up approaches to introduce new GHRM practices. This approach can lead to more effective GHRM initiatives aligned with organizational goals, values, culture, and employee preferences. Additionally, a collaborative and inclusive approach can foster a culture of innovation, learning, and sustainable competitive advantage. The proposed workflow introduces a reflective viewpoint for organizations to analyze their external and internal barriers and engines for GHRM application, including cultural background, leadership role, organizational features, and employee values and attitudes. Finally, the chapter emphasizes the need for a transition toward greener practices and discusses the challenges and opportunities of GHRM in the coming years.

Introduction

In the last two decades, sustainability has become an issue for companies, especially manufacturing ones, since they are believed to be the most responsible for endangering the environment. Companies are pushed in this direction mainly for

P. Benevene (✉) · I. Buonomo · M. Pansini
Department of Human Sciences, LUMSA University, Piazza Delle Vaschette 101, 00193 Rome, Italy
e-mail: benevene@lumsa.it

I. Buonomo
e-mail: i.buonomo1@lumsa.it

M. Pansini
e-mail: m.pansini@lumsa.it

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two reasons: (a) the endorsement of national laws and rules following the international declarations on environmental protection (such as the Montreal Convention in 1987, the Declaration of Rio Earth Summit in 1992, and the Kyoto Protocol in 1997); and (b) the rise of environmental consciousness among customers and stakeholders, that leads companies to gain competitive advantage while addressing environmental issues. Sustainability is commonly explained as having three dimensions: economic, referring to its financial performance; environmental, referring to preventing and reducing environmental damages; and social, referring to the well-being of stakeholders, societies, customers, and employees.

Companies' sustainability has been primarily addressed concerning the management of materials and production techniques. However, several studies have proven that human resource management (HRM) has a significant role in terms of sustainability intended in a broader sense (Kumar et al. 2020). The central role of HRM, indeed, is to endorse new practices and ways of behaving within the organization (Kumar et al. 2020). As Wehrmeyer (2017; p. 56) noted: "if a company is to adopt an environmentally-aware approach to its activities, the employees are the key to its success or failure".

A growing body of literature suggests that HRM can play a critical role in promoting sustainability within organizations. HRM practices can be designed to encourage employees to adopt environmentally sustainable behaviors and attitudes, both at work and in their personal lives (Jackson and Ruderman 2012). Furthermore, HRM can also be instrumental in developing sustainable HR policies and practices that support organizational sustainability efforts (Renwick et al. 2013). One way in which HRM can promote sustainability is by fostering a culture of environmental responsibility and encouraging employees to participate in sustainable initiatives. For example, employees can be encouraged to reduce their energy consumption, recycle waste, and minimize their carbon footprint (Shen et al. 2019). By promoting these behaviors, HRM can reduce the organizational environmental impact and promote sustainability. HRM can also be crucial in promoting sustainability through employee training and development initiatives. For instance, employees can be trained on sustainable practices and encouraged to adopt them at work and in their personal lives (Schönborn et al. 2019). Another way is using training and development initiatives. Training can build awareness and understanding of the importance of sustainability and how each employee can contribute to promoting sustainability within the organization. Another example involves engagement initiatives that can foster a sense of ownership and responsibility among employees. For example, employees can be involved in developing sustainability policies and initiatives, which can increase their engagement and commitment to promoting sustainability within the organization (Renwick et al. 2013). In conclusion, HRM can be critical in promoting sustainability within organizations. Organizations that encourage sustainable behaviors, develop sustainable HR policies and practices, and provide training and engagement initiatives through their HR area can reduce their impact and promote sustainable practices.

Sustainability and HRM

Given human resources' crucial role in delivering sustainable practices, in the last fifteen years, increasing attention has been paid to green human resource management (GHRM) (Renwick et al. 2013). Such a paradigm started from the seminal works of Ehnert et al. (2014), which started an increasing number of studies connecting corporate sustainability with HRM practices and policies. The main idea behind this approach is that HRM may turn organizational strategies on sustainability into practical managerial actions and outcomes (Jamali et al. 2009). Overall, this body of research allowed for the development of the GHRM paradigm.

Such a paradigm allowed for the individuation of a specific dimension of HRM that is becoming increasingly essential for organizations interested in contributing to a sustainable future (Afsar and Umrani 2020) while promoting its performance. GHRM is connected to organizational sustainability for several reasons. First is the need to devise and implement green practices within the organization, thus committing employees to follow the requirements defined by the management (task green behavior; Norton et al. 2017). Secondly, employees' initiative and ability to exceed organizational expectations (voluntary employee green behavior; Norton et al. 2017; Jabbour et al. 2019; Garavan et al. 2022), for instance, when paying further attention to water, electricity, and paper consumption/depletion and recycling (Stern 2000; Jamali et al. 2009). Finally, employees might devise new, more sustainable solutions to perform their tasks, thus fostering organizational greening (Chaudhary 2020). Several studies underlined the relevance of the proactive role played by employees' behaviors, attitudes, and commitment to achieve successful Environmental Management (EM) (O'Donohue and Torugsa 2016; Potrich et al. 2019). Overall, the commitment and motivation of employees are prerequisites for any organization to make a successful switch toward greening. The centrality of employees' personal values and interests in sustainability for GHRM is so crucial that many studies focus on the spillover effect between at-home and at-work green behaviors (e.g., Chen et al. 2017; Littleford et al. 2014).

It has to be noted that there is no strict definition of GHRM (Shahriari et al. 2019; Benevene and Buonomo 2020). This term is almost referred to as sustainable HRM. However, its domain has been broadly identified considering the perspectives of strategic HRM, corporate social responsibility (CSR), and EM (Randev and Jha 2019). Strategic HRM is involved because it refers to the company's strategic objectives regarding corporate sustainability, which need to be turned into concrete policies, processes, and actions through HRM. CSR is linked with GHRM because it refers to a company's social and environmental accountability (Ehnert et al. 2014). Finally, EM is interwoven with GHRM since the latter "compliments the technical aspect of EM with the "human" aspects of the organization" More than that, "… changes affected by the implementation of an EM system extend to all employees, not just those directly affected by new EM practices. Environmental issues also impact employees' personal lives. Effective EM thus requires not only compliance

with formal rules, but also employee engagement with and acceptance of voluntary initiatives" (Ren et al. 2018, p. 9).

The lack of a common definition of the process allowed for the emergence of different models of GHRM that explain which HRM functions are included in the GHRM without defining the concept.

Models of GHRM

Due to the lack of a standardized definition, several research papers define the antecedents and consequences of GHRM without relying on a theoretical underpinning or distinguishing the elements that compose such construct (e.g., Opatha and Arulrajah 2014; Renwick et al. 2016; Fachada et al. 2022; Macka and Genari 2019). This gap brought to implementing unidimensional constructs that address GHRM strategies without organizing or categorizing their dimensions. On one side, these studies showed the potentialities of GHRM within organizations. Nevertheless, conversely, the general "GHRM strategies" label is poorly informative, as it does not discriminate among HR functions.

Other studies describe GHRM using common HRM strategies and practices applied to greening issues and topics, excluding the unidimensional approach. Across these studies, the most mentioned GHRM dimensions include (a) Green Selection, Recruitment, or Hiring, i.e., recruitment practices based on green criteria; (b) Green Training or Development, i.e., training opportunities to improve green skills; (c) Green Performance management or Performance appraisal, i.e., performance appraisal based on green criteria; (d) Green Rewards, Pay, or Compensation, i.e., reward programs based on green performance. Other HR functions included in GHRM are Job analysis and Job description, i.e., whether and how the organization describes green tasks, skills, and responsibilities of job positions, and Green involvement, i.e., whether and how the organization includes employees in the delivery of greening initiatives.

According to literature reviews in the managerial and organizational fields, the mentioned strategies account almost for the totality of dimensions described as GHRM in the current literature (Jackson et al. 2011; Opatha and Arulrajah 2014; Renwick et al. 2016; Benevene and Buonomo 2020) and are frequently analyzed in the light of the AMO (Ability, Motivation, Opportunity) framework (Blumberg and Pringle 1982). In this theory, employees' behaviors arise from their ability to perform (A), their motivation to do it (M), and the opportunity to participate in organizational life through their behaviors (O). Consequently, when applied to GHRM, the AMO theory is mainly focused on identifying and developing green skills and competencies (A), measuring and promoting employee motivation for green issues (M), and involving the employee in green strategies to increase their green behaviors (O). Following this framework, the dimensions most commonly included in the GHRM practices are (1) Job analysis and description; (2) Selection, Recruitment, and Hiring; (3) Training, Development; (4) Performance management, Performance appraisal;

(5) Rewards, Pay, Compensation; (6) Involvement. Points 1, 2, and 3 mostly relate to the Ability dimension, including practices enabling employees to sustain and show green behaviors at work. Points 4 and 5 relate to Motivation by encompassing strategies to enhance employee willingness to display green behaviors. Finally, Point 6 is linked to Opportunity, as it indicates strategies to increase employees' opportunities to play a role in the greening process.

Interestingly, the AMO approach to GHRM was confirmed even when analyzing GHRM antecedents and consequences in an evidence based, systematic literature review (Benevene and Buonomo 2020). The authors showed that the GHRM dimensions could be reorganized following the AMO framework even when it was not a theoretical underpinning in the original studies. More interestingly, it showed a general convergence on the AMO-inspired GHRM model, so few studies incorporated GHRM aspects that differed from those embedded in the AMO framework. This tendency remained despite the suggestions in the literature for the potential expansion of the construct.

For example, Tariq, Jan, and Ahmad (2016) suggested addressing new areas pertinent to GHRM practices, individuating Green Employee Empowerment as a valuable dimension within the GHRM umbrella term. In their framework, Green Employee Empowerment includes practices encouraging employees' proactivity in green decision-making so that they feel in charge of greening processes. Unlike green involvement, where employees are expected to pursue green tasks, green empowerment is more related to authority delegation (Rothenberg 2003). Therefore, the authors suggest this dimension is not only a part of GHRM but even a mediator between employee personal motivations and eco-consciousness and their actual greening behaviors at work, thus acting as a lever for the greening process.

Critical Points of the Current Models and Approaches to GHRM

The knowledge about GHRM at theoretical and empirical levels is still far from exhaustive due to its relatively recent development. Therefore, several points need to be further addressed and developed. This section will describe four main issues that, to the best of our knowledge, arise from current models and approaches to GHRM. The issues regard (1) the roles and weight of the HR functions inserted in current GHRM models, (2) the role of organizational culture in promoting an authentic centrality of green and sustainability topics, (3) the organizational types and work arrangements where GHRM topics have been approached, and (4) the normative approach for GHRM within organizations.

First issue. The roles and weight of the HR functions inserted in current GHRM models

As stated above, the HR functions most commonly included in the GHRM model are job analysis and description, selection and recruitment, employee training, performance appraisal and management, rewards, and employee involvement. Current models stress that each function is aligned to GHRM, but do all the functions mentioned have the same weight in reaching sustainability?

It might be questioned whether the selection and recruitment process has the same weight as the other functions in this perspective. In other words: is it feasible to recruit employees mainly based on their skills and knowledge of sustainability and not instead based on the knowledge and skills required to perform duties and tasks required by the position to be fulfilled? Of course, the priority assigned to sustainable knowledge and skills is fundamental when hiring a person responsible or a coordinator of green activities or for the greening of the organization, but what about the other roles and positions?

Tang and colleagues (2018) describe Green recruiting and selection as individuating and retaining candidates who are sensitive to environmental issues and intend to commit to environmental performance. This definition implies a clear greening direction for organizations when recruiting and selecting candidates so that the recruiters can select candidates that align well with the organizational expectations and vision (Kane 2011). In a review published in 2019, Pham and Paillè reported eighteen possible practices for assessing the environment-related potential of a candidate, reporting low accordance in the literature in defining green selection criteria and practices. For example, some organizations may opt to address candidates' green skills and competencies in a job interview, while others their values or sensitivity to green issues. Adapting organizational processes to the internal mission, vision, and values is valuable. At the same time, the current GHRM practices are vehiculated as a prescriptive model that would encompass a standardized way to pursue the greening processes while leveraging the role of human resources within the organization. The heterogeneity in previous literature on green selection and recruitment informs about the need to acknowledge this type of difference among organizations to provide a helpful theoretical background for the greening process. A second interesting aspect emerging from the literature is that the disclosure of organizational socio-environmental values during the job interview and within the recruitment process raises the green reputation and prestige of the organization in the eye of the candidate, thus influencing the entire selection and recruitment process (Pham and Paillè 2019). Again, the organization would benefit from a precise positioning on green and sustainability issues to implement such a strategy and to individuate a straightforward combination of green skills and values to be expected in a candidate. Some organizations, such as public administrations and manufacturing firms, can rely on national and international regulations, stakeholders, and customers' pressure to structure these greening functions (Guerci and Carollo 2016). Instead, others may not receive such indications while still being required to participate in the greening process (Guerci and Carollo 2016). Finally, the external imposition of green-informed

criteria to recruit new employees does not necessarily mean the organization encompasses green values in its culture. As Guerci and Carollo (2016) reported, some organizations may use green criteria to recruit new employees only for specific positions and only when and if their performance would be penalized (for example, because adopting such criteria is compulsory in the European marketplace). Similar conditions are retrievable in the literature on the theme of work-related stress, where the significant amount of attention given to the topic by international institutions is in contrast with several barriers: from capitalist approaches to methodological lacks, from cultural barriers to confidentiality issues (Kinnunen-Amoroso and Liira 2014; Thanem and Elraz 2022). Greening practices may suffer from some of these dimensions (e.g., methodological lacks in assessing GHRM practices and cultural barriers). For these reasons, it is crucial to open a debate on adapting the GHRM paradigm in any organization and its impact on employees.

Second issue. The role of organizational culture in promoting an authentic centrality of green management and sustainability

This point stresses the role of the organizational position in greening goals, namely whether greening and sustainability issues are valued within the organization or merely respond to regulative and external pressures. This positioning, which relies on organizational values, mission, and vision, influences the interaction between employees and the organization on sustainability issues and the employee's intention to show green behaviors. The role of culture can be described from an internal point of view, i.e., how organizational culture influences employees' green behaviors, and from an external point of view, i.e., how organizational culture influences the relationship between the organization and its external context.

Regarding the culture-employee link, green behaviors are based on employees' positive attitudes toward green issues (e.g., Okumus et al. 2019) but can even be endorsed and promoted by management (e.g., Graves et al. 2013). Consistently, literature on social behaviors explains how organizational behaviors are related to organizational culture and leadership style. Consistently, these aspects should not be ignored because they show that employees entering a green-sensitive organization without personal sensitivity and knowledge about greening processes will likely change their attitudes and behaviors if required and endorsed by the organization. This means that they may sincerely adopt sustainable behaviors and, in addition to these, take them as part of their system of values, starting precisely from engaging in behaviors oriented toward sustainability (Festinger, cognitive dissonance). Here precisely lies the relevance of the GHRM since it can orient its members. Nevertheless, on the other hand, even an employee sensitive to green issues is likely to show different green performance in an organization that would endorse this attitude and awareness as opposed to an organization poorly attuned to sustainability issues. In this regard, it was shown that a green psychological climate promotes the link between employee green intentions and green behaviors (Norton et al. 2017). The potentialities of value-based fit between employees and the organization can be addressed by introducing culture-based reflections in the discourse on GHRM. For example, GHRM functions may act coercive or demotivating depending on employee

interest and personal involvement in green and sustainability issues. At the same time, GHRM practices are successful when they authentically engage employees in promoting green sustainability within the organization. Therefore, it is necessary to consider how organizational artifacts, values, and basic assumptions are connected to green and sustainability topics to widen the reach and improve the effectiveness of GHRM initiatives.

Furthermore, it could be helpful to address whether and how employees are actively involved in understanding, promoting, and re-interpreting such values and cultural assumptions to promote their value-based, authentic involvement in green issues. The influence of culture on employee individual and team-based behaviors was proven effective in several contexts (e.g., Hu et al. 2012; Chang and Lin 2015). Thus, when "prescribing" GHMR to managers, it is crucial to retrieve and assess the role of the organizational story and dynamics, above all regarding the greening and sustainability chapter (De Vries 2004).

Regarding the organization-external context link, a prescriptive approach to GHRM may interfere with the ongoing changes in terms of global interest and pressure for environmental sustainability. Consistently, when organizations limit themselves by adhering to regulations and financial requirements, they prevent themselves from taking a proactive part in the sustainability debate. It is known, indeed, that organizational decisions at any level are taken based on the actual values of the organization, so a formal adherence to greening practices may prevent innovative ideas from growing and spreading (Fotaki et al. 2020; Walder et al. 2019). In the worst scenario, a dissonance between organizational values and formal green practices may lead to a lower commitment to green practices and behaviors for employees (Peng and Wei 2018), thus losing sources of beneficial impact on the organization and society in general. Daily and colleagues (2009, p. 3) reported that "the success of important environmental programs may hinge on employee behavior that is beyond the scope of formal reward and performance evaluation systems". Overall, while the current GHRM model provides a guide to structure GHRM practices, a mere application may lead to a low integration of the greening practices in employees' everyday experiences.

Third issue. Types of organizations and work arrangements where GHRM topics have been approached

This issue focuses on the industries in which GHRM has been mainly studied in the last twenty years. Almost all studies on GHRM, explicitly or implicitly, focus on and develop models based on manufacturing sector organizations since this sector is primarily responsible for pollution and waste disposal (European Commission 2010). At the same time, sustainability cannot be relegated to the greening of the production sites. It has to reach all organizations, just like all segments and sectors of society hold responsibility over EM. Constructs such as environment-related organizational citizenship behaviors indicate that employees' greening practices and behaviors can interest any industry (Boiral and Paillè 2012). Therefore, all organizations are called to become greener when considering environmental management and sustainability.

This more general, broader call for action requires the involvement of profit and non-profit, private and public, and micro, small, and medium organizations. Such involvement fosters new reflections on the role of GHRM in promoting green behaviors and organizational sustainability, together with the need to revise its suitability across different types of organizations. It is likely that different organizations, according to their size, mission, stakeholders, and territory, will shape GHRM practices differently, thus leading to a more complex, extended model than the one the literature relies on now. For example, in organizations that host their users for an extended time and have a care-related mission, GHRM also passes through how employees promote green-sensitive practices and behaviors to the users (Akthar et al. 2022). This applies to healthcare facilities, educational organizations, and residential social services. Akhtar and colleagues (2022), indeed, showed that the impact of organizational greening initiatives to increase green behaviors in university students is moderated by the strategies of the administrative and the teaching staff to acknowledge, support, and reward students' green behaviors.

Work arrangements, as connected with the organizational size and sector, may also influence greening and sustainability processes. How the workplace is managed and organized, indeed, is an issue also from the sustainability perspective. This point becomes apparent when considering the issue of remote working. Remote working has become almost a mandatory option during the coronavirus pandemic. However, the diffusion of various forms of hybrid work is expected to stay and become a stable feature for many organizations (e.g., De Vincenzi et al. 2022). Facts and figures show that remote work may generate environmental benefits linked with the reduced need for transportation means, reducing greenhouse gas emissions (Fabiani et al. 2021; Orzel and Wolniak 2022). For example, the Polytechnic of Milan (2021) reported that workers required to do at least 2.5 days per week of agile work allow for a decrease in emissions of about 1.8 million tons of CO_2 for each agile worker. Digitalizing work is another example of an eco-friendly organization since it reduces paper use (Fabiani et al. 2021). According to Global Workplace Analytics (2015), the energy consumption rate of office equipment is twice that of home office equipment. These two examples are just some options to consider when GHRM promotes organizational greening. However, they help show again how GHRM is a requirement for every type of organization, not just the ones belonging to the manufacturing sector.

Fourth issue. The normative approach for GHRM within organizations

This issue is already encompassed in many considerations made throughout the chapter, but it is worth deepening the reflection on the use of GHRM in current literature and managerial practices. The current model of GHRM has a prescriptive approach, used to develop normative practices that turn into "green" each HR function, but can this model fit all kinds of organizations successfully?

The existing approach tries to answer the question, "How *should* an organization pursue its greening processes when it comes to involving employees?". This question implies a thorough knowledge of opportunities and barriers to greening and

individual and organizational influences on greening practices across several organizational types, sectors, and dimensions. Furthermore, it implies a proper knowledge of how the employee-organization fit would impact such greening processes. As mentioned earlier, organizations differ in type (profit, non-profit, governmental), size, and challenges when facing sustainability. Besides, organizations are in different stages and phases of their greening process: some are still at an early stage, while others have already gone a long way in this respect. Considering that we lack an approach to GHRM that allows us to assess all the mentioned dimensions, it is likely that a descriptive approach, as opposed to the current normative one, is more feasible to apply the GHRM processes in any organization effectively. For example, a descriptive approach may try to answer the question, "How *does* an organization pursue its greening processes when it comes to involving employees?". Similar questions seem more suitable to understand challenges and successes reached by different organizations and offer material eventually for developing an integrated model that can take into proper consideration all the factors for each situation. Moreover, a descriptive approach might offer differentiated solutions to organizations willing to become greener by considering best practices, effective solutions, and innovative ideas.

Possible Expansions for the GHRM Paradigm

The reflections above help individuate some dimensions that could fruitfully integrate the current GHRM model and its application within organizations. Such integrations may sustain a thoughtful implementation of the GHRM model, allowing for a broader understanding of the antecedents and potential consequences of GHRM practices in every context. Our reflection on these topics is synthesized in Fig. 1. This workflow is far from exhaustive, considering the ongoing expansion of the topics of green and sustainability within organizations. At the same time, we hope that could help open a debate on the gaps still to be filled in the research and application of the organizations' greening. The workflow encompasses two categories of GHRM antecedents: organization- and employee-related dimensions. Given the connections of GHRM with the general organizational strategy and performance, the organizational dimensions are the most represented in the workflow. These encompass the external regulations and pressures from stakeholders, the organizational values related to greening and sustainability, and general organizational features, such as type, sector, size, and implemented work arrangements. Employee-related dimensions, instead, include employees' values and attitudes toward greening issues and individual accountability toward the environment. This point is interesting, above all within organizations valuing employee involvement and participation through bottom-up processes.

Regarding organization-related antecedents, it could be helpful for organizations to analyze external regulations when planning GHRM activities. External regulations, such as environmental laws and regulations imposed by government bodies, can influence an organization's GHRM practices and guide its sustainability efforts

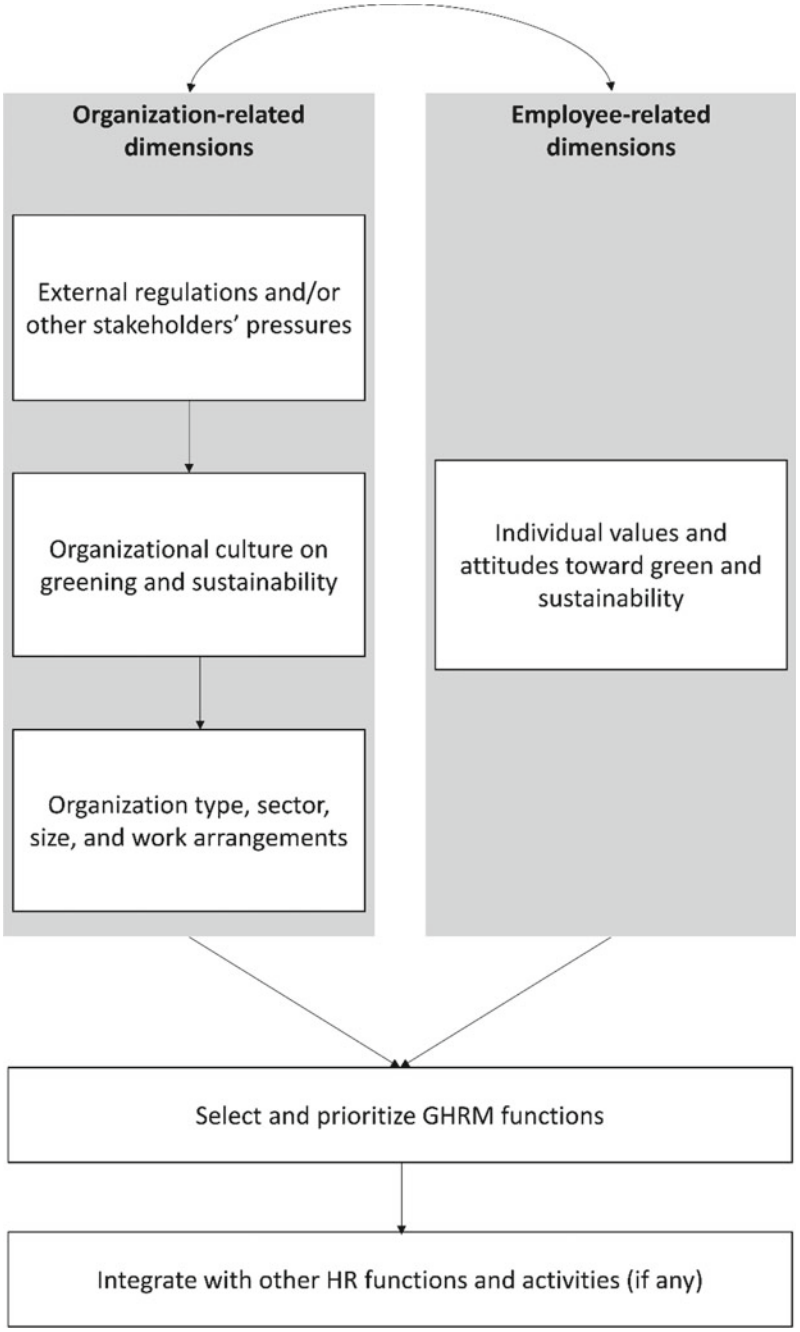

Fig. 1 Workflow for selecting and integrating GHRM functions

(Renwick et al. 2013). Organizations that do not comply with these regulations face legal, financial, and reputational consequences, which can harm their sustainability goals (Liao 2018). Thus, GHRM activities must align with external regulations for several reasons. The first reason is clear. Respecting legal requirements protects the organization from legal and financial consequences and ensures it operates within the legal framework. At the same time, organizations operating within such limits achieve sustainability goals and reach a higher reputation with current and potential stakeholders, which can contribute to long-term sustainability (Liao 2018). Overall, regional, national, and international regulation can shape any GHRM practice's strategic and operational stages.

Another key dimension to assess is organizational culture related to sustainability and environmental topics. An environmentally-oriented organization helps shape employees' behaviors, thus sustaining the HR area. With this regard, a strong culture that supports sustainability values and practices can positively impact the effectiveness of GHRM practices and improve employee engagement in eco-friendly behaviors at work (e.g., Yeşiltaş et al. 2022). In contrast, a culture indifferent or hostile to environmental issues can undermine GHRM initiatives and impede employees' willingness to participate in sustainability activities (Al-Swidi et al. 2021). For example, Al-Swidi and colleagues (2021) found that employees in organizations with supportive sustainability cultures were more likely to engage in pro-environmental behaviors than those with weaker cultures. Moreover, research has shown that organizations prioritizing sustainability and incorporating it into their culture tend to perform better financially and attract and retain top talent (e.g., Schönborn et al. 2019). While the cultural dimension is likely to impact any aspect of the GHRM practices, this point is particularly interesting for the current model of GHRM, above all considering the applicability issues on the Green selection and recruitment. It is possible, indeed, that environmentally-sensible employees are attracted by green-sensitive organizations instead of organizations having to select technically and environmentally prepared workers to advance in the selection process.

The last organizational dimension mentioned in Fig. 1 includes all the organization's objective features: type, sector, size, and specific work arrangements. As stated above, these characteristics can be highly informative when individuating good practices to implement GHRM initiatives. More specifically, the type of organization can impact the outcome the management expects to create because of the GHRM implementation. For example, profit organizations may be more interested in assessing the impact on their reputation or their cost savings (e.g., Kim and Park 2019). At the same time, non-profit organizations could be more concerned by their social and environmental impacts and how much they fit with their original mission. Finally, regulations and laws may sustain or discourage public organizations from promoting and implementing GHRM practices (Paulet et al. 2021).

Corporate sectors may shape the specific challenges and opportunities arising from the onset of GHRM practices (e.g., Zaidi and Jamshed 2021). For example, while manufacturing firms may be most interested in reducing the impact of their production sites or activities, service-based organizations may be more interested

in their carbon footprint. This difference is mirrored at the level of GHRM practices. The types of green behaviors, their intended impact, and their connection with organizational performance and mission vastly differ depending on the corporate sector. More importantly, the HR area cannot operate environment-friendly without acknowledging these peculiarities. Organizational size is another key feature of the GHRM implementation. For example, larger organizations often have more implementation resources; at the same time, they are likely to be spread across a larger territory, with more than one site, and the necessity to coordinate the efforts across all the headquarters (e.g., Piekkari 2006). On the contrary, smaller organizations may have lower resources but even be more flexible regarding decision-making and problem-solving (e.g., Bosman et al. 2020).

Finally, work arrangements can influence GHRM practices. For example, service industries are more likely to use remote working to reduce their carbon footprint (Marz and Şen 2022; Shreedhar et al. 2022). Consistently, not only remote working but even other flexible arrangements, such as office sharing and compressed workweeks, can reduce the environmental impact of an organization by reducing gas emissions, traffic, and energy consumption when compared to office-based work arrangements (Spicer and Lyons 2022).

Regarding employee-related antecedents of GHRM, individual values and attitudes toward environment and sustainability challenges are crucial for implementing green practices at work. While Green training, performance management or involvement can reach all the employees and possibly foster their attention and awareness for environmental topics, several studies showed that these practices are successful depending on the fit between personal values and organizational green goals (Zeng et al. 2020). This is true for leaders and managers' personal values as well. Leaders' values around these topics, indeed, are crucial to sustaining GHRM practices, for example, by prioritizing sustainability in decision-making, investing in green initiatives, and promoting activities to foster employees' eco-friendly behaviors (e.g., Al-Swidi et al. 2021). At the same time, green-oriented leaders are more prone to create a culture that supports GHRM and other sustainable practices, thus looping back to the organization-based dimension of our workflow.

The key point of our proposal, indeed, stands in the recursive link between the organizational and the individual dimension to ensure a successful implementation of green initiatives. Organizational psychology research has emphasized the importance of considering both top-down organizational initiatives and bottom-up employee engagement when introducing new practices (Park et al. 2021). On the organizational side, the structure and culture of the organization play a vital role in shaping GHRM practices (Jabbour et al. 2013). Furthermore, the proper involvement of top managers and administrators can provide the necessary resources and funding for GHRM initiatives and ensure alignment with the organization's broader goals and values (Al-Swidi et al. 2021). On the individual level, employee attitudes, values, and behaviors are critical in shaping GHRM outcomes (Denton et al. 2021). The individual side, indeed, can affect how GHRM practices are adopted and sustained within organizations (Liao et al. 2019). Furthermore, this approach strengthens employees' sense of ownership and responsibility for the organization's

environmental performance (Kim and Park 2019). By merging the bottom-up and top-down approaches, organizations can benefit from the strengths of both approaches and overcome their limitations. This can result in more comprehensive and effective GHRM initiatives that are better aligned with the organization's goals, values, culture, and employee's needs and preferences (Kim and Park 2019). Additionally, a collaborative and inclusive approach can foster a culture of innovation, continuous improvement, and learning within the organization, leading to a sustainable competitive advantage (Zeng et al. 2020).

Organizations and employees are in a transition phase, where organizations are at different levels of the greening process, which requires not only organizational and logistical changes but also cultural changes and attitudes from the management and then individual employees. Therefore, our workflow aims at introducing a reflective viewpoint in the discourses around GHRM within organizations so that each organization can analyze its external and internal barriers and engines for GHRM application. These would include external pressures or constraints, as well as internal resources and difficulties, such as the organizational cultural background related to greening and sustainability, the role of leadership in these processes, the organizational features, and the values and attitudes of employees, above all when in coordinating roles or strategically involved (Jackson 2022).

The question is also how to help the transition. This is the challenge of the coming years, where GHRM has to play a pivotal role.

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Leveraging Green Human Resource Management and Green Innovation into Sustainable Competitive Advantage for Small and Medium Enterprises

Yong Jing Yi, Lin Woon Leong, Feranita Feranita, Thanuja Rathakrishnan, and Calvin Cheah Wei Chieh

Abstract The importance of small and medium enterprises (SMEs) to the world economies is an indisputable fact. If SMEs are to survive and thrive in a globally competitive environment, sustainable competitive advantage is essential whereby the uncertainty and resource constraints are the norm. This study proposes a new framework for sustainable competitive advantage from the perspective of green human resource management (HRM) and green innovation, that possess important theoretical and practical research value. Building upon ability-motivation-opportunity (AMO) theory and resource-based theory (RBT), green HRM builds green employees' abilities, elevates employee engagement, and provides green opportunities for employees, while green innovation improves product design and adopts industrial processes that save energy, reduce pollution, and at the same time, is sensitive toward environmental pollution caused by business enterprises. The article ultimately provides critical perspectives of green HRM and green innovation in achieving SMEs' sustainable competitive advantage.

J. Y. Yong (✉) · W. L. Lin · F. Feranita · T. Rathakrishnan
Faculty of Business and Law, School of Management and Marketing, Taylor's University, 1, Jalan Taylors, 47500 Subang Jaya, Selangor, Malaysia
e-mail: serene.yong@taylors.edu.my

W. L. Lin
e-mail: woonleong.lin@taylors.edu.my

F. Feranita
e-mail: feranita@taylors.edu.my

T. Rathakrishnan
e-mail: thanuja.rathkrishnan@taylors.edu.my

C. W. C. Cheah
Center for American Education, INTI International College Penang, 1-Z, Lebuh Bukit Jambul, Bukit Jambul, 11900 Bayan Lepas, Pulau Pinang, Malaysia
e-mail: calvinwc.cheah@newinti.edu.my

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Introduction

Most organizations in the world are small, but their importance to the developed and developing economies and societies is undeniable. There is no consistent definition of a small and medium-sized enterprise (SME) globally, but the general idea is to determine the quantity of the employees (Organization for Economic Co-operation and Development 2020). In fact, SMEs generally recruited less than 250 employees and can be segmented into micro (fewer than 10 employees), small (10 to 49 employees) and medium (50 to 249 employees) enterprises.

Remarkably, SMEs have been playing a vital role in most economies, including accounting for approximately 90% of all businesses and generating over 50% of jobs globally (World Bank Group 2022). In addition, SMEs make a huge contribution to the GDP of the world economy. Among them, the developed countries comprise approximately 50%, whereas the developing economies take up 35% (World Trade Organization 2020). Hence, the development of the SMEs sector has become crucial as the backbone of the world economy.

However, while SMEs support significant economic growth and employment opportunities in the market, they suffer from scarcity of strategic resources and dynamic capabilities (Fabrizio et al. 2022), lack of key elements of connectivity and change in response to dynamic market forces (International Council for Small Business 2022), poorer working conditions, and lower productivity (International Labour Organization 2019). Therefore, sustainable competitive advantage becomes particularly important in order for SMEs to sustain itself and to be competent in the global competitive environment, causing SME development vital for many governments around the world.

In addition, the United Nations (UN) proposed the 2030 Agenda for Sustainable Development in 2015, containing 17 Sustainable Development Goals (SDGs) and 169 targets. The agenda embodies the expectations and priorities of the international community and is a practical plan for people, planet, and prosperity (United Nations 2015). Due to their global ubiquity and their vast importance to social, economic, and environmental development, SMEs are essential to achieving the UN SDGs; for instance, to "promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" (SDG 8), "build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation" (SDG 9), and "ensure sustainable consumption and production patterns" (SDG 12). As a result of their significant contribution and the 2030 Agenda for Sustainable Development, SMEs need to be given high priority, for SMEs are not only playing a noteworthy role in job creation and economic growth, but also driving the bandwagon of market innovation and competition.

The only downside of SMEs is that they underperform compared to larger companies in terms of productivity and employment quality, possibly due to the fact that large firms pay higher salary, provide better working conditions, and invest more in training and equipment (International Labor Organization 2019). According

to Arsawan et al. (2020), SMEs' inefficacy in managing resources has set up a disadvantage that causes the failure rate in those enterprises to increase.

In view of this, the concept of sustainable competitive advantage is increasingly recognized at the organizational level, with a perception that developing such strategy can promote success and more permanent resilience of SMEs (Anwar et al. 2018). These organizations constantly seek to explore and identify fresh business methods, such as green human resource management (HRM) and green innovation, while remaining its competitive and sustainable stand in the global market. By applying the ability-motivation-opportunity (AMO) Theory and resource-based Theory (RBT), the positive role of green HRM and green innovation will be the emphasis in achieving sustainable competitive advantage for SMEs.

Methodology

Since the main purpose of this study is to provide readers with the basis of inter-relationships between green HRM, green innovations, and sustainable competitive advantage, as to elaborate various green HRM practices and green innovations that can be incorporated to attain sustainable competitive advantage while to propose an integrated model suitable for deployment in SMEs, this study utilizes secondary data as the focus point as well as the extant literature related to the topic collected from different databases, websites, and other available resources.

Sustainable Competitive Advantage

In the highly dynamic business world, every company needs to have a creative and unique strategy to outperform other companies in the same market, which is often referred to as "competitive advantage" (Porter 1998). Competitive advantage refers to the ability of a firm to generate higher economic value than its competitors (Barney and Hesterly 2020). In other words, a company gains a competitive advantage whenever it has some influences over its competitors in attracting buyers and dealing with competitive forces. According to Barney and Hesterly (2020), there are two types of competitive advantages, namely temporary and sustainable. Their study states that when a business has a competitive advantage, high profits are brought in, but it also attracts competition that shortens the duration of that advantage. As a result, competitive advantage is only temporary for most companies.

In the face of fierce global competition and a rapidly changing and complex market environment, sustaining a competitive advantage has attracted more attention. Barney (1991) recognized that an organization gains a competitive advantage when they embark on a strategy that creates value for them that would not be exploited by their competitors. However, an organization can only claim a sustainable competitive advantage (SCA) if it possesses strategic elements that even competitors are unable

to overcome despite their best efforts. For instance, Starbucks is known for serving high-quality specialty coffee in a comfortable, welcoming atmosphere, and the store's accessibility makes it difficult for competitors to weaken or overcome Starbucks' competitive advantage (Thompson et al. 2021).

Unfortunately, there are not many businesses like Starbucks, and many of them enjoy competitive advantages that are often unsustainable. Thus, organizations begin to focus on identifying different product strategies, core competencies, and innovations to maintain competitive advantage and success. Previous studies have proven its role of effectiveness in implementing environmental strategies (Amoako 2020), leadership (Amoako 2020; Gutiérrez-Martínez and Duhamel 2019), human resources (Gutiérrez-Martínez and Duhamel 2019; Hamadamin and Atan 2019) and innovations (Arsawan et al. 2020) in building a SCA. Therefore, this chapter proposes that implementing green HRM and green innovation as environmental innovation strategies can promote SCA in the SMEs.

Green Human Resource Management (HRM)

In an interconnected global economy, where multiple users typically access multiple pools of the same resource through an interactive network (Tu et al. 2019), excessive consumption of resources can have negative environmental impacts on our society. Globalization cannot be sustained if one country prospers at the expense of others. Therefore, companies should empower people to cope with the effects of environmental challenges and be the pillar of economic improvement. The growing environmental concerns and the focus of sustainability have led to the creation of environmental strategies and reinforcement of the necessity to integrate HR practices with green/environmental elements.

Wehrmeyer (1996) emphasized the importance of HR in environmental management from three aspects: (1) promoting organizational changes, instilling environmental organizational values, developing environmental competencies and ethically addressing environmental issues; (2) incorporating the environmental elements into HR practices, recruitment, selection, training, performance evaluation, and compensation; and (3) supporting environmental management through training, communication and motivation. Furthermore, Ahmad (2015) claims that organizations across the globe are absorbing green HRM to obtain a competitive edge in the corporate world, and the adoption of green HRM in the organizations require changes in the existing HR practices of managers and employees.

Green HRM was originally conceived as the HRM aspect of environmental management (Renwick et al. 2013), which was viewed only as a people management practice and a strategic tool to encourage employee involvement in environmental management. Jabbour (2013, pp. 147–148) defines green HRM as "the systematic, planned alignment of typical HRM practices with the organizations' environmental goals". Later, scholars (e.g., Jabbour and Santos 2008; Jabbour et al. 2010; Renwick et al. 2013) proposed a set of functional and HRM in the environmental management

setting. Table 1 shows the functional and competitive dimensions of HRM in the context of environmental management.

The research field of green HRM is mostly analyzed from the ability-motivation-opportunity (AMO) theory perspective. The theory seeks to explain what characteristics lead to high performance in the workplace and is one of the most commonly used concepts in empirical research for the impact of HRM practices on organizational performance (Bos-Nehles et al. 2013). According to AMO theory, HRM enhances the employee capabilities by encouraging elite employees; while motivating them and helping them to be more committed through practices such as effective performance appraisal and rewards; and providing opportunities to the employees to participate in inspirational sharing session and relevant problem-solving activities through employee engagement programs (Renwick et al. 2013).

Table 1 Functional and competitive dimensions of green HRM

Dimension of HRM	Importance of environmental management in companies
Functional dimension of HRM	
Job description and analysis	"Including environmental issues in all the job descriptions transforms the commitment to the environment into an employees' obligation beside the usual activities of their jobs."
Recruitment	"The activities of either internal or external recruiting shows a company's preference for candidates committed to the environment."
Selection	"Selection of people committed and sensitive to the environmental issue, with a potential contribution to the environmental management of a company."
Training	"Environmental training provides employees with the needed knowledge about the environmental policy of a company, its practices, and necessary attitudes." "Environmental training of every employee of either a company or outsourcing companies, with an emphasis on the environmental aspects of each job."
Performance appraisal	"Appraisal and register of employees' environmental performance throughout their career in a company that provides them with feedback about their performance to prevent undesirable attitudes or reinforce exemplary behavior."
Rewards	"Implementation of a system of financial and nonfinancial rewards for employees with a distinct potential to contribute to environmental management."
Competitive dimension of HRM	
Grouping teams	"Grouping functional and/or cross-functional teams in order to deal with and solve complex environmental problems and to present environmental improvements."
Management of organizational culture	"The environmental issue is dealt with as a value of a company's organizational culture."
Management of organizational learning	"Stimulus to the acquisition, interpretation, sharing of information and ideas related to environmental management."

Source Jabbour et al. (2010, pp. 1057–1058)

Further into the AMO theory, previous scholars (Amrutha and Geetha 2020; Anwar et al. 2020; Muisyo and Qin 2021; Renwick et al. 2013) divided green HRM into three key components: (1) developing employees' green abilities (i.e., green recruitment and selection, green training and development), (2) motivating green employee engagement (i.e., green performance appraisal and green rewards), and (3) providing green opportunities for the employees (i.e., green employee involvement, green empowerment, and supportive culture).

Although various green HRM practices have been proposed by scholars (e.g., Amrutha and Geetha 2020; Anwar et al. 2020; Jabbour et al. 2010; Muisyo and Qin 2021; Renwick et al. 2013); however, considering the constraints faced by SMEs, not all practices are suitable for implementation in SMEs. Therefore, a set of green HRM practices that fulfill the requirement of SMEs should be implemented. For instance, Aldaas et al. (2022) examined the impact of green HRM practices (i.e., green hiring, green training and involvement, green performance management and compensation) on the environmental performance of service-based SMEs in Oman. Moreover, Islam et al. (2022) investigated green HRM practices (i.e., green recruitment and selection, green training and development, green performance management, green reward, and green involvement) and their effectiveness on millennial employee retention in Bangladeshi SMEs. In view of this, we propose several green HRM practices that are more suitable for the SME environment, including green recruitment and selection, green training and development, green performance management and compensation, and green involvement.

Green Innovation

Green innovation is often referred to the development or improvement of products, services, systems, technologies, and management practices to address the adverse environmental impacts of production and operations (Chen et al. 2018). It focuses on preventing pollution, recycling waste, and utilizing greener raw materials, and less materials during product design to reduce carbon emissions, consumption of water, electricity, and other raw materials (Muisyo and Qin 2021; Singh et al. 2020). In short, green innovation refers to environmentally friendly product and process development that reduces or minimizes damage to the environment.

The green innovation concept mainly includes three dimensions, namely, green products, green processes, and green organizational innovations (Triguero et al. 2013; Cheng et al. 2014). Cheng et al. (2014) further claimed that green innovation is viewed as an additional ecological capability built through multiple resources, such as eco-activities, eco-technologies, eco-infrastructure, and eco-management. Table 2 presents the activities associated with these three forms of green innovation.

Based on the idea of Zhang et al. (2020), green innovations are driven by an organization's internal conditions (e.g., available resources and organizational culture) and external conditions (e.g., market and legal requirement). Such efforts require

Table 2 Activities of green innovations

Dimensions of green innovations	Activities
Green Product Innovation	• Introduce a good or service that is new or significantly improved in terms of characteristics or intended uses (Triguero et al. 2013) • Create new products designed to meet market needs (Cheng et al. 2014) • For example, compact fluorescent light bulb, chlorofluorocarbon-free air conditioners, wind power (Cheng et al. 2014)
Green Process Innovation	• Develop products and services that have positive (or less negative) external impacts on the environment than alternative production processes (Triguero et al. 2013) • "Introduce new technologies into production operations and directly relate to operations" (Cheng et al. 2014) • For example, end-of-pipe (EOP) technologies: air and water pollution reduction, waste management, material recycling, incineration and energy recovery, landfill, soil remediation and environmental monitoring (Triguero et al. 2013) • For example, cleaner technologies: total waste and pollution reduction, and major changes in the overall production process (Triguero et al. 2013)
Green Organizational Innovation	• Implement new strategies and management activities to reduce environmental impact (Triguero et al. 2013) • Indirectly related to the organization's basic work activities and infrastructure, and ultimately affect the entire management systems (Cheng et al. 2014) • For example, pollution prevention programs, environmental management, and auditing systems (Triguero et al. 2013)

continuous investment and perseverance to deliver commercial benefits to the organization. Albort-Morant et al. (2016) indicated that green innovations offer two main benefits to organizations: (1) providing new business opportunities by meeting the needs of environmentally friendly customers without compromising ecosystems, and (2) creating environmentally sustainable products to increase competitiveness and thus economic benefits. Therefore, green innovation is the strategic need for organizations to drive green resources and its capabilities to prioritize customers' needs, thus providing them with better overall performance.

Although the discussion involves three types of green innovations (i.e., green product innovation, green process innovation, and green organizational innovation); SMEs usually conduct only two main types of innovation, namely green product innovation and green process innovation (Mukhtar et al. 2022; Singh et al. 2022). For instance, in the context of manufacturing SMEs in Abu Dhabi, UAE, Singh et al. (2022) suggest that green product innovation includes activities to select raw materials for products, use less materials, consider whether products are easy to decompose, recycle, and reuse; while green process innovation includes reducing

the consumption of water, electricity, coal, or material, and harmful substance emissions. Their finding asserts that the implementation of both green product innovation and green process innovation improves financial SMEs' financial performance and the market. In this light, we propose that two types of green innovations (namely, green product innovation and green process innovation) are more suitable for implementation in the SME environment.

Green HRM and Sustainable Competitive Advantage

Undoubtedly, human capital acts as the mainspring of an organization, and employees who are capable frequently play a leading role in gaining a competitive advantage. Hence, organizations need to take strategic initiatives such as green HRM practices as a source of SCA. According to Yong et al. (2019), green HRM has become an important management practice that helps organizations reduce their carbon footprints, and in turn, making their business more sustainable, and that has been the focus of global academics and practitioners for the past few decades. In fact, Benevene and Buonomo (2020) state that green HRM directly relates to the awareness, adoption, and implementation of HR practices, which subsequently affects organizational sustainability (i.e., economic, environmental, and social dimensions).

Several authors have commented that green HRM plays a strategic role in an organization's competitive advantage and value creation (e.g., Gharbi et al. 2022; Muisyo et al. 2022; Yong et al. 2019). Yong et al. (2019) assert that organizations need to inculcate green HRM practices to achieve SCA, which leads to better financial, environmental, operational, and social performance. Consequently, the proper green HRM practices implementation that are in line with organization strategic goals will ensure sustainable consumption of organizational resources such as electricity, water, papers, and other operating materials, besides having to reduce operating costs that may lead to government incentives or tax deductions and subsequently improve the reputation of the organization.

According to Waqas et al. (2021), green HRM embodies different divisions such as green marketing, green supply chain management, green operations, and green innovation within an organization, so as to provide organizational environmental strategic support to employees. It is critical for organizations to gain sustainable competitive advantage, especially in terms of hiring, developing, and engaging employees with environmental beliefs and green values (Singh et al. 2020). Besides that, green HRM that specifically adopts HR practices and integrates sustainability focus, will create a sustainable organizational culture and a green workforce across departments, thereby promoting sustainable competitive advantage.

The ability to obtain strategic resources is crucial to the competitiveness of SMEs, and considering the resource constraints of SMEs, employees with green capabilities are very important to distinguish firms from competitors. Nawangsari and Sutawidjaya (2019) claimed that green HRM must be a transformative approach to realize the

vision, mission, values, and strategies of SMEs to promote the growth and sustainability of SMEs. Proper implementation of green HRM will add commercial value to the competitive advantage of SMEs. In this regard, Yusoff et al. (2020) conducted a qualitative study on 20 Malaysian SMEs and found that four green HRM practices (i.e., green recruitment and selection, green training and development, green performance evaluation, and green compensation) can be implemented in Malaysia, and these practices have a significant impact on improving environmental performance and gaining competitive advantage of the SMEs.

Hence, AMO theory suggested that implementing green HRM (i.e., green recruitment and selection, green training and development, green performance-based rewards, green involvement practices, etc.) in SMEs aims to attract, train, motivate, reward, retain green human capital and will enable continuous innovations in products, services, and process (Singh et al. 2020). With the effective implementation of green HRM, employees may be motivated and engaged in green practices, which will eventually lead to sustainable competitive advantages of SMEs.

Green Innovation and Sustainable Competitive Advantage

Today, green innovation has become an essential strategy for organizations to obtain competitive advantage and long-term survival (Muisyo and Qin 2021; Singh et al. 2020). The application of green innovation helps organizations to enjoy both low cost and differentiation advantages. On the one hand, organizations gain cost advantages through increased resource productivity, achieved via available material, energy, water savings, and waste recycling. On the other hand, green innovations provide differentiation through improved product design and quality. Thus, it can be depicted that green innovation provides a strategy that cannot be fully imitated by the organizations' competitors, and as a result, the organization gains more economic benefits than its competitors (Gürlek and Tuna 2018).

As explained by Triguero et al. (2013), organizations aim to increase market share will pay attention to green products' market demand and may develop greener product innovations to seek competitiveness. In addition, increased market demand for green products has also led to green process innovations, since technical knowledge is the factor for reducing firm vulnerability. Organizations working on green organizational innovations can improve technical and managerial capabilities, such as ISO 14001 or new ways of working together, merely to close material loops and avoid environmental damage in value chains.

Prior studies reported that implementing green innovations enables organizations to minimize waste generation, increase production efficiency, and create better quality products at the lowest cost, thus helping organizations gain long-term competitive advantage (Asadi et al. 2020; Gürlek and Tuna 2018; Waqas et al. 2021). These studies reveal that the implementation of green innovation is not limited to manufacturing, but also applies to service industries such as hospitality. In short, green innovations help organizations create products and services using equipment in an environmentally

friendly manner and optimize resources used to be more competitive and stand out from competitors.

Resource-based theory (RBT) is also applied to green innovation that emphasizes on valuable, rare, inimitable, and non-substitutable (VRIN) resources and capabilities of an organization which are the key determinants of its competitiveness and success (Barney et al. 2011). The potential of green innovation as an important strategic tool for crafting sustainable business performance is widely accepted by scholars including Asadi et al. (2020), Ch'ng et al. (2021) and El-Kassar and Singh (2019). Hence, we contend that green innovations do not just meet the characteristics required by RBT, but also valuable assets for organizations which assist organizations to improve their sustainable competitive advantage.

Proposed Theoretical Framework

Given the limited resources of SMEs, green initiatives are undoubtedly important in promoting their growth and survival under such circumstances. This study emerges AMO theory and RBT to develop and propose an integrated conceptual framework by which SMEs can be deployed for sustainable competitive advantage. Based on the literature review, this study identifies four green HRM practices (i.e., green recruitment and selection, green training and development, green performance management and compensation, and green involvement) and two green innovations (i.e., green product innovation and green process innovation) that are suitable for deployment in the SME environment, and proposes a model (refer to Fig. 1) to analyze the interrelationship between the green HRM, green innovation and sustainable competitive advantage in SMEs.

Drawing on AMO theory, this study proposes that green HRM can ostensibly be associated with sustainable competitive advantage for SMEs, where it can be influenced by "ability" (reflected through green recruitment and selection practices, green training and development), "motivation" (enhanced by green performance management and compensation practices), and the "opportunity" (formed through involvement in green initiatives) dimension of AMO. Furthermore, RBT explains that the VRIN characteristics of green innovation are a source of improved performance in terms of cost reduction and customer satisfaction leading to sustainable competitive advantages for SMEs.

Summing Up

In summary, small and medium-sized enterprises (SMEs) are the backbone of the global economy. SMEs regularly face challenges such as increased competition, the ability to adapt to rapidly change market demands, and capacity constraints related to knowledge, technology, and innovation. Therefore, it is especially important that

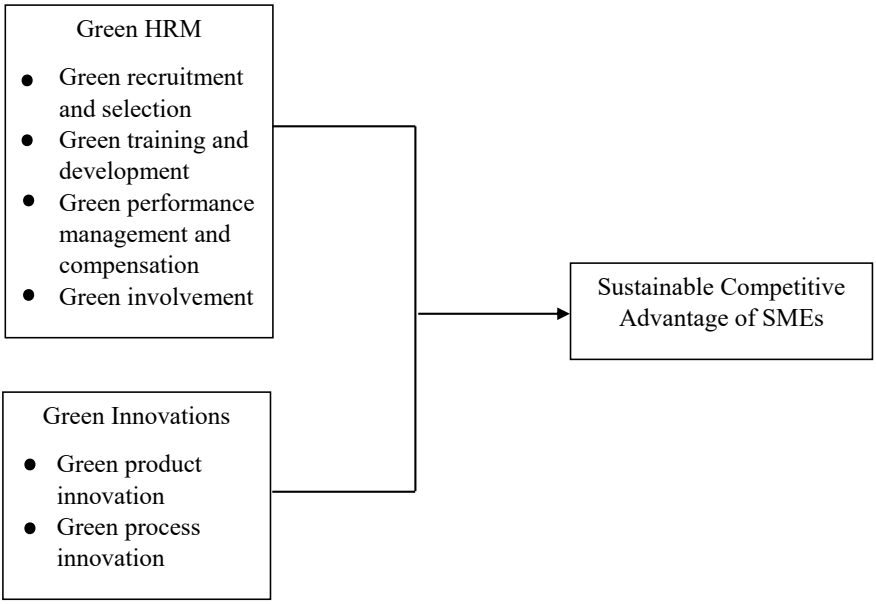

Fig. 1 Proposed Theoretical Framework

SMEs are available with fully functional support measures to safeguard their sustainable competitive advantage, and we believe that the implementation of green HRM and green innovations will help to achieve this goal. While focusing on AMO theory and RBT is a great measure, green HRM can build green employee capabilities, stimulate employee engagement, and provide employees with green opportunities, together with the implementation of green innovations (i.e., green products, green processes) to become an organization's source of valuable assets, and ultimately bring sustainable competitive advantage.

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The Role of Industrial Revolution 5.0 in Actualizing the Effectiveness of Green Human Resource Management

Olawole Fawehinmi, Osaro Aigbogun, and M. Imran Tanveer

Abstract The need to carry out our daily activities without much human contact has never been so urgent, primarily due to the COVID-19 pandemic. Furthermore, the ever-evolving global market and dynamic customer expectations have led to an increased focus on improving organizational practices and processes by professionals. This drive for efficiency has become a crucial aspect for businesses to remain competitive and successful in today's fast-paced world. Such urgency has accelerated the emergence of the industrial revolution 5.0 (IR 5.0). IR 5.0 is the emergence of artificial intelligence (AI) interactions with humans. This entails the ability of AI to feel and react accordingly. Such AI capability is suggested to improve the effectiveness of green human resource management (green HRM), which aims to promote environmental sustainability through human resource activities, encouraging employees to be environmentally conscious. In IR 5.0, AI can help green HRM monitor HR needs and ensure seamless remote recruitment and selection of top talents for the organization. Green HRM can also benefit from the use of AI by ensuring that training can be done online through simulation, reducing carbon emissions from travelling. Also, employees' progress can be monitored remotely. Further, it can help ensure that employees' green performances are well measured and accounted for in green performance management to provide fair rewards. This chapter implies that using AI in green HRM implementation may encourage employees to be more conscious about carrying out green behaviour at work.

O. Fawehinmi (✉)
Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, Kuala Nerus, 21030 Terengganu, Malaysia
e-mail: olawolefawehinmi@umt.edu.my

O. Aigbogun
Faculty of Business, Curtin University, 98009 Miri, Malaysia
e-mail: osaro.aigbogun@curtin.edu.my

M. I. Tanveer
SZABIST University, 44000 Islamabad, Pakistan
e-mail: itopel@gmail.com

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Introduction: Emerging Role of Industrial Revolution 5.0

The notion that all systems are amenable to improvement applies to almost all aspects of life. The introduction of Industry 5.0 is a global industrial transformation anchored on the principle that Industry 4.0 focuses more on digitalization and AI-driven technologies to boost the efficiency and flexibility of production (Xu et al. 2021). Thus, bolstered by the inadequacies of industry 4.0 and driven by ongoing massive investments in research and innovative technologies, the advancement of industry 5.0 aims to accelerate the transitioning of production systems to a sustainable, human-centric and resilient industry. Industry 5.0 seeks to achieve sustainable goals by respecting our planet's limits and prioritizing employees' well-being (Huang et al. 2022).

From the foregoing, the emerging role of Industry 5.0 is supported by three key pillars: Sustainability, Human-centricity, and Resilience (Romero et al. 2015; Felsberger and Reiner 2020). The creation of industrial systems based on renewable energy sources is one of the needs outlined by Industry 5.0. The industry must be sustainable to reduce carbon emissions and recognize other environment-centric restrictions. Circular processes are suggested to minimize waste, promote environmental protection, and reuse and recycle natural resources (Prakash et al. 2021). Humans are at the centre of the manufacturing model, according to Industry 5.0, therefore, the primary principle of "human-centricity" in industry 5.0 is straightforward: The use of technology is ensured to respect employees' fundamental rights, safeguarding their freedom of expression, autonomy, and humanity. Furthermore, with the global crisis created by COVID-19, resilience is now viewed as an indispensable ingredient needed for today's systems. As a result, in Industry 5.0, the ability to respond adequately to challenging circumstances and create great results is crucial.

The humanization of the built technical environment for Industry 4.0 was one of the initial components in Industry 4.0's progression towards Industry 5.0 (Grabowska et al. 2022) Industry 5.0 has a bearing on the shifting economic systems, as espoused by Rust et al. (2021). Innovation management must change as the move is made from the thinking economy to the feeling economy. The key to this new era is that AI would not be considered less valuable than people. Instead, AI and humans will have to collaborate to execute jobs in what some have referred to as 'Cobots'. Robots using AI will be given the same respect as humans and gradually assume more of the team's cognitive responsibilities. This alliance will be more about collaboration than augmentation, with AI increasingly considered an equal team member. Consequently, industry 5.0 emphasizes human-centricity, sustainability, and resiliency of production systems. However, research efforts into the implications of industry 5.0 in different facets of life are still at the infantile stage, where research findings are relatively scarce.

Artificial intelligence (AI) permeates the Industry 5.0 paradigm into people's daily life. Aligned with society 5.0, Industry 5.0 is a society in which sophisticated technologies are actively employed in people's lives, industries, and personal lives for convenience (Carayannis et al. 2021). While actual knowledge abounds

on individual-level AI-human team collaborations for executing tasks, inadequate attention has been paid to organization-wide agenda issues, such as green human resource management (green HRM). Changes in organizational behaviour, structure, workflow, ethics, and work environment are among the challenges of integrating robots into organizational processes in AI-human collaboration. Additional major challenges include the acceptability of robots in the workplace, discrimination against robots or people, privacy and trust in a human–robot co-working environment, redesigning the workplaces for robots, education, and training (Demir et al. 2019).

All these points towards prospects of critical changes in organizations. In order to establish an environmentally responsible, resource-efficient organization, and socially responsible organization, it is essential to implement a set of policies, practices, and systems that align with the AI-human collaboration reality. This is where the advancements in green HRM become vital. Through conceptually derived arguments, this chapter reviews the evolutionary vein of Industry 5.0, focusing on its human-centric feature for stimulating the green behaviours of industry workforce to achieve resilient, resource-efficient, environmentally sensitive, and socially responsible sustainable systems. The chapter further discusses plausible potential implications of IR 5.0 in enhancing Green HRM practices. Figure 1 depicts the sequence of the five industrial revolutions over the centuries.

1st Industrial Revolution	2nd Industrial Revolution	3rd Industrial Revolution	4th Industrial Revolution	5th Industrial Revolution
Mechanization	Electrification	Automation and Globalisation	Digitalization	Personalization
Occurred during the 17th and 18th centuries, mainly in Europe and North America	From the late 1800s to the start of the first world war	The digital revolution occurred around the 1980s	Start of the 21st century	2nd decade of the 21st century
Steam engines replacing horse and human power	Production of steel, electricity, and combustion engines	Computers, digitalization, and the internet	AI, robotics, IoT, blockchain and crypto	Innovation purpose and inclusivity
Introduction of mechanical production facilities driven by water and steam power	Division of labour and mass production, enabled by electricity	Automation of production through electronic and IT systems	Robotics, artificial intelligence, augmented reality, virtual reality	Deep, multi-level cooperation between people and machines' consciousness
1780	1870	1970	2011	2020

Fig. 1 The sequence of the five industrial revolutions. *Source* https://www.regenesys.net/reginsights/the-fifth-industrial-revolution-5ir/

Green HRM: Practices, Implementation, and Challenges

Various scholars have defined green HRM in diverse ways. For instance, it aims to integrate corporate environmental management practices into HRM practices (Renwick et al. 2013). Similarly, Muster and Schrader (2008) defined it as the outcome of promoting employee environmental behaviour at work while also influencing their personal lives by reducing consumption behaviour. However, the most commonly cited definition by Jabbour (2013) was used. Green HRM is a systematically planned activity that integrates environmental objectives into HRM practises to continuously develop greener workplaces. In addition, Fawehinmi et al. (2022a, b) argued that a sustainable workplace requires systematic design to operationalize the practices that can significantly reduce the negative impact generated through organizational practices. Thus, the definitions portray the gravity of green HRM as a route towards a sustainable workplace which further affects employees' attitudes.

Furthermore, Jabbour and Santos (2008) endorsed green HRM practices as a safe workplace in terms of an environmentally friendly organization for employees. Other authors also acknowledged that green HRM practises tend to enhance the environmental knowledge of employees and further affect their ecological behaviour (Fawehinmi et al. 2020). Similarly, Fawehinmi al. (2022a, b) also acknowledged that to enhance employee ecological behaviour, environmental concerns of the employees foster the employees' attitude, perceived behavioural control and environmental knowledge. Moreover, Yong et al. (2020a, b) also provided evidence that green HRM practices help organizations achieve sustainability agendas because they significantly affect sustainability dimensions. Considering the significance of green HRM practices, various ranges of green HRM practices were aspired to in the literature that aimed to highlight the implementation and challenges associated with them.

Green Recruitment and Selection

In a globally competitive world, attracting talent is a key challenge for HR professionals. Yong et al. (2020a, b) termed it a "talent war" because job seekers have to match their personal values with the organizational values, which is a challenge for HR in attracting high-quality employees. Recruitment plays a significant role in increasing the environmental performance of organizations as they become more prominent in environmental awareness to build their reputation (Renwick et al. 2013). Adding green agendas in the recruitment and selection process enables organizations to attract a limited number of applicants, precisely talent with environmental credentials (Pham and Paillé 2020). Similarly, Paille et al. (2014) affirmed that green talent significantly performs environmental and organizational citizenship behaviours.

Moreover, attracting innovative and talented employees with a rich awareness of environmental management practices forced the organization to use a web-based recruitment process to widen its search. Since the selection process aims to achieve

business success through its desired goals, it requires suitable applications from the pool to meet the specified requirements and environmental agendas. Thus, selecting committed employees who are more sensitive to environmental issues is important, nevertheless, Yong et al. (2020a, b) highlighted that limited literature is available on this issue. Most studies conceptualized it by defining job descriptions to report environmental-specific tasks, asking candidates questions, and asking questions about environmental attitudes and behaviours (Jamal et al. 2021; Ren et al. 2018; Renwick et al. 2016; Yong et al. 2020a, b; Yusliza et al. 2017).

However, the process of recruitment and selection was categorized into three sections: (a) green employer branding, (b) green awareness, and (c) green criteria used to attract the candidates (Tang et al. 2018). The green criteria for attracting the candidates highlight another critical challenge in implementing green HRM practices. Pham and Paillé (2020) systematic literature review study alluded that practitioners lack the technological advancement to accomplish environmental sustainability goals. Further research is needed to integrate the literature on attracting and selecting candidates that meet organizational sustainability agendas with industrial requirements. Hence, the role of HR in green recruitment and selection is to be redesigned with technological advancements, such as the use of AI or machine learning techniques.

Green Training and Development

In the current highly competitive and rapidly advancing technological environment, human capital has become a valuable resource for organizations. Similarly, green training has gained popularity among the green HRM practices in the literature due to its significance towards environmental management efforts (Fawehinmi et al. 2022a, b; Yong et al. 2020a, b). Moreover, Ghouri et al. (2020) argued that environmental training programmes in an organization enable employees to take the initiative and develop competency building. Similarly, past studies also evidenced that green training significantly enhances pro-environmental behaviours, perceived behavioural control, OCB, employee environmental commitment and environmental performance (Amjad et al. 2021; Cabral and Jabbour 2020; Cop et al. 2020; Ogbeibu et al. 2020; Pham et al. 2020a, b; Pham et al. 2020a, b). Hence, it is eminent that the role of green training in an organization is pertinent regardless of the workplace type or department.

However, Islam et al. (2020) highlighted the barrier to implementing green HRM practices due to managers' lack of environmental sustainability expertise. This could result in a mediocre level of green HRM practices. Considering this challenge, Fawehinmi et al. (2020) asserted that green HRM practices are pivotal to enhancing environmental knowledge. On the other hand, Tanveer et al. (2022) found that environmental sustainability training in an organization requires top management support in terms of budget and resource allocation for the existing and newly hired employees. Moreover, Singh et al. (2021) highlighted that environmental issues can be seen in

how dreadful it is when they go unanswered during the implementation of green practices. Hence, the lack of relevant expertise was identified as a significant challenge in implementing green training and development. Similarly, Tanveer et al. (2023) concluded that measuring the effectiveness of green training and development programmes in an organization is another challenge that requires further stakeholder consideration to overcome this issue. On the other hand, rapid technological advancements for environmentally friendly practices require specific green trainings for the manufacturing and service industry employees. Hence, the role of HR in green training and development requires further investigation to increase its efficiency and effectiveness to overcome the implementation challenges.

Green Performance Assessment and Reward

According to Yong et al. (2020a, b), performance assessment is an important tool for providing feedback about employee strengths and weaknesses. Furthermore, in the context of green performance assessment, it is a system that provides feedback to employees on their environmental performance activities to prevent undesirable behaviours (Jabbour and Santos 2008). Moreover, Saeed et al. (2019) defined the indicators to measure the performance assessment of employees based on environmental incidents, environmental responsibilities, reduction of carbon emissions, and actively promoting awareness about green policies. Performance assessment and reward for measuring the employees' green behaviours was acknowledged as a motivation tool, Martins et al. (2021) acknowledged that green performance management and compensation techniques are essential for economic performance because it enhances the employees' commitment towards green goals. Moreover, Ghouri et al. (2020) argued that green performance assessment establishes the linkage between organization expectations and employees' responses through feedback. The greater the feedback mechanism, the greater output is established in the shape of environmental performance and involvement of employees in reducing carbon emissions.

Although the green performance indicators were assessed academically, their implementation presents a challenge to measure what and how they are implemented. Similarly, Islam et al. (2020) noted that organizations have not yet been evaluated for their adoption of green goals and responsibilities. Therefore, green assessment is challenging for organizations and not rewarding to employees. Moreover, it was also highlighted that organizations fail to define monetary or non-monetary rewards to encourage their employees to preserve the environment. Specifically, literature using historical data and patterns through AI and machine learning techniques could be further explored to attain the greening agendas of organizations. As a result, green performance assessment and rewards are some challenges that need to be addressed and investigated further.

Green Employee Empowerment

The opportunities available to talent at the global level as well as the rapidly changing environment have raised various issues for the organizations. The re-engineering of organizational processes requires the participation of employees as primary stakeholders and is considered a route towards success and the retention of talented employees (Punia 2004). Moreover, Argyris (1998) termed employee empowerment as having equal power and provision to participate in decision-making in the positive interest of the organization. Similarly, Psoinos et al. (2000) concluded that employee empowerment strategies are one of the important factors of HR practises that are significantly associated with talent retention. Given the importance of environmental management, Renwick et al. (2013) argue that organizations should provide opportunities for employees to identify and participate in pollution prevention programmes. Similarly, Tariq et al. (2016) introduced the concept of green employee empowerment, which aimed to fulfil green tasks through employees' participation and decision-making processes. In addition, past literature evidenced that green employee empowerment is a significant factor which enables the OCBE, peer involvement, eco efficiency, task related pro-environmental behaviours, green voice behaviour, business performance, and environmental performance (Ari et al. 2020; Ghouri et al. 2020; Moraes et al. 2019; Muisyo et al. 2021; Ojo et al. 2020).

However, the limitation was highlighted in that organizations must change their structure from centralized to decentralized, as traditional structures will fail to facilitate the green employee empowerment concept. On the other hand, it was also highlighted that the concept of empowerment has vanished in certain environments where organizations, for example, have a transactional leadership style (Caillier and Sa 2017) or a high-power distance culture (Hope 2004). Both of these traits can have a negative impact on organizations due to their psychological effects, leading to employees becoming risk-averse. The arguments highlighted that organizations need to focus on implementing empowerment, which further enables them to participate in the decision-making process for the choice and adoption of green practices. In recent developments in the era of technological advancements, various enterprises have acknowledged digital and intelligent transformation as a route towards long-term growth and promoting the green intelligent manufacturing industry (Tian et al. 2022). However, adopting the latest technologies is another challenge that requires financial burden, decision-making, and empowering the employees to be familiar with these technologies. In a recent study by Tanveer et al. (2023), green employee empowerment has been highlighted as a significant barrier among the HR representatives. On the other hand, studies highlighted that encouraging the green employee empowerment in an organization is a significant factor that helps them to achieve sustainability agendas. Therefore, the issue of green employee empowerment needs to be further analysed in the adoption of GHRM practices.

Other Constraints

Role of Green Technologies and Top Management

Fundamentally, the shift to a greener economy relies on the impact of technological advancement (Sahoo et al. 2023). Organization having the capability and ability to deploy green technologies tend to implement novel ideas and new functional processes which ultimately improve environmental performance (Castellano et al. 2022). Similarly, organizations prioritizing green technology innovation can implement technologies for energy conservation, emissions reduction, eco-product development, and sustainable development. Green technology-oriented businesses not only outperform their rivals but also advance the environment and the social welfare of all stakeholders (Pekovic and Bouziri 2021; Tanveer et al. 2023; Wu and Li 2020). On the other hand, with the rapid advancement of technology, technologies related to increasing the efficiency of greener practises are extremely expensive, which becomes a limitation for some organizations (Bohdanowicz 2006).

Furthermore, top management commitment is critical for implementing green HRM practises in an efficient manner (Yusliza et al. 2019). A recent study by Tanveer et al. (2022) highlighted that cost and benefit are the major issues for organizations while moving towards greening their organizational processes. Furthermore, it was stated that, regardless of whether the organization is a service or manufacturing one, adopting the latest technologies is difficult for the organization in two ways: first, because of the cost associated with purchasing and implementing new technologies. Secondly, the availability of resources and providing training to employees also leads to additional expenses which is further considered an additional monetary burden. In this trajectory, advances in technology and the commitment of top management towards environmentally friendly organization is a challenge that requires further investigation. Hence, dealing with cost and benefit is a pertinent issue for the organization which further leads to the provision of training and development for existing or new talent.

Lack of Academic Institutions Role

Recent studies have highlighted the importance of manager knowledge, which is one of the challenges in implementing green HRM practices. For instance, Islam et al. (2020) highlighted a lack of knowledge management among managers due to a lack of courses at the university level around the world. Considering these aspects, various studies have confirmed that green HRM practises tend to enhance environmental knowledge (Fawehinmi et al. 2020). On the other hand, studies also confirmed that the gap between academic research and practical implications still exists, especially regarding green HRM practices (Fawehinmi et al. 2022a, b), which may be the reason for the low level of managers' knowledge on how to implement effective

green HRM practices. Moreover, the organizations are also considering a burden in terms of coordinating and organizing training programmes which affects their profitability agendas (Tanveer et al. 2022). Nevertheless, the rising trend of environmental degradation and harmful effects caused by human-nature interactions is a global challenge. It needs collaboration between the academic researchers and industrial practitioners for a lasting solution. Hence, the role of academic institutions in boosting green HRM practises is pertinent but limited in literature.

The Role of Industrial Revolution 5.0 in Enhancing Green HRM Practices

Industry 5.0 (IR 5.0) recognizes the power of technology for industrial (business) growth, but it also combines business goals with social goals in the workplace (for example, emphasizing workplace safety through the use of next-generation technologies or human–machine relationships) as well as beyond the organization (social and environmental duty) (Gorodetsky et al. 2020). Sustainability underlines that in a worldwide, highly dynamic (unpredictable) environment, it is increasingly difficult to sustain a profit-driven firm. For an enterprise to become a genuine source of wealth, it must incorporate social, environmental, and societal factors. The core of Industry 5.0 is the synergy of three components: technological, social, and ecological. (Grabowska et al. 2022).

The Industry 5.0 paradigm is the integration of AI into daily life. Researchers suggest "Society 5.0" (Super Smart Society) rather than "Industry 5.0." (Elim and Zhai 2020). Society 5.0 integrates physical and virtual space to solve social issues, unlike Industry 4.0, which is limited to industry. Society 5.0 uses new technologies in people's lives, industry, health care, and other areas, not for development but for everyone's benefit and convenience (Carayannis et al. 2021).

In addition, a similar concept known as Society 5.0 (Fukuyama 2018) has emerged in recent years with the goal of finding solutions to the issues that exist in the modern society. Society 5.0 is a futuristic super-smart society in which everyone is able to live a high-quality and comfortable life through the fusion of cyberspace and physical space by making full use of information and communication technology (ICT). Both "Industry 5.0" and "Society 5.0" are concepts that are being considered for the future of their respective industries and societies (Huang et al. 2022).

The mission of Society 5.0 is to create a human centred, super-smart society to ensure that all citizens have access to high-quality lives that are full of comfort and vitality. This will be accomplished by delivering essential goods and services to individuals at the necessary level and at the appropriate time via merging cyberspace and physical space using 5G, Big data, and AI (Huang et al. 2022). People working with robots and intelligent equipment are referred to as Industry 5.0. Using modern technology such as AI, Internet of Things (IoT), big data analytics, and robots will

assist people in working more efficiently. For instance, Braganza et al. (2022) highlighted that job satisfaction and engagement can increase by gigification, which is the application of AI System Automation in the 'gig work' context. Further, a study shows that AI adoption in green HRM practices influences the development of green abilities, motivation of employees, and facilitation of green opportunities (Gupta 2021).

For this reason, we opine that IR 5.0 will be beneficial in enhancing the role of green human resource management in efficiently recruiting and retaining competent and green valued employees, training and giving fair compensation based on their green performance and also allowing the data to inform employees and involve employees on environmental sustainability issues.

Artificial Intelligence and Green Recruitment and Selection

AI might be used to rapidly sort and choose candidates based on their CVs, taking into consideration a number of aspects including the requisite abilities and experience. This has resulted in more effective sourcing and matching of talent, as well as the rediscovery of potential from previously submitted applications. Moreover, AI may be trained to deliver real-time feedback to prospects, hence lowering the workloads of recruiters and lessening the irritation experienced by candidates. Crucially, AI helps organizations get a better understanding of what candidates have to offer, hence they can lead to less biased and more focus solely on the skills and experiences of candidates leading to more effective recruiting decisions and a more diverse workforce (Yoong 2022).

Even though there is fear of job loss due to adoption of AI for green recruitment and selection, (Ore and Sposato 2022), most recruiters are assured that their jobs are not threatened because the recruitment process requires humans to conduct them, but the AI only expedites the recruitment and selection process. Because of the ease of the process, 66% of recruiters said that they would like to implement AI in HR recruitment to improve their ability to identify proper candidates (Lisowski 2021). In terms of green recruitment and selection, AI could assist in sorting and selecting candidates possessing environmental values, which would fit well in the environmental sustainability goals of the organization. An instance of the use of AI in the field of recruiting is the Mya Systems hiring chatbot. Conversational AI is used to expedite the hiring process for big recruitment firms and organizations like L'Oréal, Adecco, Hays, and Deloitte (Lisowski 2021).

Artificial Intelligence and Green Training

Green training is the process of upskilling employees' skills and knowledge in such a way that it does not have a negative impact on the environment. It also entails

training employees on ways to sustain the environment in the workplace. Now more than ever, organizations must attain environmental performance for survival in the global market. For this reason, organizations need to be investing in their greatest asset—their employees. Without adequate green training, employees will not be able to keep up with the demands of their jobs, especially the environmentally conscious aspects, and ultimately, will put the success of the company at risk. In terms of green training and development, in order to achieve a comprehensive and effective green training and development, organizations are relying on AI (Garg et al. 2018). AI supports organizations with advanced digital technologies, cloud computing and big data storage facilities, decision-making applications, and smart analytical tools to allow for a well informed and adequate green training methods for employees (Singh and Shaurya 2021; Trujillo-Gallego et al. 2022).

Employees are able to obtain environmentally friendly training and development that is tailored to their individual tastes thanks to the large amounts of data that can be analysed with the help of AI. It is possible to personalize content to meet the requirements of individual employees, to concentrate on those aspects of an employee's performance in which they struggle, to recommend relevant content to an employee based on that employee's previous actions, to anticipate requirements according to the role they play, and even to autogenerate content using a variety of content generation algorithms. Millennials increasingly rank opportunities for professional and personal growth as the most valuable aspect of a work perk. Therefore, it is imperative that companies acknowledge this fact and immediately begin implementing AI for the purpose of training staff by customizing information to the user's preferred method of education.

Employees will find that learning is easier and more pleasant as a result of this, which will help them better retain information and perform better on the job. Time is saved, not only for the firm but also for the personnel. This is due to the fact that employees now have the ability, thanks to AI-infused green training and development, to organize their own individualized training material, determine their own objectives, and acquire knowledge based on their preferred learning styles and methods. Because of this, they will be able to master the individualized training materials at their own speed while still satisfying the requirements outlined by the business. In order for AI to be exploited to its maximum potential, businesses will need to make use of machine learning, data analysts, AI programmers, and other related professionals. The information that is generated as a result of analysing this data enables human resource departments to obtain insights into the workers' activities and training preferences, and assists them in developing training programmes that provide value and encourage adaptive learning.

AI in green training is imperative because it can help optimize and rethink the effectiveness of the training methods. AI is able to calculate and aggregate large data sources, as well as identify areas of a worker's environmental knowledge that need improvement. Finally, depending on these various data, employee profiles may be built, which can then be used to improve the entire learning experience and educate relevant employee's new skills. This saves time and effort over presenting the identical training material to each and every employee, which might be a waste

of time given that some employees may already have prior knowledge of the subject matter. If employers recognize that their workers have gaps in their green knowledge, it may be simpler and less expensive to teach those workers in the relevant areas and help them develop their green expertise. This will be a benefit for any company, and it will also keep staff interested since they will have the opportunity to learn new things while also strengthening their understanding of environmentally friendly practises.

Also, it is fairly typical for employees to ask questions while they are training online at their own speed and doing it online. Throughout the course of their training, employees may be able to obtain rapid responses by utilizing an AI technology supported by chatbots. Because of this, there is no delay in finding answers to the questions, which means that the employee may move on with the training course without having to wait for the trainer to respond to the queries. Some employees find their green training extremely easy, while others drown in the training. For those employees having a tough time, AI can create training module that adapts according to each employee and evaluate them based on their skills. This can also provide better insights into each employee's strengths and weaknesses. It can also provide updated content based on the result of the assessment. This will undoubtedly help improve the quality of employees and benefit the organization. For instance, AI can interpret video instructional exercises into stories for employees.

The ways in which training is delivered have an effect on the outcomes of that training. The process of green training and development needs to take into account the many ways in which employees learn, which can be impacted by characteristics such as age, ethnicity, and cultural background, among other things. Products based on AI make training programmes accessible to a broad variety of individuals, including those with a variety of various sorts of impairments. For instance, in 2009, Google introduced a video app that automatically subtitles videos, which may be of use to deaf personnel. The app also features an automatic translation feature, which enables employees to watch training videos in more than 50 different languages without having to manually translate them. AI makes available applications and solutions that can generate replacement words for photographs and images for employees who are blind. Google has introduced its Cloud Vision API, which makes use of neural networks to differentiate the context of a picture and produce a textual representation of it. So, with the help of AI, professionals can build training programmes that each employee may participate in.

Artificial Intelligence and Green Performance Management

Green performance Management (GPM) activities have been recognized as the cornerstone of green HRM by aligning employee management to organizations' overall objectives. However, this area has had a dearth of studies (Fawehinmi et al. 2022a, b). The concept implies arranging activities to improve, manage, and measure employees' green performance, paying close attention to organization effectiveness (Gupta 2021). These activities centre on planning green performance, managing

green performance, conducting green performance reviews and assessments, and assessing green performance. There are many various facets that are included in each of these activities. The terms environmental strategic objectives, key performance indicators, and performance targets are all part of what is known as green performance planning. Green performance assessment, on the other hand, refers to the environmental analysis and feedback of GPM components to measure the extent of an employee's advancement in their green activities.

Further, the role of GPM is to review employees' green performance management, including assessing green training effectiveness and proffering better green training methods in the future for better employee green performance. The use of AI has been optimized to make the GPM process easier. When it comes to GPM technologies, robust databases, and analytical data mining are regarded as reference points. This is because these technologies collect data from many places within an organization on how an employee carries out his or her green responsibilities (Dhir and Chhabra 2019). Line managers may produce relevant and objective ideas by linking these accessible facts, which would increase workers' green performance, as well as assist the firm in making favourable decisions about employees' green mindset (Gupta 2021).

AI systems quickly collect and analyse green performance and data to get specific insights on training effectiveness. The insights point out employees' progress and emphasize employees' green knowledge gaps if any. Then an AI-equipped learning programme suggests ways to fulfil the uncovered gaps. For instance, AI could cluster employees into distinct groups based on their green performance level (Chiu et al. 2021). Later, suitable strategies could be developed to improve underperformers' green performance and enhance unmotivated employees' morale. Moreover, an AI algorithm could be used to predict employees' green performance levels based on their background data and performance characteristics (Mikalef and Gupta 2021). As a result, GPM could witness remarkable changes in the way it is managed due to the adoption of AI (Jarrahi 2018).

Much of the difficulty in assessing green performance in GPM has been based on the challenges caused by the ambiguity of green assessment and the top management commitment (Ogbeibu et al. 2022). This is because employee green behaviour is not monitored closely. Hence AI can bridge this gap by storing information on the carbon emissions of employees when they drive alone to work compared to carpooling or taking the bus. Also, the AI stores data based on how much employees use energy in their office through the air conditioner setting, computers and other electronics left idle while away from the office.

Organizations could develop an AI waste collection system which uses AI and computer vision to sort waste into various categories. With the help of robotic automation, the waste is put into its respective bin. Whenever the waste bin is full, it sends a notification to the recycled waste vendor that it is ready to be collected. Further, the weight of recycled papers, plastics, and e-wastes could be stored by AI under each employee's name and additionally used for GPM when each employee's carbon emission is computed.

One of the advantages of using AI in GPM is that it eliminates contrast bias. This occurs when an assessor has a tendency to compare an employee's performance to that of his or her colleagues rather than to clearly stated criteria of success. AI eliminates this tendency. Another one is the so-called "recency bias," in which events that occurred in more recent times are given greater weight, maybe unjustly, than those that occurred in the more distant past (but still within the period where green performance is being assessed). Here is where AI may be useful because human failings such as prejudice, weariness, and logical fallibility are things that machine intelligence does not have to contend with. Because AI-driven evaluation may take place in real time (with systems monitoring objectives, quotas, and how these are influenced by people's relationships), rewards and compliments for excellent performance can be quickly bestowed upon those who deserve them.

In the event that goals are not being fulfilled or performance standards are being lowered, it is possible to implement corrective measures before the issue worsens and becomes unmanageable. Employees are able to discover which of their green abilities need to be improved through the use of GPM evaluations. The employee's educational experience may be tailored to their specific needs with the assistance of sophisticated analytics. In addition, AI-assisted GPM has the potential to automate routine responses, enabling staff to discover answers to their questions much more rapidly. It frees up company leaders, HR specialists, and executives from the burden of Questions & Answers, enabling them to concentrate their efforts on other essential strategic green activities that deliver more value to the organization.

Organizations should adopt AI facilities that support green HRM policies. For instance, AI applications monitor employees' energy and paper usage. This could be in terms of how much energy is consumed by individual employees in their office and also through their mode of transportation to work. This will allow discussions on reducing energy usage, which can be tracked by an AI app on each employee's smartphone. Also, in recent times, electrical devices such as air conditioners can be turned on and off remotely. Hence, employees could utilize this to ensure that their air conditioner is switched off while they are away from the office for an extended period. This will considerably save a lot of energy.

Further, employees can engage in carpooling with colleagues, which would help save on both the cost of transportation and reduce carbon emissions in the environment. Employees who partake in such arrangements could input this on an AI app, which automatically stores how much carbon emission they have prevented for that day. Furthermore, organizations can provide driverless carbon-free bus shuttles for employees, which would also motivate employees to save on carbon emissions by not driving their cars to work. Employees can later be evaluated based on the amount of carbon they have saved due to their activities over a particular time frame.

Artificial Intelligence and Green Reward

Because of the objective and transparent evaluation of employees' green performance, green rewards should be aligned accordingly. It is important that employees should be recognized based on the frequent feedback and real-time data from AI-aided green performance evaluation. There are obvious benefits to utilizing AI and digital technologies to support green pay and incentive programmes inside a business. These solutions are flexible, agile, and cost-effective. Significantly, they can interact easily with information technology systems that already exist, but they also provide the benefit of being able to deliver predictive analytics based on real-time data. This is a significant advantage.

In spite of this, many types of AI as well as disruptive solutions have been offered as facilitators of the decisions and processes involved in green reward. Online scraping is one of the many tasks that may be performed by AI to provide more effective searches for material that is relevant. When an employer is searching within its peer group for a benchmark for green reward parity, these tools may assist HR professionals with peer group selection to assure the maximum level of accuracy and provide assistance when selecting peers for the group. Employees can therefore have their pay determined by how well they contribute to the environment. The utilization of intelligence gleaned through Organization Network Analysis is in light of the fact that almost all organizational communication is now carried out online. It gives businesses the ability to mine the data generated by these employee interactions and make educated guesses about the difficulties and concerns related to green pay and incentive.

Another way that AI can support green HRM is the personalization of employees' green rewards. Green rewards can be anything that delivers perceived or real value to an employee, including financial and non-financial rewards. Not all employees want financial rewards for performing green activities; some only want to be verbally praised and probably given a plaque. By analysing employees' motivations, it is possible to customize pay and reward programmes to help employees to best match their desires and abilities with the organizational needs. Hence, AI can help distinguish these employees, which will help improve satisfaction and green performance among employees.

In addition, companies are shifting away from paying their staff once a year and towards doing it in smaller increments more frequently. It is possible that this will assist to enhance employee engagement, and it will save them from having to wait until the end of the year to receive their awards for the job that they have done. The younger generation has come to anticipate instant gratification and the freedom to choose how they receive it, both of which are attainable through the use of AI.

Artificial Intelligence and Green Employee Empowerment

The empowerment of environmentally conscious employees may be strengthened through soliciting useful feedback, identifying the intents of workers, and developing a structure based on those intentions. As a consequence of this, methods based on natural language understanding (NLU) and artificial neural networks will assist in differentiating the two and performing phrase semantic analysis. This will make it possible for businesses to develop a variant that will successfully engage personnel.

Because of advancements in AI technology, businesses now have access to data in real time. Several different HR technology solutions, like as Pulse Questionnaires, assist in measuring what their employees are going through on a regular basis. With this AI, employees can give frequent, meaningful suggestions on how green HRM practices and environmental initiatives can be improved in the organization. It also provides access for employees to air the difficulties of achieving their green goals. Hence, with this, top management can swiftly implement policies that will help ease employees' problems.

When employees are involved in developing green HRM policies, it creates a sense of ownership and responsibility, which fosters the support and engagement of employees in ensuring the success of environmental sustainability initiatives. As a result of the proliferation of learning analytics, the fast-expanding Internet of Things (IoT) environment, and the increased capabilities of machine learning, AI is quickly becoming an imminent breakthrough disruption in the employee engagement industry. It is suggested that researchers in collaboration with companies' managers should find ways in which AI technologies can recognize problems and sought out employees' specific technical contributions to offer remedies in order to proactively enhance employee empowerment.

In this regard, AI has the potential to liberate management from the choice fatigue that comes with putting together a team that interacts productively. AI may identify which workers would work best together, based on comparable values, to accomplish the intended goals by using the employee data that was acquired via performance and sentiment analysis. Working in a team also typically entails attending meetings, which are frequently unnecessary. Spending time attempting to coordinate schedules with coworkers in order to schedule an appointment might lead to a considerable loss of productivity. As a direct result of this, a decrease in productivity might eventually lead to a reduction in involvement. AI can take over the role of the intelligent manager and schedule meetings for staff depending on their availability. In addition to this, it provides recommendations on who should be invited to the meeting based on the knowledge they can bring to the table. Therefore, employee empowerment can be enhanced by delegating process-oriented tasks, freeing them up to attend productive meetings and contribute to green policies in the organization.

Discussion and Conclusion

It is well known that organizations are skeptical about adopting AI in their business operations, including green HRM practices. This is because of the perceived high cost of adoption, security and privacy issues, and the fear of employees not cooperating. AI follows a maintenance procedure that is laborious and time-consuming, similar to that of other technologies since it requires constant evaluations and upgrades. As a result of this, a research article on the AI applications used in recruiting and selection found that the majority of businesses who employ AI tools tend to be bigger, technology-focused, and innovative corporations. However, despite the exponential rate at which AI is being adopted, businesses have not yet reached an inflection point since they are reluctant to invest in AI at the present time (Albert 2019).

Nevertheless, it has been indicated that AI adoption helps cut costs and boost work engagement and performance efficiency. It is stated in recent research that cost-effectiveness, relative advantage, top management support, HR readiness, competitive pressure, and support from AI vendors positively affect AI technology adoption for talent acquisition (Pillai and Sivathanu 2020). This insinuates that in order to have a competitive advantage in the industry, organizations, regardless of their sizes, should adopt AI to leverage themselves in the industry. It is advised that leaders must implement and leverage AI technologies and collaborate with human resource managers to transform processes and practices in organizations to make them more environmentally sustainable (Trujillo-Gallego et al. 2022) It is opined that top managements should encourage AI, robotics and algorithms competence to support green organizational activities (Ogbeibu et al. 2021). Top management should be willing to change and attain the employees' support to ensure a smooth transition to AI.

The protection of green HRM data is another significant obstacle to the advancement of AI. Concerns around data protection and privacy act as a barrier to the widespread use of AI technology (Pillai and Sivathanu 2020). The data of employees needs to be safeguarded, and proper governance norms should be established in order to successfully use AI-driven green HRM interventions. The recommendations need to address not just the many technical and legal facets, but also the entire technological and data input procedures. The integration of green HRM functions with AI technology can be a costly endeavor initially, especially since there is a shortage of skilled employees in this field, which could lead to reluctance among employees who lack expertise in AI technology and may find adapting to the new system challenging (Kapoor 2022). However, integrating green HRM functions with AI technology can lead to long-term cost savings and increased financial performance for the organization.

Finally, green HRM is a crucial tool for achieving environmental sustainability in the workplace through the workforce. However, green HRM practices have been faced with a lot of bottlenecks over the years. With the adoption of AI in green HRM practices, it is opined that such blockages can be freed, and the full potential of green HRM and its implementation can be unveiled in the workplace. Therefore, the

introduction of IR 5.0, in which robots aid human operation, should be seen more as an advantage than a threat to the workforce, especially in GHRM practices.

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Green HRM, Green Creativity, and Sustainability: Evidence from Chinese Private Enterprises in China

Feige You and Daisy Mui Hung Kee

Abstract This chapter aims to shed light on the crucial role that private enterprises in China can play in promoting sustainability through the adoption of green HRM practices and fostering green creativity. With the advent of advanced technologies and the digital revolution, the achievement of sustainability can be accelerated and supported. The increasing demand for sustainable products and services has led to the rise of green HRM practices, which have been a topic of interest in the sustainability field. However, debates about their nature and value have persisted over the past two decades. Therefore, it is crucial for private enterprises in China to adapt to the changing landscape and redefine their value propositions to prioritize green creativity. This shift in focus toward innovation and environmental sustainability is essential for these enterprises to remain relevant. By leveraging green HRM practices and fostering a culture of creativity, private enterprises in China can promote sustainability and have a positive impact on society.

Introduction

Sustainability has gained significant attention worldwide as a concern for organizational prosperity (Ahmad et al. 2022). Academic scholars are also contributing to this trend through an expanding body of literature on the subject. In their recent research on green behaviors, Francoeur and Paillé (2022) focus on countries where the promotion of green behaviors is most apparent and suggest that various academic approaches to environmental management are critical to environmental sustainability. Their findings indicate that Europe has the most research on green behaviors (40.94%), followed by North America (25.98%) and Asia (24.44%) in roughly equal proportions (see Fig. 1). However, very few studies have been conducted in other

F. You (✉) · D. M. H. Kee
School of Management, Universiti Sains Malaysia, 11800 Penang, Malaysia
e-mail: feige.you@outlook.com

D. M. H. Kee
e-mail: daisy@usm.my

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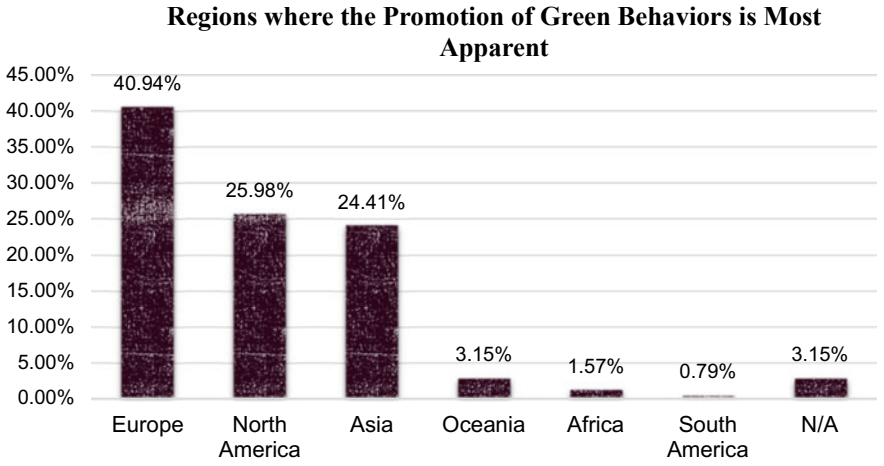

Fig. 1 Regions where the promotion of green behaviors is most apparent (Francoeur and Paillé 2022)

regions, with Oceania, Africa, and South America accounting for only 3.15%, 1.56%, and 0.79% of the total publications dedicated to green behaviors, respectively.

In Asia, mainland China leads in green behavior research with a percentage of 10.24%, followed by Vietnam (3.98%), Pakistan (3.15%), Taiwan Special Administrative Region of China (2.37%), South Korea (1.56%), India (1.56%), and Thailand (0.78%) (Francoeur and Paillé 2022). According to Zhang et al. (2020), China, as the world's largest emerging economy, has become a significant environmental contaminant. Chinese enterprises are driving economic development and have more responsibility for environmental protection than other international enterprises (Zhang et al. 2020). Therefore, the role of Chinese private enterprises in environmental management is crucial and cannot be overlooked.

This chapter focuses on how Chinese private enterprises use green HRM to create green behavior for environmental sustainability. By adopting green HRM practices, private enterprises in China can contribute to environmental protection and promote sustainable development.

The emergence of the COVID-19 epidemic has had a significant impact not only on public health but also on the global economy and businesses across various industries. Particularly, the pandemic has hit hard on businesses in tourism, travel-related industries, and non-essential retail services (Hu and Kee 2022a, b), including Chinese private businesses. Many of these businesses, especially those with little funding and resources, have been forced to shut down, and those that survived the lockdown period are facing challenges in their regular activities. As the lockdown measures are slowly being lifted, Chinese private enterprises must deal with unexpected issues to remain competitive and sustainable in the long run. Furthermore, these businesses must integrate environmental, social, and governance (ESG) concepts while implementing new corporate strategies to achieve sustainable economic growth.

Green HRM research and practice have gained momentum in recent years as more organizations focus on sustainable business (Jackson and Seo 2010). The private sector, in particular, is encouraged to lead the implementation of ESG principles (Hu and Kee 2022a, b). While the impact of businesses on environmental issues is becoming increasingly evident, Chinese private enterprises have been slow to adopt ESG principles.

The foundation and scope of green HRM involve applying traditional HRM techniques to environmental issues (Marrucci et al. 2021). Green HRM involves aligning HRM practices with an organization's environmental objectives systematically. It aims to integrate HRM practices that assist in reducing adverse environmental effects or promoting positive environmental impacts of organizational activities in line with the organization's overall objectives (Yusliza et al. 2019). Despite recognizing the importance of green HRM in the workplace, most HR practitioners in Asia do not practice green HRM in their enterprises. Recent advancements in HRM have, however, addressed environmental issues (Zhu et al. 2021). Green HRM applies throughout the employee lifecycle, from organizational recruiting to employee retention, and is best defined by its critical emphasis on environmentally responsible HR strategies (Dutta 2012). The techniques aim to assist businesses in reducing staff carbon footprints, such as reducing resource waste, promoting a better job-related mindset, achieving a better work-life balance, lowering expenses, and enhancing employee performance. Green HRM refers to HRM practices that are environmentally friendly and work to make the corporation green (Sabokro et al. 2021; Marrucci et al. 2021). It applies HRM techniques to verify that resources are effectively used within an organization (Sabokro et al. 2021), and public and private organizations have started paying greater attention to their green characteristics to boost sustainability (Anwar et al. 2020).

Green creativity involves generating new concepts for environmentally friendly goods, services, procedures, or behaviors that are exceptional, innovative, and valuable (Amabile and Pratt 2016; Chen et al. 2013). However, there is a lack of empirical research on the relationship between workers' environmental ideals and green creativity (AlSuwaidi et al. 2021). The value-belief-norm theory explains that a person's values, beliefs, and norms drive behavior, which can be used to explain this link (Stern et al. 1999). Values are straightforward rules that can direct mental inferences and affect attitudes and actions, and they play a crucial role in directing ecological behavior (Stern et al. 1999). Therefore, green creativity is essential for environmental sustainability (Ogbeibu et al. 2020). Managers prioritize green creativity among employees to create new achievements (Chen et al. 2013; Zhu et al. 2021), as creativity is a significant employee trait that reflects their capability to execute obligations under any circumstances (Li et al. 2021).

This chapter proposes a systematic review of green HRM and sustainability, with a particular focus on Chinese private enterprises operating in China. A thorough understanding of green HRM is important in helping Chinese private enterprises sustain their operations in a more organized and productive manner. Chinese enterprises should take a proactive and socially responsible approach by assuming responsibility and limiting the negative impact of their activities on the environment (Shen

et al. 2019). One effective way to achieve this is by implementing green HRM to improve corporate social responsibility (CSR) outcomes. Therefore, this chapter will discuss the role of green creativity in enabling Chinese private enterprises to implement business environmental sustainability. We propose that green HRM can promote green behavior through green creativity among Chinese private enterprises. We view green creativity as a potential mediator between green HRM and green behavior. The use of advanced technologies and the digital revolution can support and accelerate sustainability efforts. Therefore, it is crucial for private enterprises in China to change their approach and transform with refined value propositions, focusing on green creativity, which in turn will lead to innovation and environmental sustainability, enabling them to stay relevant. This chapter provides insights into the role that private enterprises in China could play in promoting the desirable impacts of environmental sustainability on society through green HRM and green creativity.

Literature Review

Private Enterprises in China

China recognizes three types of private enterprises: individual investment firms, partnerships, and limited liability corporations. A private enterprise is a business owned and operated without the assistance of the state. In economics, the term "private enterprise" refers to a private business, corporation, or enterprise type with various meanings. One viewpoint defines private enterprise as a legally recognized economic entity that engages in private investments, operations, profits, and business risks exclusive to the private sector. State-owned businesses can be classified into two groups based on their ownership structures: state-owned private companies and private enterprises. Private enterprises are owned and managed by private individuals, while state-owned enterprises are owned and governed by the government. Table 1 illustrates the primary differences between state-owned enterprises and private enterprises in China.

State-owned enterprises (SOEs) play a crucial role in the Chinese economy. They are corporate entities that conduct business activities on behalf of the government that controls them (Word Economic Forum China 2020). Over the past four decades, China's economy, which primarily relies on SOEs, has been highly successful. According to the Fortune Global 500 list of 2020, 117 of the world's top 500 firms are registered on the Chinese mainland, with 91 of them being state-owned enterprises. China has the largest number of SOEs worldwide, with over 150,000 of them.

Despite the pressure of the pandemic, China's market entities have continued to grow since 2020, reflecting the great resilience of the Chinese economy. Private enterprises in China have played an essential role in promoting economic and social development. The total number of enterprises in China has risen from over 13 million to 51 million (State Administration for Market Regulation 2022). The number of

Table 1 State enterprises versus private enterprises in China

State-owned enterprises	Private enterprises
Started by the Government	Started by a person
Established by an act of parliament	Founded by the registrar of companies
Wholly owned and operated by the state	Owned and managed by private persons
Basic services for residents are the aim of state-owned businesses. It was not made to make money	Only to generate profits for their owners. The primary objective of private firms is profit
The state covers losses	Private individuals bear losses
When state businesses make money, it goes into the consolidated fund	When private businesses make money, the owners share it

Source https://byjus.com/commerce/difference-between-public-and-private-sector/

Chinese private enterprises has increased from 10.857 million in 2012 to 47.011 million in 2022, more than quadrupling in 10 years (see Fig. 3). Both Figs. 2 and 3 show that the overall scale of Chinese private enterprises has steadily increased. These figures indicate that the overall strength of private enterprises in China has been greatly enhanced, and more private enterprises have continued to enter the Fortune 500 list. The proportion of private enterprises in China has also continued to rise, from 79.4% to 92.1% (see Fig. 2).

In order to achieve sustainable development, it is crucial to prioritize environmental sustainability as the primary objective of an organization Fawehinmi et al. (2022). Enterprises must effectively manage their economic, ethical, and social responsibilities to uphold corporate interests and the environment by implementing sustainable development practices (Gupta and Gupta 2020). Both public and private

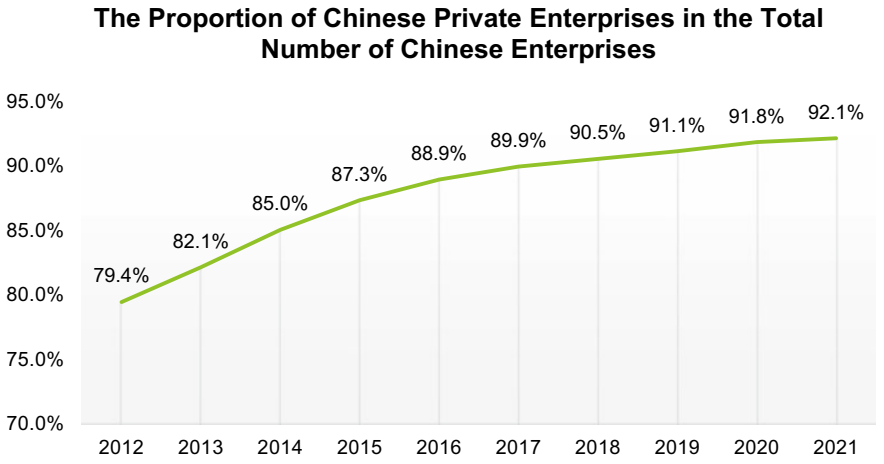

Fig. 2 The proportion of Chinese private enterprises in the total number of Chinese enterprises (State Administration for Market Regulation 2022)

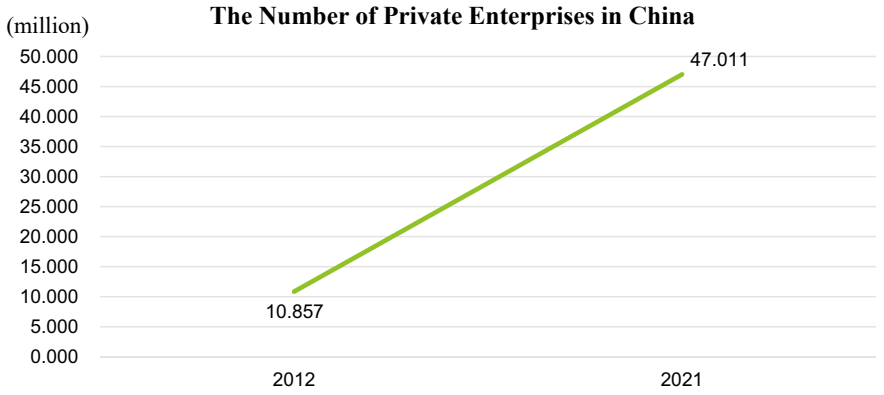

Fig. 3 The number of private enterprises in China (State Administration for Market Regulation 2022)

organizations have increasingly emphasized their green initiatives to enhance business sustainability (Daddi et al. 2020). The growing focus on sustainable business programs has contributed to the current greening of HRM literature and practices. HRM should be integrated with environmental management to establish and maintain effective environmental management systems (Renwick et al. 2013). Scholars and practitioners have started to combine HRM with environmental management techniques (Jabbour and de Sousa Jabbour 2016; Jackson and Seo 2010). However, despite the growing attention given to environmental issues and opportunities, HRM techniques have been slower to adapt (Jackson and Seo 2010).

Shen et al. (2019) found that Chinese businesses are increasingly using techniques such as Skype interviews to conserve resources and reduce costs associated with the hiring process. This HRM strategy used by domestic Chinese enterprises is noteworthy, as job opportunities, especially for young and highly qualified job seekers, are considered attractive to environmentally conscious enterprises (Peretz et al. 2017). Shen et al. (2019) examined green HRM in Chinese enterprises, and this chapter will focus specifically on green HRM in Chinese private businesses.

Environmental Problems Faced by Chinese Private Enterprises

Environmental pollution has emerged as a major concern in China since its reform and opening up. In 2013, China released 2.49 tonnes of carbon dioxide from the use of fossil fuels, which adversely affected the country's reputation and public health. As the world's largest cotton producer, China accounts for 25.4% of global cotton production (USDA 2021). Therefore, both the public and private sectors are increasingly interested in finding sustainable solutions to tackle environmental issues (Blok et al. 2015). The need to protect the natural environment from the negative

impact of certain industries is gaining support, and organizations must successfully manage their commercial, moral, and social responsibilities by implementing green innovation management (Blok et al. 2015).

China's economy has sustained an average yearly growth rate of about 10%, which is known as the "growth miracle." However, this rapid economic expansion comes at a significant environmental cost. According to the Ministry of Environmental Protection's 2015 bulletin on the environmental status in China, air quality pollution in 265 Chinese cities exceeded the limit, accounting for 78.4% of cities, and 40.4% of cities suffered from acid rain. In the long term, this broad economic expansion is far from being an unlimited energy source for sustainable economic development. Instead, it can create a significant depletion of China's natural resources, impose enormous environmental costs on society, and worsen the country's economic structure imbalance.

In China, various industries are legally permitted to produce a certain amount of greenhouse gases. According to Chinese forestry administration officials, desertification has affected approximately 1.05 million square miles of Chinese land, impacting more than 400 million people (Khan and Chang 2018). Pollution and desertification are reducing China's ability to maintain industrial production while providing food and clean water for its large population. Despite the popular perception, China is still a developing country (Khan and Chang 2018). Industrialization is accelerating, with the gross national product increasing by almost 10% annually (Çakmak and Acar 2022). Moreover, China's per capita energy consumption is one-tenth that of the US (Çakmak and Acar 2022).

Obstacles for China's Private Enterprises to Implementing Environmental Sustainability Strategies

Chinese private enterprises implement environmental sustainability strategies for several reasons. Firstly, many lack the resources and skills to understand environmental law requirements properly. One-sided, exaggerated, or even inaccurate interpretations of environmental regulations by speculators and some media sources have contributed to a negative image of green conduct among Chinese private enterprises. Therefore, there is still significant potential for development in understanding environmental laws and social responsibility for environmental protection. The growth of Chinese private enterprises has not been sufficiently connected to green development, and several businesses are still not respecting the modernization and upgrading of infrastructure for environmental governance, nor are they completely aware of the rigid restrictions placed on environmental monitoring.

Secondly, illegal pollutant discharges occur occasionally. Many industries that produce a lot of pollution face operational challenges and environmental regulations. However, the foundation set up by private enterprises to reduce pollution is relatively weak. Since many private organizations lack the means to update their pollution

control systems and some even lack legal business procedures like the environmental impact assessment, it is not easy for them to comply with environmental monitoring criteria.

Thirdly, most private enterprises have an archaic idea of economic progress. China's economic and social structure has come a long way since reform and opening up, but most businesses still adhere to the development philosophy of "emphasizing commercial gains and neglecting environmental protection." The central ecological and environmental protection inspector publicly disclosed some typical situations. Although this strategy may help businesses make money in the short term, it is unsustainable in the long run, which is bad for both the long-term and steady growth of the business and China's ecological environment. From a specialized practice perspective, employee career management in Chinese private enterprises is still in its infancy, and the outcomes are underwhelming. Additionally, the company's methods for career development are outdated, and employee development is often neglected in favor of inspiring individuals to work hard for the company.

Environmental Sustainability

The concept of sustainability is multifaceted, encompassing various aspects of human activity. Environmental sustainability, in particular, is a macro-level objective that can significantly contribute to broader environmental goals (Ahmed et al. 2020). The classic concept of sustainable development emerged in the 1980s, emphasizing the need to satisfy present needs without compromising the ability of future generations to meet their own needs. The Brundtland Commission highlighted the interdependence of ecological, social, and economic aspects of human activity. The sustainable design aims to limit the human impact on the environment and preserve natural resources by promoting energy efficiency, waste reduction, and recycling in the workplace.

Pro-environmental behavior also requires individual changes in "ways of doing." The concept of the triple bottom line or P3, which involves considering the interplay of People, Planet, and Profit, first appeared in the 1990s, and environmentalism is no longer a fringe topic. HR policies and practices can also influence employee behavior and, in turn, affect labor productivity and environmental sustainability (Muisyo and Qin 2021). An environmental management system can serve as a mechanism for controlling the environmental implications of organizational operations, formalizing people, processes, and procedures, encouraging continuous improvement, and involving top management.

Considering these factors, enterprises must integrate environmental considerations into their commercial strategic plans, given that their activities, production, and services affect the environment and their interaction with various stakeholders. Entities generate most of their carbon footprints through regular activities, thereby impacting the environment (Chang et al. 2022). Public organizations must therefore adapt and incorporate environmentally friendly methods into their operations to meet

these challenges (Haddock-Millar et al. 2016). Green HRM, a global strategy for environmental sustainability, involves building ecological standards, policies, and strategies, motivating, empowering, and keeping human resources aware of green leadership initiatives, and integrating them into greener processes (Jabbour and de Sousa Jabbour 2016; Renwick et al. 2013).

The benefits of green HRM for governmental organizations are numerous (Hosain and Rahman 2016), including protecting the environment, creating a positive workplace culture, boosting staff morale, gaining a competitive edge through CSR, saving money, enhancing corporate image, reducing government and law enforcement agency involvement, increasing employee eco-friendliness and environmental learning, promoting creativity and growth, supporting learning and changing behavior, maximizing material use, and reducing waste.

Creating Green Behavior in Chinese Private Enterprises Through Green HRM

Kollmus and Agyeman (cited in Fawehinmi et al. 2022) define green employee behavior as "a type of behavior that actively strives to minimize the detrimental influence of one's actions on the built and natural environment." Additionally, Amrutha and Geetha (2021) describe employee green behavior as a collection of intentional and altruistic activities that seek to protect the environment by preventing negative ecological impacts or enhancing the environment.

Research suggests that HRM can positively impact green sustainability objectives at the corporate level (Anwar et al. 2020; Ahmed et al. 2020; Fawehinmi et al. 2022; Zhu et al. 2021). Renwick et al. (2013) suggest that several factors may influence how green HRM affects employee green behavior, including increasing awareness and education about environmental issues, communicating the organization's goals for green behaviors to prospective employees, and increasing employees' knowledge, abilities, and capacities through participation in green projects and education about green concepts.

Studies have found that green HRM can increase environmental consciousness and encourage green behavior among employees (Fawehinmi et al. 2022) and that gathering information from employees can help green HR managers predict their green behavior (Zhang et al. 2020). Moreover, Ong and Riyanto (2020) found that green HRM initiatives can improve corporate citizenship behavior and increase extra-role behaviors in manufacturing companies.

Shen et al. (2019) validated these arguments in a study of Chinese employees and found that green HRM directly and indirectly affects employees' in-role green behavior. The current study seeks to examine how green HRM affects green behavior across a wide range of private enterprise sectors in China. This research is significant in expanding our understanding of how HRM can promote green behavior in the workplace and contribute to environmental sustainability.

Creating Green Behavior in Chinese Private Enterprises Through Green Creativity

Green creativity fosters innovative and sustainable concepts for products, activities, or services that benefit the environment (Chen et al. 2013). Numerous organizational and human factors can influence it. For example, according to Chen et al. (2013), corporate leadership and environmental awareness influence environmentally friendly creative solutions. Such leadership provides individuals with the tools to contribute to future green innovations by understanding their needs, skills, and incentives. Developing employees' green creative skills is critical for managers to foster organizational innovation. The academic discourse suggests that creativity is a fundamental quality for employees to identify human skills to achieve corporate goals in specific situations (Ogbeibu et al. 2020). Green creativity can enable staff to generate fresh ideas for sustainable products and services and motivate them to adopt greener behaviors (Ogbeibu et al. 2020). Therefore, we argue in this book chapter that green creativity can enhance employee green behavior and act as a potential mediator between green HRM and green behavior.

Creating Green Creativity in Chinese Private Enterprises Through Freen HRM

According to Huo et al. (2020), Green HRM encompasses the entire employee working cycle, including employee incentives, education, training, and authorization. Guerci and Carollo (2016) found that the primary components of green HRM are green training, green pay, and green recruiting. Specific approaches, such as environmental preservation education and green behavior management, can raise employees' environmental awareness, promote motivation in environmental protection, provide job prospects, and maximize the vital value of human resources (Renwick et al. 2013; Guerci and Carollo 2016).

Regarding working capability, green HRM can recruit and promote environmentally conscious individuals. Green recruitment actively finds and favors such people who have adequate environmental awareness, sensitivity, and understanding and are aligned with the organization's environmental protection ideals (Renwick et al. 2013). These individuals are concerned with environmental protection, energy conservation, and lowering emissions throughout the work process, and they proactively participate in green creative initiatives. Meanwhile, strong environmental responsiveness allows the business to alter environmental conservation methods in response to developments in the external environment, which promotes green creativity (Guerci and Carollo 2016).

Green performance management, green reward, and green incentive authorization are crucial to encourage employees' readiness or motivation for green creativity. The overall goals for green creativity should be matched with the assessment indicators as

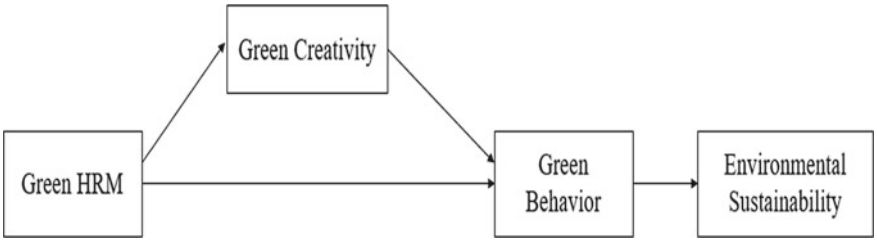

Fig. 4 Proposed research model

a key component of performance appraisal Mandip (2012).Green HRM emphasizes recognizing employees who exhibit environmentally friendly ingenuity. Employees are asked to define their roles in the environmental management process, which improves their ability to recognize and comprehend the strategic objectives of the organization's green inventiveness (Bret Becton et al. 2008). Employee participation in adopting appropriate environmental protection practices is encouraged to develop green innovation. We see a potential link between green HRM and green creativity.

Methodology

This chapter employs the resource-based view of the firm (Barney 1991) to examine how organizations adopt green HRM for environmental sustainability. The discussion in this chapter reflects on the findings of secondary research. Drawing on the resource-based view theory, this chapter concentrates on the implementation of green HRM in enterprises to enhance environmental sustainability. Our perspectives are based on accumulated evidence, observations, and critical arguments regarding the challenges that enterprises face in promoting environmental sustainability. The chapter also outlines the methods and strategies that enterprises can employ to promote environmental sustainability and business growth in the future, with a specific focus on Chinese private enterprises operating in China. In light of these discussions, we propose the research model illustrated in Fig. 4.

Discussion

The literature review conducted in this chapter has revealed the significant potential of HRM practices in promoting environmental sustainability across organizational processes and people. From job design to employee interactions, HRM can play a vital role in greening organizations and their operations. However, the challenge lies in comprehending the scope and complexity of green HRM to transform organizations into eco-friendly entities. To establish a cleaner manufacturing process and promote

green initiatives, management styles must align with the organization's values, goals, and objectives.

Green HRM strategies such as attracting environmentally responsible individuals, providing environmental education, offering green technology, and necessary resources and infrastructure can foster green creativity, encourage employee recycling behavior and improve environmental performance. Organizations can establish robust pollution prevention strategies that effectively use resources, reduce harmful environmental effects, and enhance their positive environmental impacts.

The personnel factor is essential in enhancing an organization's sustainability performance, and green HRM strategies are critical in developing ecologically connected creative behaviors and promoting a greener mindset among workers. In China, where greenhouse gas emissions are the highest globally, initiatives such as the China National Environmental Monitoring Centre have been established to promote organizational greening. However, these initiatives are insufficient in addressing the growing levels of harmful pollutants that affect citizens' daily lives, as highlighted by a report published by Greenpeace and the Swiss company IQAir (2019). This underscores the importance of green HRM and green creativity in private enterprises in China and their role in promoting environmental sustainability in the long run.

Future Research Directions

This chapter delves into the general concept of green HRM in private enterprises in China, highlighting how green practices can provide organizations with an opportunity to address social challenges by embracing green HRM. Consequently, researchers can scrutinize and investigate the application of green HRM and green knowledge in enterprises operating in a particular industry sector within a specific country. To comprehensively grasp green HRM, a future study could focus on potential underlying mechanisms or explore other industry settings to generate practical insights for academics, managers, and policymakers. These insights would assist in charting future directions for environmental sustainability in the country while maintaining a balance between the economy and society to foster harmony.

Moreover, future studies can employ qualitative approaches to explore alternative concepts or develop new theories that contribute to knowledge. For instance, these studies could examine the potential obstacles that arise when implementing green HRM at the individual and organizational levels.

Conclusion and Recommendation

In conclusion, green HRM is a vital factor in promoting environmental sustainability. Although green HR practices are relatively new in Asian countries, they can help minimize environmental waste and redesign HR products, tools, and processes

to enhance efficiency while reducing costs. However, addressing environmental concerns alone is insufficient, and green HRM practices and approaches should be integrated into broader business strategies and government policies. As human resources are a crucial asset in any organization, incorporating green HRM into mission statements and policies can increase employee satisfaction and dedication to environmental causes. While the effects of green HRM activities vary, ongoing research can help identify their potential impact on HRM concerns.

Despite the growing importance of green HRM, empirical research on the topic remains limited, particularly in the service industry and emerging nations. It is recommended that further studies be conducted in various service sectors in developing countries to better understand how green HRM can improve environmental performance. Moreover, research with a larger scope is needed to explore the influence of green HRM elements on organizations' environmental performance. In light of these findings, private enterprises in China must adapt to changing trends and focus on green HRM and creativity to promote innovation and environmental sustainability. By doing so, they can stay relevant in the market while contributing to a greener future.

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Research Trends in Green Human Resource Management: A Comprehensive Review of Bibliometric Data

Anandhan Hariharasudan and Sebastian Kot

Abstract In the recent past, there has been a growing interest among organisations in adopting Green Human Resources Management (GHRM) practices to promote eco-friendly behaviour among employees, thereby creating socially responsible and resource-efficient organisations. Numerous studies have been conducted to better understand this field, and this study aims to analyse the bibliometric data of GHRM retrieved from the Scopus database. Scopus is a reliable source of bibliometric data, covering scholarly publications from over 5,000 publishers with a rigorous quality control process. Its standardised metrics, user-friendly interface and analytical tools make it a valuable research resource. In particular, it elucidates the comprehensive viewpoints of GHRM and its impact on scientific publication networks. The methodology employed in this study involves a thorough and organised analysis of scholarly articles published in journals indexed in Scopus. The bibliometric data were extracted from the Scopus database from 2000 to 2022 to obtain the study results, and the considered duration is the emergence of GHRM publications. The Boolean operators and filtering were used to extract the exact data related to GHRM. There were 1214 bibliometric data obtained on GHRM from the Scopus database. To carry out the analysis, this study utilises VOSviewer software, which allows for the visual categorisation and examination of the distribution of bibliometric data and scientific publication networks through cluster maps. The study findings are divided into three primary categories: publication timeline, the countries of affiliation of co-authors and citations. The results indicate that the networks of bibliometric data visualisation display the relationships and relative strengths of publications. The findings of the

A. Hariharasudan
Faculty of English, Kalasalingam Academy of Research and Education, Anand Nagar, Krishnankoil, Srivilliputhur 626126, Tamil Nadu, India
e-mail: dr.a.hariharasudhan@gmail.com

S. Kot (✉)
The Management Faculty, Czestochowa University of Technology, Armii Krajowej 19B, 42-201 Czestochowa, Poland
e-mail: sebastian.kot@pcz.pl

Faculty of Economic and Management Sciences, North-West University, Vaal Triangle Campus, P.O. Box 1174, Vanderbijlpark 1900, South Africa

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study revealed that 1214 articles on GHRM were published from 2000 to 2022, with China leading in research contributions. Charbel Jose Chiappetta Jabbour's works have received the highest citations, with a total strength link of 350. Furthermore, the analysis of the visualisation networks provides a novel understanding of current research in this field. The present review also identifies the gap in the literature and paves the way for further research.

Introduction

Human-caused environmental degradation and climate change have led to devastating weather and climatic disasters, resulting in economic losses and a 1.08 C rise in global temperatures (United Nations Environment Programme 2019; Kuzior et al. 2022). The sustainability discussion starts from the business sector, which is the major cause of ecological harm at local, provincial and international scales (Moscardo et al. 2013). The business sector must address environmental problems caused by the excessive consumption of natural resources and raw materials (Burritt and Schaltegger 2010). For future generations' needs and to meet their aspirations, the organisation has to ensure proactive steps towards the environmental issues before getting the social licence to operate the business organisation (Shafaei et al. 2020; Umar et al. 2022). The recognition of sustainability and corporate social responsibility has highlighted the significance of human resources in most organisations, in addition to financial, legal and other factors associated with promoting cleaner production in business (Amrutha and Geetha 2020). The integration of human beings into environmental sustainability through practices that emphasise human resources can be considered the organisational function of Green Human Resource Management (GHRM) (Fachada et al. 2022). GHRM is an emerging topic that promotes sustainable resource use within organisations and environmental sustainability (Adhikari et al. 2014). It aims to attain environmental sustainability and promote social equity, as well as the health, wellness and overall well-being of both the organisation and its employees. This objective is pursued while also striving to achieve economic stability and environmentally friendly practices (Amrutha and Geetha 2020).

GHRM utilises eco-friendly HR practices, referred to as Green Creativity, to decrease the carbon footprint of employees. These practices include electronic filing, car sharing, job sharing, teleconferencing, virtual interviews and recycling. As a result, the implementation of such practices leads to enhanced efficiency, reduced costs and increased employee engagement and retention (Joshi and Dhar 2020). It makes the employee (Madan and Swaty 2016) and members of society aware of the economic utilisation of natural resources and encourages eco-friendly products (Esmaeilpour and Bahmiary 2017). According to empirical research, GHRM practices, such as training, pay, performance management and recruitment, play a crucial role in achieving environmentally sustainable development. This highlights

the potential for green-focused companies to effectively implement these strategies (Pham et al. 2020).

GHRM policies are implemented in Green Hiring, Green Training, Green Discipline Management (Nisar et al. 2021), Green Performance Management, Green Employee Relations, Green Compensation, Green Building and Green Initiatives for HR (Ahmad 2015).

Research studies on Green Human Resource Management (GHRM) have proposed various models for the implementation of GHRM practices in organisations, highlighting the importance of communication, employee involvement and training (Renwick et al. 2013). Comparisons of GHRM practices between companies have shown that a focus on GHRM practices can lead to higher levels of employee engagement and commitment, resulting in increased organisational performance (Haddock-Millar et al. 2016). Future research on GHRM practices has been called for to evaluate the effectiveness of these practices and investigate their potential impact on business performance (Renwick et al. 2013). A study conducted in Malaysia provides empirical proof that GHRM practices have a positive impact on firm performance. The research reveals a noteworthy correlation between green recruitment, green training and firm performance (Nisar et al. 2021).

Though numerous studies on GHRM and its practices exist, bibliometric studies are still scarce. A few studies focus on bibliometric data and explore the citation networks and coauthorship links but deal with other disciplines of research areas (Cavalcante et al. 2021; Hariharasudan et al. 2021). Besides, it is identified from the reviewed literature that there are some review studies on GHRM, but those studies are not dealt with the bibliometric data for showcasing the year-wise GHRM publications, coauthorship network by countries and citation network of the authors. Thus, here is the novelty of the present study. In this way, it motivates the researchers to conduct the present study. In addition to identifying research gaps in the field of GHRM, this study aims to provide a comprehensive understanding of related issues by examining the implementation methods and practices of GHRM within organisations, as well as other pertinent aspects, through a survey and review of published articles. The data for this study is obtained from the Scopus database. While bibliometric data can be obtained from various sources, including Web of Science and Google Scholar, Scopus has distinct advantages. It offers comprehensive coverage of scholarly publications from over 5,000 publishers, with a rigorous quality control process ensuring high-quality publications. Scopus also provides standardised metrics such as the h-index, which is widely accepted in academia, and a user-friendly interface and analytical tools to help researchers search and analyse data, making it a valuable resource for bibliometric analysis. Moreover, VOSviewer software is used for the network visualisation of the obtained data.

This study has a significant contribution to the field of GHRM. Here are the objectives:

- It identifies gaps and best practices in GHRM for further research and replication in other organisations.

- It raises awareness of GHRM issues among researchers, practitioners and policymakers.
- It provides evidence-based decision-making information for the development of policies and practices that support GHRM and enhance organisational performance.
- It contributes to the development of theory in GHRM by analysing existing literature and identifying key trends and patterns.

Sustainable Organisation

To attain quality output, creative employees focus on Sustainable Organisation. Organisation directed towards the preservation of the ecosystem by conserving natural resources and recycling raw materials is known as Sustainable Organisation. By asserting Environment management, the organisation gains its reputation among the competitive companies worldwide. The governments of many countries have more responsibilities for attaining sustainability goals. In the current generation, many small-scale industries focus on natural resources of its production and acknowledge prospective organisations for sustainable development. Addressing environmental concerns within an organisation is an imperative task that requires innovative approaches (Joshi and Dhar 2020) and Green Human Resource Management is one such strategy that can be employed to achieve this objective.

Overview of Green Human Resource Management

Human Resource Management (HRM) is one of the main management responsibilities in any organisation (Yusliza et al. 2017). The concept of environmental management within the organisation by adopting green human practices and policies is called Green Human Resource Management (GHRM) and was introduced in 2011 (Ahmad 2015). The GHRM aims at making employees of an organisation adopt green activities, which involve in development, implementation and maintenance of the system for achieving the environmental goals of an organisation and the effective contribution of environmental sustainability. This explains the policies, practices and systems that make the organisation's employees adopt green to benefit society, individuals, businesses and natural environment (Sharma et al. 2022). Due to numerous environmental issues, the organisation is facing pressure to adopt sustainability. GHRM practices make the employees contribute to the preservation, conservation and non-polluter of the environment (Opatha 2013). To reduce each employee's environmental carbon footprint, the organisation needs to adopt GHRM by connecting industrialisation, urbanisation and ecological management. GHRM gives a larger insight into the employees' resources and workforce to control pollution by suggesting the organisation go towards Green (Farrukh and Raza 2022). As

a result, GHRM is considered an important organisational task from the economic perspective, along with the management of human resources (Renwick et al. 2013). The organisation's ethics, sustainability activities and performance are affected by environmental, social and governance indicators. To attain market performance, the organisation must perform with high scores of environmental, social and governance values (Rajesh and Rajendran 2020; Dang et al. 2021). Therefore, GHRM significantly affects environmental and business performance (Ghouri et al. 2020). Effective implementation of GHRM helps enhance employee's green skills and knowledge by increasing organisational commitment (Shoaib et al. 2021).

Environmental Performance and Organisation Performance

In line with the economic view for attaining the marginal cost, keep within bounds on the investment of ecological activities in the organisation. Studies show to determine the organisation's economic performance in the beginning by investing beyond the legal and ecological requirements (Fontes et al. 2021). Considering the research, rather than implementing excessive environmental performance of the organisation, following Green practices enhances employees' performance along with the organisation's benefits. Moreover, Green practices enhance the organisation's financial level through environmental performance. Reducing wastage, recycling raw materials and energy consumption increase the financial benefits of the organisation.

Consequently, GHRM practices proactively enhance the environmental benefits of the organisation by getting the advantage of premium prices and improving sales by increasing market legitimacy and social endorsement. The main advantage of attaining in the competitive world is selling unique products and services by practicing environmentally friendly activities such as green initiatives and adopting sustainable organisation through social endorsement. To attain a sustained competitive world, organisations must continuously adopt green practices by taking many new innovative steps which enhance the organisation's performance. Moreover, GHRM greatly reduces the wastage of raw materials, carbon emission, energy consumption and other waste management, increasing the organisation's performance (Ginevičius 2022). Henceforth, organisational performance and financial growth increase by adopting ecological involvement (Ghouri et al. 2020).

Psychological Mechanism Linking to GHRM

Negative impacts of economic activity on the ecological environment demand the organisation to take necessary steps to save the environment by improving green practices. The organisation needs to concentrate on improved green practices to stay competitive in the market environment. Environment awareness is not only for social responsibility but also enforces the organisation to follow the standards by

properly training the employees. Giving green rewards improves their organisation's performance and motivates them to take innovative steps and reduce waste. Therefore, to achieve economic efficiency, business environment objectives need to follow GHRM (Belas et al. 2019). GHRM can enhance the green behaviour of employees by adopting green practices. Individual environmental values, organisational culture, employee empowerment and green pay rewards interlink GHRM and organisational performance (Rawashdeh 2018; Rahiman et al. 2021). Appreciating and motivating the employee by giving the necessary rewards keeps the employee following sustainable goals and improves the organisation's performance. Therefore, GHRM does its job altogether by enhancing the whole organisation.

Mediating Role of Green Innovation

Interaction between GHRM and Green Innovation helps us to understand the importance of factors that enhance sustainable performance. GHRM practices improve organisational performance, employee skills and social responsibility to the next extent (Joshi and Dhar 2020). The company goals can be supported by using renewable resources and green practices by giving employees chances to implement innovative steps. Innovative steps followed by the employee make the organisation achieve its goal (Pakurár et al. 2020). The study points out the utilisation of the innovative steps to be followed to achieve the organisation's goal (Ye et al. 2022). Along with this, employees who work with innovative techniques help the organisation's performance grow and lead to sustainable development. After implementing Green Innovation, it is necessary to follow green practices. GHRM provides support for hiring people with effective skills and technical support for committing the environmental ideologies and an innovative Business model. Thus, Green Innovation mediates the relationship between Environmental progress and GHRM to a great extent (Awwad Al-Shammari et al. 2022).

Initiatives Taken in Green Organisational Management

From an operational point of view, the objectives of the organisational firms are connected with their implemented HRM and innovative practices. Moreover, employees are motivated and highly involved in enhancing better environmental policies (Awwad Al-Shammari et al. 2022). An organisation that makes the employees choose green activities for the benefit of the organisation and the society beyond profit-seeking is considered Green Organisation (Shoaib et al. 2021). Generally, organisations adopt consistent HR practices to manage the organisation's culture and business strategy (Roscoe et al. 2019). Green initiatives in HR manifest the organisation in an environment-friendly zone (Madan and Swaty 2016). All over the world, Organisations are incorporating GHRM practices to gain an advantage in the

corporate world. The managers need to work towards the GHRM inside the organisation by giving guidelines to the employees. This enhances the management, HR professional and line managers to take informed decisions about the architecture of the HR role. It enhances people's abilities, motivates them and creates a supportive culture by exploring them to exhibit the desired strategised behaviour for attaining sustainability (Bahuguna et al. 2023).

Meanwhile, practices such as green building, paperless offices, conservation of energy, recycling and waste management need to be followed (Hosain and Rahman 2016). The building is constructed with the features such as energy efficiency, renewable energy and stormwater management (Hlushchenko et al. 2022). Many corporate companies like Ford and Pepsi Co are committed to sustainability, including green building design. A paperless office is the restricted use of paper in a limited way so that it reduces the overall cost of paper consumption by printing, copying, storing and saving time for searching documents (Ahmad and Ahmad 2015). Conservation of energy inside the organisation has a great potential impact on society. Introducing 100% renewable energy and solar lights (Zhang 2010) inside the organisation and campaigning the employees about turning off PCs, TVs and lights when leaving makes the organisation save energy. In addition to the HR system, tracking of carbon emissions of the employee creates a huge impact on the environment (Ali et al. 2020). Moreover, processing the used-up waste material into new useful products helps the organisation to reduce the usage of raw materials. This process reduces energy as well as the amount of waste which has been thrown. Recently, the corporate is adopting 3Rs—Reduce, Reuse and Recycle to save the environment (Ahmad 2015).

Implementing Green Recruitment

Green recruitment selects employees sensitive to environmental issues and willing to commit to environmental programs. It is about informing the organisation of environmental policies while recruiting employees (Arulrajah et al. 2016; Sathyamoorthi et al. 2023). There are two types of green recruiting (Saeed et al. 2019). They are as follows:

1. Eco-friendly ways of hiring employees using online tools, limited paper usage for recruiting and selection.
2. Assessing the green attitudes of employees and individuals who prioritise environmentally-friendly practices, such as the utilisation of recycled products.

In order to achieve environmental policies, employees are recruited based on their green knowledge and green innovation (Cooke et al. 2020). The four categories of Green Recruitment are Green Competency, Green Attitude, Green Behaviour and Green Results (Opatha 2013). According to the green activities, employees must have the knowledge and skill (Competencies). Also, employees need to have appropriate beliefs, feelings and intentions towards implementing green activities (Jehan

et al. 2020). A critical GHRM requires green behaviour and Green organisational citizenship behaviour to attain positive actions, which helps the organisation to achieve its environmental goals. Employees need to do voluntary green actions.

Moreover, Green recruiting saves time and energy by moving to web-based recruitment (Renwick et al. 2013). To decrease unnecessary waste creation, the organisation needs to recruit employees in an environmentally sustainable way, moreover, by clearly redefining the recruitment process by training the employee of the organisation to learn hospitality during online sessions. The green employer creates the brand for any organisation and its environmental management policies through the GHRM practices (Pham et al. 2019). Hence, Green branding creates a company reputation by selecting potential employees who are positive towards environmental issues (Tang et al. 2018).

Green Employee Training and Management Activities

Green training and management refer to developing employee's skills, knowledge and attitude towards Environmental issues and taking necessary actions (Harmon et al. 2010; Yusliza et al. 2020). The application of environmental management influences the perception of the employee for enhancing environmental issues by following sustainable behaviours (Molina et al. 2021). The organisation makes the employees pay attention to environmental issues and motivates them to learn environmental protection activities (Arulrajah et al. 2016). Training should be provided along with education programs for all the company employees and sharpen the employees' skills to deal with the different environmental issues (Ahmad 2015). Green training can be provided along with green initiatives for the benefit of the employees (Pham et al. 2018). Green initiatives make all the employees involved in environmental issues—green involvement (Renwick et al. 2013). Organisations can offer employees the chance to partake in environmental management programs to identify environmental concerns and take appropriate action. Green employee training helps the employees to collaborate with the other employees and creates a friendly environment within the organisation (Nisar et al. 2021). Green training motivates and enhances employee discipline management rules. Moreover, GHRM follows the discipline constraints, such as penalties, warnings or work suspensions concerning the individual who fails to follow the environmental principles inside the organisation (Bombiak and Marciniuk-Kluska 2018). In addition, it is important to provide employees with training and education focused on sustainability, which can also equip them with the skills to educate customers about the advantages of adopting eco-friendly practices and purchasing green products (Vorontsova et al. 2020).

Rewards on Green Employee Performance Management

Green pay is one of the strategic approaches for making the employee follow GHRM practices (Haldorai et al. 2022). It is argued that rewards motivate employees and contribute more to environmental goals (Joshi and Dhar 2020). Incentives and rewards are powerful measures for aligning the employees' performance with the organisation's goals (Ren et al. 2018). Non-monetary incentives, such as recognition and praise, can serve as a source of motivation for employees. Green rewards, such as financial and non-financial rewards based on environmental achievements, publically recognised environmental performance and connected Green Rewards with Green Innovation Techniques (Rawashdeh 2018). Promoters are offering green travel benefits, green tax incentives and recognition for eco-friendly travel, as well as non-financial incentives (Rawashdeh 2018). By promoting environmentally conscious travel practices, such as green travel, individuals can significantly reduce their carbon footprint and increase their awareness of environmental issues. Incentives such as green taxes encourage the use of bicycles, less polluting vehicles and the use of recyclable bags (Tang et al. 2018). Green recognition entails the recognition of the worldwide employee origination paid vacation gift certificates. Eco-friendly initiatives are encouraged by non-monetary green rewards, which generate a sense of pride among colleagues.

Motivating Green Employees

Motivating the employees plays a big role in implementing GHRM, and maintaining the performance of the employee and their appraisal of the necessary work through sustainability, presents many challenges. Proper maintenance is required to measure the environmental performance standards of various organisational units and assess their recycling initiatives' impact on overall environmental performance. To address this issue, many companies have implemented corporate environmental standards and green information systems to provide valuable knowledge on Green Human Resource Management (GHRM) for their employees. Green Pay system is a creative initiative for developing employee performance and environmental benefits (Renwick et al. 2013).

Green Performance Appraisal (GPA) includes environmental incidents, environmental responsibility of the employee and environmental concern communication and following their policies (Renwick et al. 2013). GPA helps enhance employee performance, Organisation production and Environmental Sustainability. To widen the employee performance objectives, managers of the concerned organisation need to take accountable steps to enhance performance (Renwick et al. 2013). Hence, GHRM plays not only the environmental sustainability but also its employees' performance through green initiatives.

Methodology

Apart from providing a thorough literature review on GHRM, the study's methodology includes an analysis of bibliometric data on GHRM obtained from the Scopus database. Additionally, the study utilised VOSviewer software to graphically analyse the data, which enables the visualisation of bibliometric data distribution and network through cluster maps.

The data were retrieved in November 2022 from the Scopus database, where the researchers can get the most used and reliable bibliometric data. The obtained data ranged between 2000 and 2022 because the considered duration is crucial for GHRM and its related activities. The researchers used Green Human Resource Management as a query term. This gave a total of 1214 results. Thus, the present study used 1214 articles for the analysis. To extract the exact data, the authors used boolean operators and filtering methods—they are as follows, TITLE-ABS-KEY (green AND human AND resource AND management) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "ENVI") OR LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (LANGUAGE, "English")). After applying Boolean operators and filters, 1214 bibliometric data were obtained, which were used for analysis in the present research. The authors used bibliometric indicators for further analysis.

The VOSviewer software was used to process the final datasets, providing various results such as publication trends over time, co-author analysis across different countries and author citation networks. In addition, the results reveal the key trend of publications concerning GHRM. The graphical representation and analysis of the bibliographic data are insignificant because the researchers can have a vast understanding of the publications related to GHRM.

GHRM Publications by Year

Through the search, it is evidenced that the first articles related to GHRM were published in 1977. Those papers were focused on environmental and ecological issues. However, the publications of research articles related to GHRM gained momentum after 2015. The bibliometric analysis indicates a year-on-year increase in the number of publications related to GHRM. It shows that there is a crucial need for the green revolution in the present world. Figure 1 portrays the year-wise publications of GHRM. The highest number of articles published in 2022.

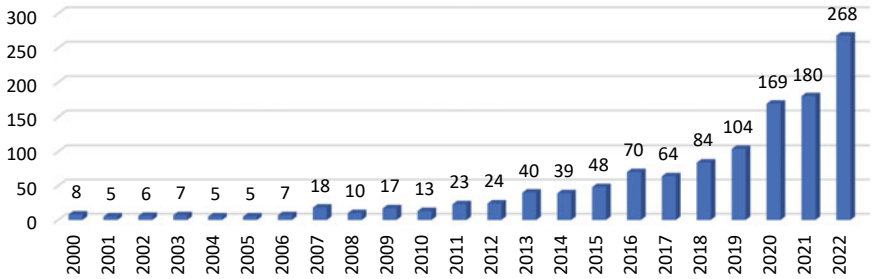

Fig. 1 Year-wise Publications on GHRM

Geographical Analysis of GHRM Publications

The research related to GHRM is gaining popularity among researchers worldwide as this field of research reveals the crucial factors of Green Management. Besides, the research on GHRM significantly contributes to the UN's sustainable development goals. Though it is popular in all nations, there are the top 10 countries that have published or contributed significant publications in the research world. The countries with the highest number of research articles related to GHRM are presented in Table 1, with China having the highest number of publications at 291 articles, followed by the USA with 196 articles and the UK with 111 articles. Brazil is also included in the list, ranking 10th with a total of 47 articles.

VOSviewes, the software tool, is employed to map the coauthors' countries of affiliation. Figure 2 shows the network visualisation of clusters on GHRM in relation to coauthorship countries. The cluster mappings of China, the USA, the UK and India are linked strongly among the nations. The lines connecting the points displayed on the map illustrate the co-authorship relationships between countries, while the

Table 1 Top 10 countries on GHRM publications

S. no	Countries	Number of publications	Percentage calculated from total number of publications (% of 1214) (%)
1.	China	291	23
2.	The USA	196	16
3.	The UK	111	9
4.	India	102	8
5.	Malaysia	92	7
6.	Pakistan	75	6
7.	Australia	60	5
8.	France	53	4
9.	Italy	50	4
10.	Brazil	47	3

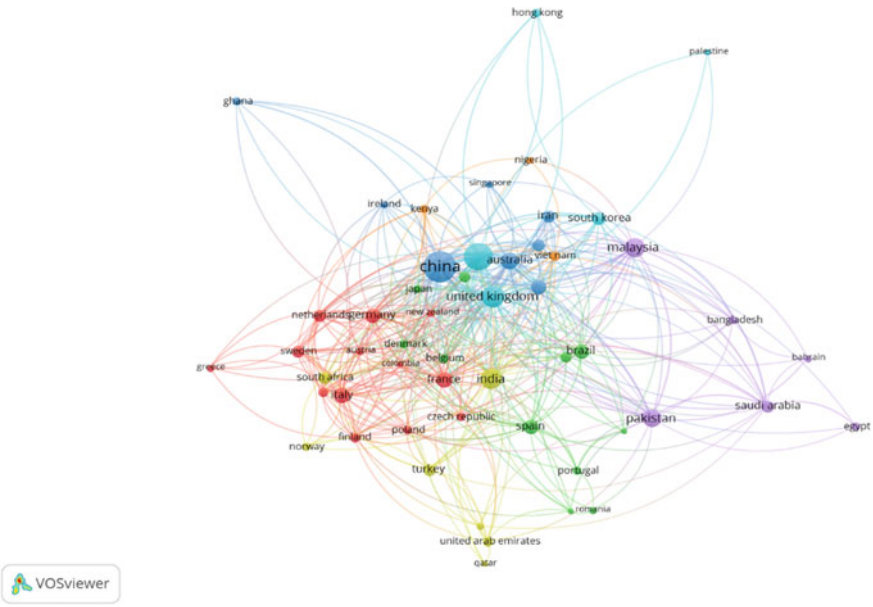

Fig. 2 Networks of Coauthors' Countries of Affiliation

distance between the clusters represents the strength of their co-authorship and the frequency of their collaborative publications.

Citation Analysis of GHRM

Figure 3 displays the author citation network generated by VOSviewer, which uses citations between articles as a measure of relevance to a particular thematic field. This approach is utilised for documents, journals and authors. Charbel Jose Chiappetta Jabbour, a French author, is prominently featured in the blue cluster with a total link strength of 350 and 2204 citations, indicating frequent citation of his work.

Results

From the adopted methodology, one can understand that there is a wide range of research conducted in the field of GHRM around the world. Based on the obtained bibliometric data and its analysis, it is identified that there are a total of 1214 articles were published from 2000 to 2022 in the field of GHRM. China leads in the research on GHRM by having 294 publications and giving a major contribution to

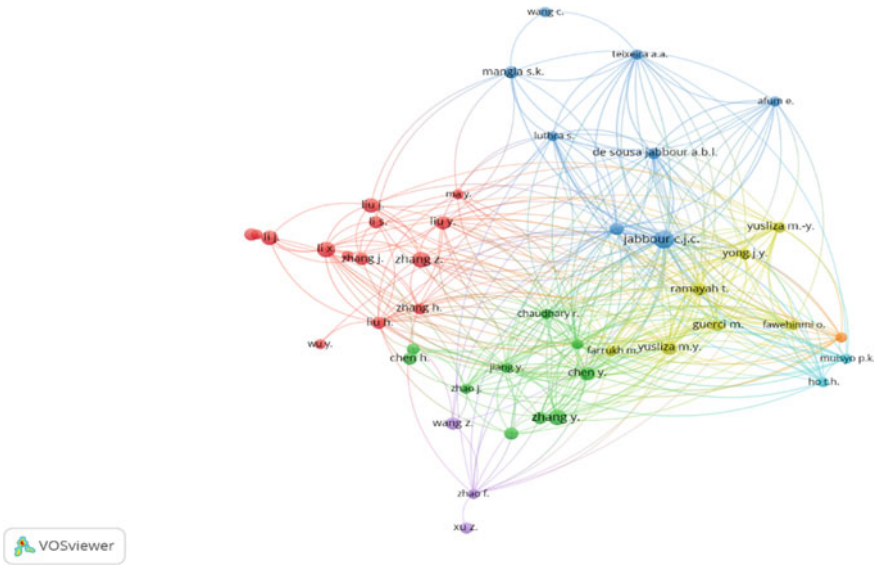

Fig. 3 Author Citation Network of GHRM

the overall research, with a percentage of 23%. Charbel Jose Chiappetta Jabbour's works have attracted the highest citations, with a total of 2204 and a strong link of 350. His works revealed the crucial things of GHRM. A study published in 2011 revealed the GHRM functions and environmental management and also posted research questions arising from considering several functional GHRM practices, including performance management, training, development, learning, organisational culture and compensation and rewards. Considering the suggestions and future directions given by this study, a lot of researchers have taken the opportunity to execute their research in this emerging field (Jackson et al. 2011). Another study by Jabbour elaborates on the connections between GHRM and Green Supply Chain Management (GSCM), finding a relationship synergistic and integrative framework for the GHRM-GSCM and proposing a research agenda for this integration that gives opportunities to scholars, managers and practitioners in the field of GHRM (Jabbour and de Sousa Jabbour 2016). Besides, there are only a few authors whose articles are linked with maximum citation networks, which shows that there are still a lot of possibilities for future works too. Though the research on GHRM started in early 1977, related research is still scarce, which is pathetic in today's polluted world. There is a timely need for researchers to execute more research on GHRM to save our world. Considering the overall publication count from 2000 to 2022 on GHRM, it is minimal compared to other fields of research, and it can be understood from the results that there is a lot of research scope and gap in the literature, which paves the way for future researchers. In addition to that, there is a global need to reduce global warming, which gives dangerous alarm to the entire world. So, the research on GHRM will definitely safeguard the world from environmental issues.

Discussion

Though various review studies have been conducted in the field of GHRM, the present review study can give a comprehensive overview of GHRM. In some ways, the findings of this review study are aligned with existing literature. This section of the chapter explains the extended comparison of related research. For instance, a study by Ahmad elaborates on the policies and practices of GHRM, but the present research not only reveals the policies and practices of GHRM but also showcases the bibliometric overview of the existing literature (Ahmad 2015). Amrutha and Geetha conducted a systematic review study utilising NVivo Plus software version 12, which revealed three clusters related to green human resource management practices, employee green behaviour at the workplace and organisational sustainability. However, in the present study, the connections between authors' citations and the affiliations of co-authors' countries were analysed using VOSviewer software. Thus, this chapter is aligned with the study of Amrutha and Geetha (Amrutha and Geetha 2020). The methodology adopted for the present study is similar to the previous studies (Cavalcante et al. 2021; Hariharasudan et al. 2021). In earlier research, Green Human Resource Management's functions are comprehensively explained in the Sri Lankan context (Opatha 2013), so this research is somehow aligned with the existing one; however, the present research comprehensively explains the GHRM in the global context. A review paper conducted by Ren et al. gives direction to GHRM research (Ren et al. 2018), and this research contrasts the present research as it gives a detailed, comprehensive nature of GHRM and its bibliometric connections. Despite the efforts of developing countries to promote knowledge about GHRM, most studies have been conducted in the Western hemisphere. Better coordination between countries could provide a more comprehensive understanding of the GHRM scholarship, which aligns with the goals of the present study (Khan et al. 2020). The previous review explores the possibility of integrating two distinct types of literature, namely environmental management (EM) and human resource management (HRM) research (Renwick et al. 2013), which is aligned with the present review. Thus, the discussion section has revealed the findings of the present review with existing research, and it can give a comprehensive overview to future researchers.

Conclusion

Green Human Resource Management practices are significant in attaining a sustainable environment. Determinatively, hiring employees with innovative skills, providing green training and green disciple and developing them to attain the organisational goals are important. According to the reviewed literature, it is observed that GHRM enhances employee performance along with the organisation's growth. Eventually, this will result in sustaining environmental policies, and this, in turn, leads to increasing Business Performance.

The present review study offers a comprehensive examination of GHRM based on scientific papers indexed in the Scopus database. Using VOSviewer software, this bibliometric study analyses the distribution of bibliometric data and networks via cluster maps. The study's results demonstrate that the present review is unique in its approach as it provides a more comprehensive analysis of bibliometric data with the assistance of VOSviewer, which has not been utilised in previous research. The study has certain limitations as it focuses solely on articles indexed in the Scopus database while disregarding journal articles from other databases such as Web of Science, Dimensions and PubMed. Additionally, only articles published in English are taken into account. Thus, these limitations give the direction to further research to explore and obtain insight into GHRM. Further, the study not only gives a comprehensive overview but also provides opportunities for future researchers.

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Understanding the Impact of Top Management Green Commitment and Green Human Resource Management Practices on Employee Green Behaviors and Green Creativity: Evidence from the UAE Higher Education Sector

Alaa Amin Abdalla

Abstract Employing social exchange theory (SET), the present research aimed to comprehend how top management's commitment to green human resource management methods and sustainability impacted employee green behaviors in the higher education sector of the United Arab Emirates. Using a self-administered questionnaire, data were gathered from employees of higher education institutions in the UAE, including academic and administrative staff members. Four hundred and twelve questionnaires were disseminated, of which 202 were employed for statistical analysis. Partial least squares-structural equation modeling was employed to assess the hypotheses. The results indicated that top management green commitment (TMGC) and green human resources management (GHRM) significantly predicted green employee extra-role and in-role behavior and green creativity. The findings offer education policymakers insights about how TMGC and GHRM can support employee green behaviors and green creativity. The study will aid in developing policies to promote an organization's adoption of GHRM practices by expanding knowledge about how HRM may contribute to efficient environmental management. This study is novel for three main reasons. First, this research adds to the GHRM literature in general. Second, it adds to the scant literature concerning GHRM in higher education. Third, the introduction of GC as a consequence of TMGC and GHRM is a unique contribution.

A. A. Abdalla (✉)
Academic Programs for Military Colleges, Abu Dhabi University, Abu Dhabi, UAE
e-mail: alaa.abdalla@adu.ac.ae

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Introduction

Among the most crucial team-level elements, top management green commitment (TMGC) has recently attracted consideration in sustainability inquiries and is now seen as crucial to EGB. All efforts that employees make at the bottom line are ineffective if management is uncommitted to environmental sustainability (Karatepe et al. 2022; Haldorai et al. 2022). TMGC refers to staff members' evaluations of an organization's commitment to green activities and initiatives for motivating its personnel to practice pro-environmental behavior and support a firm's environmental sustainability objectives (Haldorai et al. 2022). Increasing TMGC research has demonstrated that this commitment can bring about better environmental performance (Haldorai et al. 2022), green work engagement, employee organizational citizenship behaviors (Erdogan et al. 2015), and pro-environmental task-related proactive behaviors (Karatepe et al. 2022). Nonetheless, how TMCG transmission mechanisms impact GHRM and EGB via an individual's positive psychological state is unclear.

Green HRM is a trailblazing idea associated with how employees behave in the workplace concerning sustainability (Dumont et al. 2017). Attention is currently focused on operational systems, in which service activities have been slightly altered to comply with international environmental legislation and norms due to enterprises starting to include environmental objectives in their policies and strategies (Chung 2020). Environmental behavior is complicated, requiring collaboration among different interdisciplinary methods (Jackson et al. 2011). Because of this requirement, assuming that adding environmental goals to an organization's strategy and policies will automatically produce the intended green behaviors and results may be problematic. Put another way, the full and effective attainment of those beneficial objectives may not be guaranteed even if sustainability objectives are included in an organization's overall strategy and its operations adopt compliance approaches. Environmental behavior is pro-innovative and has associations with commitment, enthusiasm, innovation, and voluntarism (Ganda 2017).

Such characteristics are related to human factors that are supposed to enhance the implementation of ecological efforts and include a person's attitudes, cognitive judgments, perceptions, and social values (Jabbour et al. 2019). As a consequence, calls have been made for human resources management to adhere to a company's sustainability philosophy when creating and executing HRM activities and practices (Kim et al. 2019; Pham et al. 2019a, b). The concept of "green human resources management," which integrates environmental goals and objectives into HRM practices and actions (Kramar 2014), has evolved in response to these requests, promising the successful betterment of people's and organizations' environmental-related outcomes. Organizations must encourage employee behavior that advances an organization's green goals because employees are the ones who implement green organizational policies (Daily et al. 2009). Green workplace behavior is indicative of someone's environmental concern (Norton et al. 2015). This stance covers extra-role and in-role green behaviors. Formal Green responsibilities that are crucial components of an employee's performance evaluation are called in-role green behaviors.

Extra-role green behavior refers to voluntarily adopted green behaviors that transcend an employee's formal duties and are not considered in performance evaluations (Paillé and Boiral 2013). Generally, green behaviors refer to actions that employees take to back environmental management practices at work (Dumont et al. 2017). The successful adoption of green initiatives in the workplace depends on employee green behaviors. Additionally, research has shown that engaging employees in green practices are essential to achieve environmental management initiatives (Mazzi et al. 2016) because this engagement would improve environmental performance and provide businesses with a competitive edge (Kim et al. 2019).

Higher education institutions worldwide have been working more diligently recently to integrate green practices into their services. HE institutions must assume a leading role in implementing strategies and their alternatives to tackle existing environmental concerns in research and teaching institutions (Disterheft et al. 2012). Additionally, they must establish precedents by reviving and acknowledging environmental management concerns' evolving needs and difficulties (Finlay and Massey 2012). Thus, higher education institutions should adopt a "Go Green" mindset to promote a green workplace (Gilal et al. 2019). Studies in a range of industries, including the automotive industry (Chaudhary 2019), hospitality, and tourism (Luu 2017), have all been conducted recently as GHRM research has grown. However, very few studies of GHRM have been done in academic institutions. Indeed Pham et al.'s (2019a, b) recent literature review recommended more research in a range of service sectors.

Some studies have been conducted relative to higher education. For example, Fawehinmi et al. determined that GHRM promotes academic staff' green behaviors via environmental knowledge mediation. At the same time, Gilal et al. (2019) demonstrated that incorporating employees' green behaviors in higher education institutions' strategic management is crucial to increase organizational environmental and financial performance and attracting personnel. To promote green HRM in higher education, this research sought to develop a model of GHRM practices and TMGC impacts on employees' green behaviors, specifically including extra-role, in-role, and green creativity behavior because the connection between TMGC and GHRM and employees' green work-associated results are in an early stage. (Pham et al. 2019a, b). This research adds to the literature in three ways. First, it contributes to the scant HRM research conducted at higher education institutions (Aboramadan et al. 2020). Second, it adds new variables to the GHRM knowledge base by examining a model that includes green creative behavior as a dependent variable. Third, it improves knowledge of the mechanisms behind the link among TMGC, GHRM, and the environmental workplace behavior of employees.

Theoretical Foundation and Hypotheses Development

Top Management Green Commitment and Green Outcomes

EGB comprises initiatives staff members take to preserve or improve the environment. According to earlier research, EGB has two primary categories: role-related and extra-role green behaviors. Role-related green behavior refers to obligatory green behaviors as part of an employee's job responsibilities. Following green organizational policies, selecting ethical, environmentally friendly alternatives while working, and creating sustainable products and processes are typical examples of such behaviors. Extra-role green behavior refers to employees' voluntary, contextual behaviors promoting green practices outside an organization's standard expectations. These actions resemble those of organizational citizenship. Communicating and discussing environmental sustainability with coworkers is a typical example (Tian et al. 2020). TMGC is a critical organizational competency encouraging the creation and implementation of corporate environmental activities (Haldorai et al. 2022) and should positively correlate with the IRGB and ERGB of higher education sector employees. To create such an environment, top management must do several things.

First, top management must provide the green training resources necessary to enhance staff members' green skills, which supports EGB. In particular, top management must underwrite green training to improve workers' environmental knowledge via creating an environmental knowledge base for workers, aiding workers to recognize environmental issues, enhancing their environmental protection abilities, and enticing workers to embrace green behaviors in extra- and in-role green behaviors (Liu et al 2020). Haldorai et al. (2022) showed that top management could keep staff members up to date on green practices and processes, enhance their green skills, increase their readiness to fulfill green responsibilities in their roles, and encourage greener behavior through environmental training.

Second, performance management and appraisal metrics are crucial for motivating and maintaining EGB, and top management can use evaluation, promotion, and rewards to encourage employees to increase green organizational citizenship behavior effectively; employees will be motivated to take part in green activities when their performance is assessed because this process aligns behaviors with articulated goals, assures responsibility, and focuses on environmental objectives (Haldorai et al. 2022).

Third, employee financial and non-financial rewards may cultivate EGB (Ye et al. 2022), and extra leave, prize money, and promotions can incentivize extra- and in-role green behavior (Hooi et al. 2021). Moreover, managerial commitment to ecological protection facilitates developing involvement opportunities and a pro-green culture, making it easier for employees to engage in environmental protection undertakings.

Fourth, communicating an environment-friendly vision and disseminating information through exchanging ideas, open discussions, and sharing different perspectives on environmental issues can inspire employees to engage in green initiatives behaviors and become more creative about the environment. The result of these

practices should help develop an image that an organization is responsible for. As a result, employees may identify with these organizations to boost self-esteem and self-worth. Consequently, they create unique, environmentally friendly problem solutions, boosting GC. Additionally, they may believe these are highly responsible and ethical firms; consequently, they understand that producing novel solutions will not harm their career (Ahmad and Umrani 2019).

A few studies have found a connection between employees' green behavior and TMGC (Erdogan et al. 2015; Karatepe et al. 2022). In particular, Karatepe et al. (2022) showed how TMGC promoted proactive, task-associated pro-environmental behavior in the hospitality sector. In this instance, the expectation is that employees will reciprocate their organizations' environmental commitment and endeavors by displaying green behaviors when organizations make clear environmental goals, provide green development and training, and evaluate employee performance effectively using green metrics and reward systems. In light of this discussion, the ensuring hypotheses are posited.

H1. TMGC will positively affect employees' in-role green behaviors.

H2. TMGC will positively affect employees' extra-role green behaviors.

H3. TMGC will positively affect employees' GC.

Top Management Green Commitment and Green Human Resource Management

The term "TMGC" describes the extent that senior company members are viewed as environmental stewards. According to Chadwick et al. (2015), a team member's dedication is necessary to achieve an organization's strategic goals because each member helps maximize an organization's resources. An organization's entire workforce must participate in implementing green initiatives, and senior management commitment is required for this to occur (Yusliza et al. 2019). Essential resources are made available for implementing GHRM when senior management is dedicated to resolving environmental issues. One critical competency in firms that support the creation and execution of corporate environmental activities is top management commitment. Per Yusliza et al. (2019), top management commitment is correlated with all aspects of GHRM, including "green analysis and description of job position," "green recruitment and selection," "green training," "green performance," and "green rewards." Top management significantly impacts how HRM practices are assessed when they are put into practice in organizations.

El-Kassar and Singh (2019) argued that top management's dedication to encouraging changes and employee empowerment and disseminating environmental knowledge is necessary for environmental management projects to succeed. Ecologically aware top management teams typically see the potential advantages and market

opportunities emerging from employing eco-friendly HRM practices, and consequently, they embrace an approachable and encouraging approach for such HR practices. They argued that HRM serves as a link between an organization's objectives and intended performance. Likewise, top management dedicated to the environment employs GHRM to accomplish its desired environmental performance. Thus, this hypothesis is posited:

H4. TMGC will positively affect GHRM.

Green Human Resources Management Practices and Employee Green Behaviors

By aligning HRM procedures with organizational environmental goals, GHRM can substantially contribute to formulating and implementing an environmental management system (Jabbour et al. 2013). Integrating sustainability within an HR framework is crucial to building a sustainable organization (Jabbour and Santos 2008). GHRM seeks to employ varied HRM strategies to support environmental objectives and create a workforce dedicated to environmental sustainability (Masri and Jaroon 2017). GHRM may entail providing candidates who care about the environment and are sensitive to other people's feelings and preferences during an organization's hiring-and-selection process (green selection and recruitment), putting in place development and learning systems to boost staff environmental awareness and management abilities (green training), and assessing staff performance according to how well they support the company's environmental objectives (green performance management). Employee Green behavior reveals someone's stance concerning environmental issues (Norton et al. 2015). This stance includes employees' green creativity and green behavior in extra- and in-role behaviors (volunteering).

As mentioned, green formal duties crucial to employee performance evaluation characterize in-role green behavior. Conversely, extra-role green behavior refers to voluntary green behaviors in that an employee participates beyond the scope of his or her formal duties that are not considered in a performance evaluation (Paillé and Boiral 2013).

For the following reasons, the expectation is that GHRM will impact employee green behavior positively. First, explaining an organization's desire to go green during recruitment and bearing in mind people's environmental standards during a selection process will probably increase employee understanding and awareness of the topic (Renwick et at. 2013). Second, integrating staff members in implementing green initiatives and providing green training is apt to boost their knowledge, skills, and talents and increase their psychological receptivity to adopting green practices. Third, HRM theories contend that employee comprehension of the necessity for and urgency of adopting such practices is required for HRM practices to be effective in eliciting appropriate workplace conduct (Nishii et al. 2008). Adopting GHRM policies and practices is apt to demonstrate organizational commitment to helping

protect the environment, motivating employees to strive toward achieving an organization's green objectives. Last, employee recognition and appreciation of their green performance through prizes and promotions encourage employees to contribute to and engage in green initiatives (Renwick et al. 2013).

Dumont et al. (2017) supported the points above in a study of Chinese employees. They found that GHRM, indirectly and directly, affected in-role green behaviors but indirectly impacted extra-role green behaviors by fostering a psychologically green environment. Furthermore, Saeed et al. (2019) showed the beneficial influence of GHRM practices on employee pro-environmental behaviors in a broad range of Pakistani industries. If employees are formally acknowledged and rewarded, green workplace behaviors may be anticipated to impact employee performance directly. However, GHRM practices may or may not directly impact voluntary green behavior when these behaviors are not officially acknowledged or rewarded; instead, people's awareness of an organization's green culture, their inclination to engage in green behaviors, and the green practices that they pursue each day influences them (Dumont et al. 2017).

In addition, Chen and Chang (2013) used the term "green creativity" in setting widespread concerns about organizational policies promoting responsible behavior. Green HRM initiatives, like environmental training and education, recognizing PEBs at work, and evaluating candidates in the recruitment and selection processes, should assist in influencing employees' attitudes and behaviors about adopting more green practices. Green recruitment, green training, and green pay are crucial elements of green HRM, according to Guerci and Carollo (2016). Additionally, these practices should foster favorable perceptions of an environmentally responsible firm. As a result, as "social identity theory" proposes, workers may choose to identify with these companies to improve their sense of self-worth and self-image. Their ownership should grow; consequently, they would develop creative, eco-friendly solutions to challenges, improving GC. Also, they may view these firms as more responsible and ethical, in which case they would understand that creating unique ideas would not harm their careers (Ahmad and Umrani 2019). Per Huo et al. (2020), green HRM is crucial for impacting employees' attitudes and actions and realizing green creativity.

Empirical research has shown that GHRM is typically connected with green work design, green employee empowerment, green task behavior, and organizational citizenship concerning environmental issues (Hameed et al. 2020; Luu 2019). It is possible to use social exchange theory's reciprocity norm (Blau 1964) as the rationale for describing how GHRM and staff members' green behaviors are associated (voluntary and task-related behaviors). When firms are committed to environmental management by offering distinct green goals and objectives, green development and training, and effectual green performance appraisal and reward systems, it is anticipated that employees will reciprocate by engaging in green activities. Therefore, these three hypotheses are posited:

H5. GHRM will positively affect employee in-role green behaviors.

H6. GHRM will positively affect employee in-extra green behaviors.

H7. GHRM will positively affect employee green creativity.

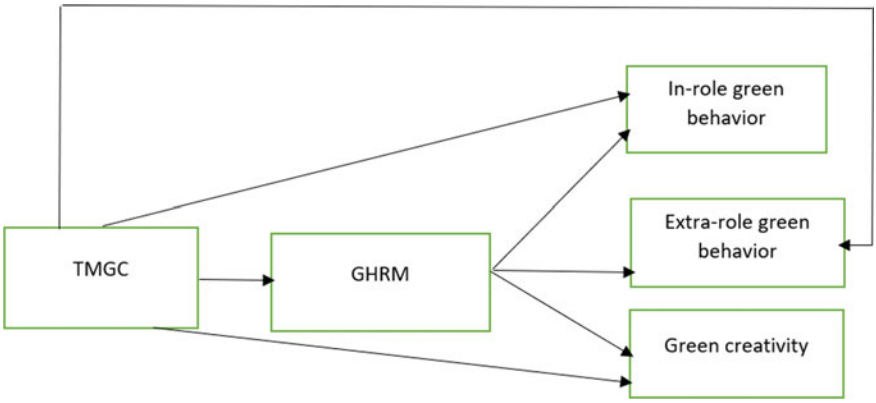

Fig. 1 Research model

Research Model

The research's objective was to develop an impact-based model of TMGC and GHRM in higher education concerning individual green work-associated results, such as Green Creativity and in- and extra-role behaviors. Figure 1 provides the model.

Choice of Theory for the Present Study

Social exchange theory (SET) was found to be suitable for this study (Blau 1964). SET refers to voluntary activities taken by individuals that result in future obligations that are not specified and whose nature cannot be bargained, according to Blau (1964). Employees will engage in social interaction in their working relationships depending on how trusting they feel toward their employer. According to Cropanzano and Mitchell (2005), a primary element of SET is that, as long as the parties uphold certain exchange "rules," relationships will evolve into loyal, trusting, and reciprocal commitments. For instance, when a person receives financial and socioemotional resources and support from their organization, they will feel obligated to respond in kind and repay that organization. Rules of exchange typically include repayment or reciprocity rules so that one party's actions result in responses or actions by the other party. One way an employee can repay an organization is through their in-role and extra-role behavior levels; people may give back to their organizations in exchange for the resources they receive from them and for their commitment to and support of green HRM practices.

Several empirical studies have employed social exchange theory as an underpinning theory to explain the association between organizational practices and employee green behavior (Islam et al. 2022; Pham et al. 2019a, b; Moin et al. 2021).

Methodology

Participants and Procedures

Data were gathered from employees of higher education institutions in the UAE, including academic and administrative staff members, and snowball sampling was employed. Each university representative received a questionnaire. As appropriate, the reps were then urged to give this questionnaire to their senior HR manager, HR manager, or HR director. Each participant received a questionnaire and a cover letter outlining the study's objectives and providing guidance on completing the questionnaire. Four hundred and twelve questionnaires were distributed on April 12, 2022, and 210 were returned by May 20, 2022. After deleting incomplete surveys, 202 questionnaires, or 49%, were used for statistical analysis. Regarding genders, males comprised 70.1%, and females comprised 29.9% of the sample. Regarding age, 37.9% were over 40, 6.2% were between 31 and 35, 23.4% were between 36 and 40, and 32.5% were between 25 and 30. Regarding experience, only 2.3% had more than 15 years of work experience, 55.3% had experience spanning from 1 to 5 years, 15.6% had experience from 6 to 10 years, and 26.8% from 11 to 15. Each employee had a full-time contract, and 45% worked in faculty positions, while 55% were in managerial roles.

Statistics

Descriptive statistics, correlations, and reliability metrics were created with SPSS version 24, and hypothesis testing was done using partial least squares structural equation modeling (PLS-SEM) (Hair et al. 2018). PLS-SEM has been widely employed in several academic fields, including human resource management (Ringle et al. 2018). The PLS-SEM method with ordinary least squares calculates the path coefficients (Rigdon 2012). PLS-SEM can also manage correlated measurement errors and ordinal measures (Rademaker et al. 2019).

Measures

Ghrm

Dumont et al.'s (2017) six-item scale was employed to evaluate employee perceptions of GHRM implemented in their companies. This construct had a Cronbach's alpha of 0.883.

Tmgc

Erdogan et al. (2015) created a six-item scale to gauge employees' perceptions of management's activities and behaviors related to the environment. This scale was employed to measure TMGC. This construct had a Cronbach's alpha of 0.92.

In-Role Green Behavior

Bissing-Olson et al.'s (2013) three-item scale was employed to evaluate in-role green behavior. This construct had a Cronbach's alpha of 0.667.

Extra-Role Green Behavior

Bissing-Olson et al.'s (2013) three-item scale was employed to evaluate voluntary green behaviors was employed to measure extra-role green behavior. This construct had a Cronbach's alpha of 0.667.

Green Creativity

For employee GC, Chen and Chang's (2013) six-item scale was utilized, but the phrase "project" was changed to "university." This scale had a Cronbach's alpha of 0.94.

Measurement Model Assessment

The researcher investigated scale item factor loadings. Table 1 shows that the standardized factor loading values varied from 0.659 to 0.867, and all loadings were significant at 0.001 level. The average variance extracted (AVE) and composite reliability (CR) were calculated in order to examine convergent validity and internal consistency (Fornell and Larcker 1981). With all variables having CR values greater than 0.70 and all AVE values greater than 0.5, the data were internally consistent and convergently valid.

Discriminant Validity

Two tests assessed discriminant validity. The first was that which Fornell and Larcker (1981) proposed, comparing the AVE's square root with the intercorrelations between the variables. According to Table 2, the discriminant validity requirement was met

Table 1 Factor loading, with t-values, CRs and AVEs

Construct	Item	S. loading	t-statistic	CR	AVE
TMGC	My university values the environment My university cares about the environment My university is committed to preserving and protecting the environment My university is aware of the need to protect the environment My university demonstrates concern for ecological matters My university considers the full impact of its action on the environment	0.775** 0.841** 0815** 0.867** 0.805** 0.667**	21.55 27.35 25.24 32.83 17.26 14.68	0.913	0.635
GHRM	My university sets green goals for its employees My university provides employees with green training to promote green values My university provides employees with green training to develop employees' knowledge and skills required for green management My university considers employees' workplace green behaviour in performance appraisals My university relates to employees' workplace green behaviours to rewards and compensation My university considers employees' workplace green behaviours in a promotion	0.710** 0.821** 0.807** 0.803** 0.749** 0.660**	14.87 25.26 25.01 20.57 17.83 10.89	0.891	0.577
In-role green behaviour	I adequately complete the assigned duties in an environmentally friendly way I fulfil the responsibilities specified in my job description in environmentally-friendly ways I perform tasks that are expected of me in environmentally-friendly ways	0.808** 0.796** 0.708**	13.65 12.5 9.31	0.815	0.596

(continued)

Table 1 (continued)

Construct	Item	S. loading	t-statistic	CR	AVE
Extra-role green behaviour	I take initiatives to act in environmentally friendly ways at work I take a chance to get actively involved in environmental protection at work I do more for the environment at work than I am expected to	0.756** 0.715** 0.754**	10.90 8.21 10.62	0.786	0.550
GC	The members of the 'university' suggest new ways to achieve environmental goals The members of the 'university' propose new green ideas to improve environmental performance The members of the 'university' project promote and champion new green ideas to others The members of the 'university' develop adequate plans for the implementation of new green ideas The members of the 'university' would rethink new green ideas The members the 'university' would find out creative solutions to environmental problems	0.728** 0.807** 0.806** 0.698** 0.824** 0.775**	16.74 30.08 27.58 12.95 26.19 27.65	0.900	0.600

Notes ** Significance at p = 0.001. All scale items employed a 7-point Likert-type scale with responses varying from "1 (strongly disagree) to 7 (strongly agree)"

because AVE's square root was more than the intercorrelation. Also, the heterotrait–monotrait ratio (HTMT) was used to further support discriminant validity. The results in Table 3 indicate that, as Hulland (1999) recommended, all ratios were below 0.85, indicating discriminant validity.

Quality Check of the Structural Model Assessment

The structural model was judged using many criteria. GHRM (0.103), in-role green behavior (0.165), extra-role green behavior (0.200), and GC (0.434) R squared (R2) for the research variables were first calculated. By applying Chin's (1998) recommendations, these values were deemed acceptable. A medium effect for TMGC on GHRM (0.114), TMGC on in-role green behavior (0.027), and TMGC on extra-role behavior (0.038) were found using the f square (f2). The GC's TMGC effect size was

Table 2 Descriptive statistics, correlations and the square root of AVE in diagonal

Constructs	Mean	SD	1	2	3	4	5
TMGC	5.61	0.934	*(0.797)*				
GHRM	5.43	1.26	0.330**	*(0.760)*			
In- role green behaviour	5.55	0.961	0.257**	0.632**	*(772)*		
Extra-role green behaviour	5.13	1.18	0.268**	0.391**	0.317**	*(0.742)*	
GC	5.70	0.914	0.615**	0.364**	0.219**	0.357**	*(0.775)*

Table 3 HTMT ratio

Constructs	TMGC	GHRM	In-role green behaviour	Extra-role green behaviour	GC
TMGC					
GHRM	0.364				
In-role green behaviour	0.328	0.480			
Extra-role green behaviour	0.378	0.554	0.512		
GC	0.705	0.433	0.365	0.506	

represented as a string (0.510). Medium-sized (0.117, 0.141, and 0.063, respectively) effects were had by GHRM on extra-role, in-role, and GC.

Analysis

Table 2 provides the correlations of the research variables and the means and standard deviations. Correlations were positive and significant for the variables. The correlations were: TMGC and GHRM ($r = 0.330$, $p = 0.000$), TMGC and in-role green behavior ($r = 0.257$, $p = 0.000$), TMGC and extra-role green behavior ($r = 0.268$, $p = 0.000$) and TMGC and GC ($r = 0.615$, $p = 0.000$). GHRM and in-role green behavior ($r = 0.362$, $p = 0.000$), GHRM and extra-role green behavior ($r = 0.391$, $p = 0.000$), and GHRM and GC ($r = 0.364$, $p = 0.000$) had significant correlations.

Results of Hypotheses Testing

According to the findings, TMGC was positively correlated with GC (ß = 0.568, t = 10.32, p = 0.000), extra-role green behavior (ß = 0.183, t = 2.43, p = 0.016), and in-role green behavior (ß = 0.155, t = 2.39, p = 0.018). The results supported H1, H2, and H3, respectively. The results supported hypothesis H4, which stated that GHRM would positively affect GC (ß = 0.320, t = 4.94, p = 0.000). GHRM significantly influenced extra-role green conduct (ß = 0.354, t = 4.85, p = 0.000), in-role green behavior (ß = 0.330, t = 4.65, p = 0.000), and green creativity (ß = 0.199, t = 3.46, p = 0.001), supporting H5, H6, and H7.

Discussion and Conclusion

The research's novelty is how it linked the top management's green commitment, GHRM, and green creativity. According to the best available knowledge, this is the first study to employ this theoretical framework in empirical evidence from the United Arab Emirates. Doing so fills a knowledge gap in the existing literature about sustainability in higher education (Gilal et al. 2019).

This section focuses on this research's key findings and emphasizes the study's objectives, theoretical contributions, limitations, and directions for further research. The study examined how TMGC, GHRM, extra- and in-role green behaviors, and GC were related to higher education in the UAE. The goal was to comprehend the effects of top management's green commitment to green HRM practices and whether these positively impacted employees' green behavior and creativity. This research also argues that top management's green commitment directly influences employees' green behavior and creativity.

Main Findings

The results showed a strong positive correlation between top management green commitment and GHRM. Additionally, top management's green commitment significantly and positively impacted employees' in-role and extra-role green behaviors and employee creativity. A significant positive correlation was present between GHRM and employees' in-role and extra-role green behaviors and green creativity. These findings were consistent with Dumont et al. (2017), which showed that GHRM positively affected extra-role and in-role green behavior. Also, these findings aligned with the SET, which urges employees to employ task-associated, voluntary green behaviors to attain an organization's green management initiatives.

Theoretical Implications

This study contributes to the higher education green management and GHRM literature in several ways;

First, the study offers theoretical contributions, providing additional justification for the pressing necessity to incorporate top management green commitment by providing empirical data on the potential of top management green commitment and GHRM to inspire employee's green behavior and green creativity; this can be explained, as was previously demonstrated, by the fact that any organizational goal depends on top management's commitment. The top management has the power to persuade and spread practices with an environmental slant at all organizational levels, including GHRM practices (Paillé et al. 2014). According to Williams et al. (2014), senior management commitment is a prerequisite for accomplishing any objective inside an organization, and the situation examined in this research is no exception. The support of top management is the main force behind implementing GHRM and decision-making on strategic directions and the evaluation of a business.

Second, it illustrates the significance of (GHRM) for attaining employee green behavior and employee creativity; the study advances GHRM knowledge and its effects by providing a conceptual framework for connecting GHRM, employee green behaviors, and green creativity.

Third, the study bolsters theory-building by extending the GHRM nomological network in its infancy.

Fourth, this research adds to understanding the antecedents of employee green behaviors and adds to organizational behavior knowledge by looking at GHRM as a predictor of extra- and in-role employee green behaviors and green creativity. Additionally, the study fills a substantial literature gap by illuminating the sociopsychological processes through which GHRM impacts employee extra- and in-role-related green behaviors.

Fifth, this research also provides a comprehensive understanding of these connections from the employee's perspective and extends the research on behavioral HRM by illuminating the potential outcomes of the interaction between TMGC, GHRM, and employee green behaviors. Last, this research has significant policy implications for HR decision-makers for maintaining sustainability at the forefront of evolving HRM paradigms (Boudreau and Ramstad 2005). The study will aid in developing policies to support the organization's adoption of GHRM practices by increasing knowledge about how HRM can contribute to efficient environmental management.

Practical Implications

The research examined how TMGC and GHRM practices impacted in- and extra-role behaviors and GC green results. The findings from data gathered from the UAE's higher education sector showed that TMGC and GHRM were positively associated

with the aforementioned outcome variables. The study recommends additional examination of the precise processes underlying the link between TMGC and GHRM and its effects to improve the knowledge of GHRM.

Organizations should support the growth of environmentally friendly attitudes and behaviors within their workforce to implement environmental sustainability plans successfully. This research shows that TMGC and GHRM are crucial tactics for promoting and eliciting these attitudes and behaviors; consequently, firms should integrate successful "green" policies into their HRM framework to achieve their green performance objectives.

Limitations

Despite the strength and significance of the findings, several limitations must be explicitly acknowledged. First, even though the variables chosen for the framework are deemed acceptable for research on GHRM practices in organizations, additional factors can also contribute to this framework. Second, to perform a cross-country study, the framework must be modified to accommodate other organizations and countries, which could improve the findings' generalizability and impact the outcomes. Third, this research's data collection phase occurred at one point.

Future Research Directions

Despite its limitations, this paper may be expanded to cover additional GHRM practices and empirically explore how various GHRM practices can support one another under various circumstances. It is essential to recognize the need to examine GHRM activities in terms of their various dimensions, whether at the individual or organizational level. The study could also be improved by utilizing respondents from various industries and firm sizes, longitudinal data to show causal links between independent and dependent variables, or multiple cases to explore the influence of top management green commitment and GHRM practices. The researcher hopes this study will provide a different perspective for those investigating the effects of top management's green commitment and HRM practices on staff members' green behavior and creativity.

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Green Human Resource Management and Organizational Sustainability in Airlines—EgyptAir as a Case Study

Bassam Samir Al-Romeedy

Abstract Organizational sustainability may help an organization stand out from its competition. In recent years, scholars and practitioners have given significant attention to understanding the factors that influence organizational sustainability. Therefore, this research attempted to explore how organizational sustainability is affected by green human resource management through green organizational support as a mediator. Data from 368 EgyptAir employees were examined, and using structural equation modeling, hypotheses were tested. The results revealed that green human resource management significantly and positively affects perceived green organizational support and organizational sustainability. The results also showed that perceived green organizational support positively affects organizational sustainability. Regarding the mediator effect, the results concluded that perceived green organizational support mediates the association between green human resource management and organizational sustainability in part. These results may aid future researchers in better comprehending the connection between green human resource management and organizational sustainability via perceived green organizational support. Furthermore, these results may assist managers and policymakers in their attempts to adopt green human resource management, strengthening organizational sustainability by increasing perceived green organizational support.

Introduction

Obtaining a long-term competitive advantage and contributing to developing a sustainable economy, the tourism and hospitality industry now realizes that they must preserve the environment, rational consumption of water and energy, make use of green technology, reduce waste, and deliver green products and services that are safe for customers and are not detrimental to the environment (Yusoff et al. 2020; Ari et al. 2020). Aboramadan et al. (2022) indicated that green practices in tourism

B. S. Al-Romeedy (✉)
Faculty of Tourism and Hotels - Tourism Studies Department, University of Sadat City, Sadat City, Egypt
e-mail: bassam.Samir@fth.usc.edu.eg

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and hospitality organizations result in increased market share, satisfied customers, and sales revenues. Hence, there is an increasing demand for leaders to comprehend what they can do to support effective green management behaviors in tourism and hospitality businesses. Environmental management requires green human resource management (GHRM) (Patwary et al. 2022). GHRM is focused on merging the organization's green management goals with HRM practices. GHRM entails practices aimed toward the organization's green effect and is frequently tied to the environmental plan of the organization (Sobaih et al. 2020). GHRM practices also contribute to organizations' ability to achieve environmental competitive advantage (Muisyo et al. 2021a, b). Engagement in organizational sustainability (OS) is critical for raising employee understanding of environmental concerns and motivating employees to address possible obstacles effectively (Amjad et al. 2021). HRM policies are used by GHRM to encourage responsible utilization of resources inside companies and to improve environmental sustainability (Margaretha and Saragih 2013; Das and Singh 2016).

The sustainable performance of organization is also positively affect by GHRM. GHRM practices have boosted efficiency, decreased expenses, and increased work engagement, assisting organizations in achieving sustainability (Islam et al. 2020). In addition, GHRM also contributes to supporting the competitiveness of organizations, improving performance, increasing efficiency and effectiveness, retaining talent, and improving the financial position in the market, which enhances its organizational sustainability (Al-Romeedy 2019a, b, c). GHRM and economic sustainability are important issues in various organizations (Abdeen and Ahmed 2019). Interestingly, managers recognize that environmental sustainability and a green emphasis assist organizations in developing a favorable image, impacting competitiveness, and its sustained existence (Aboramadan and Karatepe 2021). The use of GHRM also helped to developing a green organizational culture, optimal utilization of resources, a healthy work environment, and enhancing the economic and environmental performance of the organization (Suharti and Sugiarto 2020). GHRM reflects the organization's policies toward preserving the environment, urges executives to prioritize environmentally sustainable operations, and promotes employees to decrease pollution (Lamm et al. 2015).

Employee views and ideas about the degree to which management appreciates their roles and takes care of their particular requirements are also reflected in perceived organizational support. Employee impressions of the extent to which the organization regards their contributions to green initiatives and activities are reflected in perceived green organizational support (PGOS). Many organizations have begun to pay more attention to PGOS since it has been proven to affect employees' green behaviors and enhance organizational sustainability (Aboramadan et al. 2022).

Although some recent studies sought to examine the impacts of GHRM on both PGOS and OS in the tourism and hospitality context, no study dealt with the influence of GHRM on PGOS and OS in the aviation industry, to the best of the researcher's knowledge. No previous studies also addressed the mediating role of PGOS in the relationship between GHRM and OS in aviation. So, this research attempts to bridge this knowledge gap regarding the interrelationship between GHRM, PGOS, and OS

in the Egyptian aviation sector. Given this, the study aims to achieve several objectives, which are measuring the effects of GHRM on both PGOS and OS, evaluating the impact of PGOS on OS, and exploring the role of PGOS as a mediator in the connection between GHRM and OS.

Literature Review and Hypotheses Development

Green Human Resource Management (GHRM)

GHRM is a set of practices that promote and sustain a preventative strategy for environmental management and attain high-performance results in terms of environment sustainability (Shafaei et al. 2020). GHRM also refers to integrating HRM practices with an organization's green objectives. It comprises methods such as decreasing carbon footprint through video conferencing, lowering paper printing, printing on both sides of the paper, energy conservation, and using energy-efficient lighting …etc. (Al-Romeedy 2019a, b, c). To achieve environmental sustainability, GHRM implies merging organizational environmental management goals alongside standard HRM practices (Elayan 2022). GHRM entails integrating principles of environmental management into the HRM practices (recruitment, selection, performance appraisal, training and development, and reward to enhance the environmental sustainability (Das and Singh 2016). Further, employees are used by GHRM to attain green objectives, enhance green performance, and social responsibility, reduce waste, gain competitive advantage through continuous learning, and adopt positive environmental behaviors and attitudes (Bhatti et al. 2022). GHRM practices are believed to be the best environmental performance strategy, offering an elementary framework that enables organizations to effectively manage their environmental effects (Yusoff et al. 2020).

There are many reasons for organizations to adopt GHRM practices. These reasons include protecting the environment, managing costs, improving employee motivation, providing a healthy work environment, enhancing the organization's image and reputation, and supporting innovation and creativity. These reasons also include promoting positive attitudes and behaviors for employees, optimal utilization of resources, reducing waste, and achieving sustainable competitive advantage (Mashala 2018). GHRM also reflects the strategic direction of the organization toward preserving the environment from damages as a result of its activities and operations, increasing the use of organizational processes that encourage employees to engage in environmental behaviors, and improving their environmental performance to lessen the negative environmental effect of the organization's activities (Singh et al. 2020).

GHRM includes two basic aspects: preserving knowledge assets and environmentally friendly HRM practices (Pallavi and Bhanu 2016). GHRM practices also include reducing paperwork and focusing on sustainable green practices. GHRM means using each employee to promote and maintain sustainable business practices

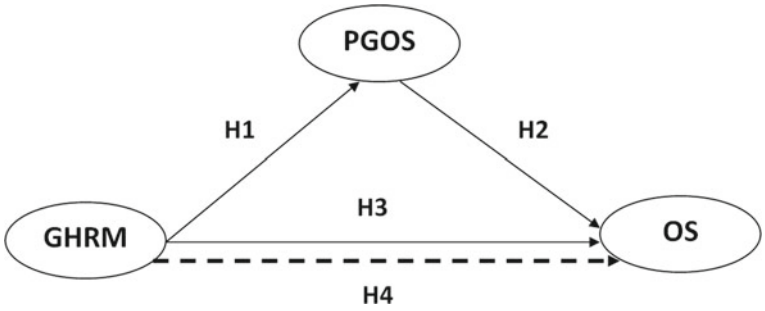

Fig. 1 Conceptual framework

and create awareness, which in turn helps organizations operate sustainably (Pallavi and Bhanu 2016). Furthermore, the organizational capacity of green HR initiatives strongly indicates the sustainability of organizational environmental and financial performance (Qureshi et al. 2020). Likewise, GHRM activities (e.g., adopting green objectives, allowing employees to participate in setting environmental plans and goals, motivating employees to adopt environmental citizenship behaviors, planning environmental management activities, and educating employees about the importance of environmental goals) can contribute to increasing employees' environmental consciousness and performance (Saeed et al. 2019).

Significantly, GHRM positively affects technological and product innovation, innovative orientation, environmental performance, the developing of environmental skills of employees, and the development of administrative and operational processes (Singh et al. 2020). GHRM also constructs operational processes strategically to promote long-term performance (Ojo et al. 2020). Moreover, GHRM provides a realistic method for organizations to generate human capital that can improve their environmental performance and sustainability (Roscoe et al. 2019). It also supports green innovation (Farooq et al. 2022), enhances employees' awareness of green organizational support, environmental citizenship behaviors, and performance (Aboramadan and Karatepe 2021), besides enhances work engagement and pro-environmental behaviors (Karatepe et al. 2022). Figure 1 indicates the conceptual framework.

The Relationship Between GHRM and PGOS

According to Kusi et al. (2021) and Zhao et al. (2021a, b), employee views and impressions of the organization's principles, the degree of the organization's interest in meeting the employees' functional and personal needs, and desires, and the appreciation of the employees' efforts in accomplishing their work tasks are referred to as perceived organizational support. PGOS are distinct ideas that employees have about the extent to which the organization recognizes their efforts toward environmental

sustainability and supports environmental behaviors among employees (Lamm et al. 2015).

PGOS is also linked to managerial motivation for employees to participate in sustainability activities through training, empowerment, and rewards that motivate them to implement green goals and adopt environmental initiatives. Employees' perceptions of PGOS also depend on the organization's interest in environmental issues, the supply of required resources and competencies to assist employees involved in the implementation of some environmental activities and tasks at work, and the achievement of environmental goals (Paillé et al. 2020). Similarly, PGOS influences organizational performance since positive thoughts and loyalty to the organization might significantly impact employees' willingness to implement and introduce organizational innovation and sustainability (Hossin et al. 2021). PGOS also enhances mutual trust between management and employees, adopting positive attitudes at work, organizational commitment, and active participation in implementing various initiatives (Kusi et al. 2021).

PGOS yields many benefits, such as increased job engagement and meeting employees' emotional and social needs. Employees feel respected and prominent at work when they believe their organizations recognize their environmental efforts. Furthermore, PGOS encourages green knowledge sharing, green citizenship behaviors, and green voice (Aboramadan et al. 2022). It also contributes to increased job satisfaction and organizational symmetry, promoting psychological empowerment and reducing labor turnover (Lamm et al. 2015). The success of adopting GHRM practices is associated with positive employee perceptions of PGOS and the organization providing sufficient support to adopt environmental initiatives and achieve green goals (Karatepe et al. 2022). While Aboramadan and Karatepe (2021) argued that employees build positive green perceptions when they realize that the organization adopts GHRM to increase their environmental awareness, encourage green efforts and motivate them to be environmentally friendly, in addition, to invest in training and to qualify them to implement green goals and initiatives.

Aboramadan et al. (2021) added that GHRM improves PGOS by having employees see GHRM practices as an approach to growing their environmental capacities and skills. Hameed et al. (2021) revealed a positive link between GHRM and PGOS, as GHRM is an indicator of supporting employees by considering their desires and needs, which is reflected in increasing their awareness of their organizations' support for environmental protection activities, which leads to an increase in PGOS. The study of Bhatti et al. (2022) found that GHRM positively influences enhancing PGOS. So, the following hypothesis is postulated:

H1: GHRM positively affects PGOS.

The Relationship Between PGOS and OS

OS has become a goal that all organizations seek, especially in light of the highly competitive work environment, its association with the organization's long-term success, and its adaptation to the changes in the work environment. OS may be more associated with organizational culture than particular rules and processes (Rahman and Hosain 2021). OS is the organization's ability to achieve environmental sustainability by maintaining and achieving positive results efficiently and effectively, creating knowledge, building capabilities, and producing innovative services and products. It also refers to the organization's contributions to the dimensions of sustainability, in addition to incorporating sustainability issues into the parts of the organization's structure, and restructuring procedures and stakeholder collaboration to reach the organization's objective (Lozano et al. 2021). OS is based on the ability of organizations to achieve their goals and increase value for shareholders and stakeholders by focusing on economic, environmental, and social aspects (Baumgartner and Rauter 2017; Stubbs and Cocklin 2008). It is also related to all activities aimed at achieving a sustainable balance in the economic, environmental, and social dimensions in the short and long term through the work carried out by organizations represented in marketing, operations, communications, sales, and production (Vitale et al. 2019).

Additionally, OS depends on the organizations' direction to achieve their goals by providing sustainable services and products and avoiding or reducing the costs and risks of sustainability. To ensure achieving OS, strong leadership, and a distinguished organizational culture that positively affects management and employees should be adopted, in addition to dealing effectively with changes in the workplace, possessing a high level of strategic flexibility, and seizing available environmental opportunities. OS is also achieved through the strategies and plans developed by the organization and its employees to ensure business continuity and future growth within the framework of a clear vision implemented to achieve the organization's goals (Mohamed and Al-Romeedy 2021). Amjad et al. (2021) found that GHRM practices mainly involve implementing HRM practices to increase organizational capabilities to effectively use available resources to enhance organizational sustainability.

In this vein, OS aims to make the best use of available resources in the organization, reduce expenses, and maintain the level of service quality provided to ensure an increase in the organization's ability to attract customers and strengthen relationships with suppliers and stakeholders (Mohamed and Al-Romeedy 2021). Organizations are increasingly interested in engaging employees to enhance sustainable performance through initiatives to reduce waste and ensuring that energy and other resources are used efficiently (Ojo et al. 2020). The organization relies on its employees to achieve its objectives and ensure its sustainability for the longest possible period. Suppose those employees realize the support of the organization in their jobs. In that case, they are more willing to exert more effort at work, develop their performance, be more committed to carrying out their work tasks, improve the

operational and competitive capabilities of the organization, and achieve goals. Organizational support also enhances the financial and environmental performance of the organization, enhancing OS (Wang et al. 2018; Hossin et al. 2021). As confirmed by Paillé et al. (2020), employees are more willing to develop and improve OS when their organizations demonstrate PGOS. PGOS also promotes sustainable innovation for organizations (Zhao et al. 2021a, b). Kusi et al. (2021) highlighted that perceived organizational support influences sustainable performance. Further, Hossin et al. (2021) clarified that PGOS enhances organizational sustainability. Consequently, the following hypothesis is constructed:

H2: PGOS affects positively OS.

The Relationship Between GHRM and OS

The HR function drives the organization's sustainability via matching its practices and procedures with environmental sustainability objectives (Margaretha and Saragih 2013). GHRM is primarily concerned with organizational capabilities and the ability to attract, train, and retain employees using environmentally friendly practices. These practices enable organizations to enhance their social awareness about the environment and lead them to achieve sustainability (Qureshi et al. 2020). Pursuing improved environmental performance and long-term sustainability also requires organizations to invest in sourcing and regulating essential resources to improve their strategic value and adopt GHRM practices (Ren et al. 2020). GHRM is associated with achieving OS through developing human resource practices that support organization economically, environmentally, and socially (de Souza Freitas et al. 2011). Likewise, GHRM practices are grounded in preserving the environment, which may enhance its environmental reputation and performance in the long term (Munawar et al. 2022). OS results from GHRM practices that aggregate social and environmental requirements (Zhao et al. 2021a, b).

In addition, GHRM seeks to maximize the utilization of resources in order to improve the organization's sustainable practices and processes (Patwary et al. 2022). It must additionally give the capabilities required to constantly enhance the environmental performance of the organization (Yusoff et al. 2020). It also equips the organization with environmentally conscious employees who understand and value environmental conservation, promote green initiatives, and strive to implement environmental objectives to enhance sustainable management outcomes (Abdeen and Ahmed 2019). Employees must engage in environmental activities, particularly green citizenship behavior as it helps tackle environmental issues and improve organizations' long-term growth (Pham et al. 2019a, b).

Also, organizations that adopt GHRM achieve more benefits, such as organizational sustainability, than organizations that do not adopt these practices (Aboramadan and Karatepe 2021). GHRM contributes to improving economic and environmental performance through the best use of the organization's resources and

skills (Suharti and Sugiarto 2020). Whereas, Abdeen and Ahmed (2019) showed that some practices of GHRM like green training and green appraisal influence the financial performance of travel agents in Egypt. Rubel et al. (2021) elaborated the importance of GHRM as a resource for enabling organizations to achieve organizational sustainability. Das and Singh (2016) stated that the primary goal of GHRM is to build a workforce capable of shifting to green practices in the organization, improving organizational performance, and developing employee performance to enhance organizational and environmental sustainability.

In the same context, the results of Amjad et al. (2021) depicted that GHRM practices like green training, performance appraisal compensation, and rewards contribute to achieving OS and developing environmental performance in organizations. At the same time, green training and green recruitment affect OS positively (Yong et al., 2020). Mishra (2017) also showed that employees are linked to organizational and environmental sustainability through GHRM practices. Previous research has shown a link between GHRM and environmental performance (Singh et al. 2020; Ojo et al. 2020; Roscoe et al. 2019; Rawashdeh 2018; Hameed et al. 2020), and environmental sustainability (Paillé et al. 2020; Mehta and Chugan 2015; Nisa et al. 2016; Iqbal 2020; Mashala 2018; Sharma 2016). Several studies also showed that GHRM positively links with OS (Zhao et al. 2021a, b; Qureshi et al. 2020; Elayan 2022). Hence, the following hypothesis is suggested:

H3: GHRM affects positively OS.

The Mediating Role of PGOS Between GHRM and OS

GHRM assists organizations in gaining a competitive advantage by integrating environmental protection into their plans and increasing environmental awareness. Implementing these practices positively affects organizations' sustainability (Malik et al. 2020). OS may not be directly affected by GHRM practices, but it may need some supporting factors to enhance this effect. Paillé et al. (2020) highlighted the role of PGOS in enhancing the impact of green training on environmental action-related outcomes. Therefore, the link between GHRM and OS can be supported by PGOS. Similarly, GHRM influences PGOS and environmental performance (Bhatti et al. 2022). According to Paillé et al. (2020), GHRM practices, when combined with PGOS, contribute to improving the sustainable performance of organizations. PGOS can also directly influence sustainable performance through sustainable innovative behaviors of employees due to increased job satisfaction and work engagement (Hossin et al. 2021). Likewise, Bhatti et al. (2022) indicated that employees who realize green organizational support by adopting GHRM practices are more committed to engaging in environmentally friendly activities. They are also more willing to try to preserve the environment and are more inclined to support OS. In this vein, GHRM leads to enhanced PGOS, which positively supports OS. So, the following hypothesis is assumed:

H4: PGOS Mediates the link between GHRM and OS.

Methodology

The current study employs a quantitative approach, the best tool for investigating relationships between latent constructs and testing hypotheses (Cepeda-Carrion et al. 2018). When it comes to hypothesis testing, the quantitative method is better for investigating group links and relationship reduction (Castleberry and Nolen 2018; Gaafar et al. 2021).

Participants and Procedures

Data from EgyptAir were gathered to test the study hypotheses. This company is one of the leading airlines in the world. EgyptAir serves 81 locations in Europe, the Middle East, the Americas, Africa, and Asia with scheduled passenger and cargo services. It belongs to the Star Alliance network. Two professionals reviewed the survey's English version and back-translated it into Arabic (Al-Romeedy and Ozbek 2022; Al-Romeedy and Mohamed 2022a, b). From August 2022 to October 2022, data were collected through face-to-face contact. A random sample of 428 employees received questionnaires, and 402 surveys were collected. Due to inadequate information and Z-shaped replies, only 34 surveys were discarded. Finally, with an 86% response rate, 368 surveys were valid for statistical analysis. The researcher also guaranteed the secrecy of the data provided. All participants volunteered and were not rewarded for their participation.

According to Table 1, more than two-thirds of the sample were males (68.8%), whereas (31.2%) were females. As for age, 47% of respondents were (from 30 to less than 40 years), followed by who was (from 40 to less than 50 years) (38.6%), then 10.6% of respondents were aged (less than 30 years), and 3.8% of respondents were aged (50 years and above). 80.2% of the respondents have a bachelor's degree. There were 80.4% employees, 11.7% supervisors, and 7.9% managers in the sample. Finally, 35.1% have work experience (from 10 to less than 15 years), 31.8% have a (from 5 to less than 10 years) experience, followed by 22% have work experience of (15 years and above), and finally, 11.1% have work experience of (less than 5 years).

Measures

All latent constructs were evaluated using items from previous studies that had been modified to be more applicable to the sample (Morean et al. 2013). The Likert scale measures how strongly respondents agree or disagree with a particular item (Awang et al. 2016). Except demographics, On a 5-point Likert scale, all the questionnaire items were rated (5 = strongly agree, 1 = strongly disagree). GHRM was measured by a 4-item scale adapted from Zhao et al. (2021a, b). PGOS was evaluated using a

Table 1 Respondents' characteristics

Gender	Male	Female		
	253 (68.8%)	115 (31.2%)		
Age	Under 30 years	From 30 to less than 40 years	From 40 to less than 50 years	50 years and above
	39 (10.6%)	173 (47%)	142 (38.6%)	14 (3.8%)
Education	Medium level	Bachelor	Postgraduate	Others
	32 (8.6%)	295 (80.2%)	19 (5.2%)	22 (6%)
Position	Manager	Supervisor	Employee	
	29 (7.9%)	43 (11.7%)	296 (80.4%)	
Job experience	Under 5 years	From 5 to less than 10 years	From 10 to less than 15 years	15 years and above
	41 (11.1%)	117 (31.8%)	129 (35.1%)	81 (22%)

7-item scale adopted from Aboramadan et al. (2021). Finally, OS was assessed by a 7-item scale developed by Amjad et al. (2021).

Measurement Model

SmartPLS3 was used for the statistical analysis. To assess reliability, Cronbach's alpha and composite reliability (CR) were executed (Ab Hamid et al. 2017). The composite reliability (CR) and average variance extracted (AVE) ratings are crucial in determining the scale's validity, as Na-Nan et al. (2018) highlighted. A suitable AVE value is 0.5 or above; our results met this condition (Franke and Sarstedt 2019). The CR value for each construct should be more than 0.7, and the CR value for our constructs reported by the results also meets this rule (Shrestha 2021). Cronbach's alpha is equal to 0.70 (Al-Romeedy 2019b, c), and all construct values were much higher than this value (See Table 2). To corroborate the overall construct factor structure, confirmatory factor analysis (CFA) was used. The measurement model analysis yielded a satisfactory fit to the data, as shown in Table 3.

The heterotrait–monotrait (HTMT) ratio was adopted to assess discriminant validity, with a recommended value of less than 0.90 (Hair et al. 2021). According to Table 4, HTMT ratio values were significantly lower than 0.90 across all constructs,

Table 2 Results of measurement model

Construct	α	CR	AVE
GHRM	0.85	0.88	0.695
PGOS	0.79	0.81	0.609
OS	0.82	0.85	0.652

Table 3 Confirmatory factor analysis

Indices	Value
Normed chi-square	1.936
Goodness of Fit Index (GFI)	0.953
Adjusted Goodness of Fit Index (AGFI)	0.957
Comparative Fit Index (CFI)	0.944
Normed Fit Index (NFI)	0.948
Root Mean Squared Error of Approximation (RMSEA)	0.023

Table 4 Discriminant validity: Heterotrait–Monotrait (HTMT) ratio

	GHRM	PGOS	OS
GHRM			
PGOS	0.692		
OS	0.603	0.713	

Table 5 Fornell–Larcker criterion

	GHRM	PGOS	OS
GHRM	*0.834*		
PGOS	0.632	*0.708*	
OS	0.558	0.611	0.*807*

demonstrating that the connectivity of items across constructs is less than the connectivity of items within the same constructs; therefore, discriminant validity is retained. The Fornell–Larcker criteria were additionally employed to assess the discriminant validity. As seen in Table 5 (diagonal in italics), the square roots of AVE are larger than the largest relationships with any other construct for all constructs.

Test of Hypotheses

According to the results in the Table 6, GHRM significantly and positively affects PGOS ($\beta = 0.522$, p-value $= 0.000$). Hence, H1 is confirmed. H2 was confirmed as there is a positive effect of PGOS on OS ($\beta = 0.487$, p-value $= 0.000$). As well, the results highlighted the significant and positive effect of GHRM on OS ($\beta = 0.511$, p-value $= 0.000$). Consequently, H3 is confirmed.

To explore the indirect effect of GHRM on OS via PGOS, Bootstrapping is a method for determining the indirect effect of potential constructs (Biesanz et al. 2010). It is one of the most exact and successful methods for studying mediating effects, and it is gaining traction among academics, according to Cheung and Lau

Table 6 SEM results

Path	β	S.D	t	p-value	Result
H1. GHRM → PGOS	0.522	0.063	8.286	0.000	Confirmed
H2. PGOS → OS	0.487	0.071	6.859	0.000	Confirmed
H3. GHRM → OS	0.511	0.066	7.742	0.000	Confirmed

Table 7 Bias-Corrected Bootstrapped result

Path	β	S.D	t	p-value	VAF	Result
H4. GHRM → PGOS → OS	0.303	0.041	7.390	0.037	0.189	Confirmed

(2008). The t-values were displayed using Smart PLS 3.0, and 500-resample bootstrapping was used to evaluate the indirect effects (Zaman et al. 2021). The mediator's role in direct and indirect effects is investigated.

According to the results in the Table 7, PGOS mediates the link between GHRM and OS partially ($\beta = 0.303$, p-value $= 0.037$), confirming H4.

Discussion

The study's objectives were to explore the effect of GHRM on PGOS and OS, to evaluate the effects of PGOS on OS, and to examine the mediating role of PGOS in the association between GHRM and OS. A quantitative technique was considered in this research to achieve the research objectives, using a survey to gather data from EgyptAir ($N = 368$). The results support the suggested research model and all of its hypotheses.

The results depicted that GHRM significantly and positively affects PGOS. This result agrees with some previous studies, as Hameed et al. (2021), Aboramadan et al. (2021), and Bhatti et al. (2022) indicated that GHRM positively affects PGOS through employees' perceptions of GHRM as a source of developing their environmental skills and abilities and meeting their personal needs and desires. Aboramadan and Karatepe (2021) also showed that organizations adopting GHRM to enhance environmental awareness and performance of employees, encourage them to practice environmentally friendly activities, and invest in developing their environmental skills in the field of implementing environmental initiatives and goals, will contribute to building green positive perceptions among workers as a result of their sense of green support.

The results demonstrated that PGOS has a significant and positive impact on OS. This result is in line with the study of Hossin et al. (2021), which pointed out that organizational sustainability is predicted by perceived green organizational support. Likewise, when employees realize the PGOS in their jobs, the management supports them to improve administrative and operational processes, develop the organization's

financial performance, as well as environmental performance, green innovation, and their commitment to achieving some green goals, this leads to OS (Wang et al. 2018; Hossin et al. 2021). Employees who recognize the organization's green organizational support are more willing to do more to promote OS (Paillé et al. 2020).

Additionally, the results depicted that GHRM affects OS significantly and positively. This result agrees with some previous studies (e.g., Zhao et al. 2021a, b; Qureshi et al. 2020; Elayan 2022), as they claimed that GHRM correlates significantly and positively with organizational support. Amjad et al. (2021) clarified that GHRM contributes through various practices, like green recruitment, training, performance appraisal, and rewards, to promote environmental performance and enhance OS. GHRM is also based on enabling organizations and their employees to achieve OS (Rubel et al. 2021) by linking employees to practices that support OS and enhance their competitiveness (Mishra 2017). Besides, GHRM aims to achieve OS by qualifying employees to be more capable of transforming into green organizations and developing their performance and organizational performance inside and outside the workplace (Das and Singh 2016). Finally, the results showed that PGOS affected OS and mediated the link between GHRM and OS, making this the first study to explore PGOS's mediating effect. This result highlighted that PGOS acts as a mediator between GHRM and OS.

Implications

Theoretical Implications

The study's results hold significant implications for both theory and practice. This research theoretically adds significantly to the HR and aviation literature. It contributed substantially to our aviation knowledge by developing and empirically testing a model to explore the linkages between GHRM, PGOS, and OS directly and indirectly. This study also included several ground-breaking examinations. Until now, fewer studies addressed the influences of GHRM on PGOS and OS. There has been no empirical research on the relationship between these constructs in the aviation sector regarding contextual applicability. Regarding geographical relevance, there has been a considerable shortage of empirical studies on GHRM with a concentration on the Middle East. The same may be said about the link between GHRM, PGOS, and OS, in addition to the relationship between PGOS and OS in airlines. The current study bridges the gap in the aviation literature and HRM and organizational behavior literature by empirically analyzing these relationships in the context of EgyptAir. Finally, by evaluating the mediating role of PGOS in the link between GHRM and OS, this study has made significant contributions to human resource management and airline knowledge. The influence of GHRM on PGOS and OS, in general, has received little attention from researchers. As a result, the current study has made an important addition to our understanding of GHRM, PGOS, and OS.

Crucially, this is the first research in the Middle East and the world—according to the author's knowledge—to assess the role of PGOS on the link between GHRM and OS.

Managerial Implications

With the increasing trend toward greening in airlines, the importance of integrating various administrative and operational practices and processes with environmental management has increased. For example, the shift from traditional HRM to GHRM. The study's results revealed a positive impact of GHRM on enhancing both PGOS and OS in EgyptAir. Since employees with green expertise and experience are essential for the effective execution of green objectives, managers should set a clear policy for selecting new employees with knowledge, experience, and skills in implementing green goals and environmental initiatives. Some incentives should also be put in place to keep outstanding personnel whose environmental aims and values align with those of the organization. Furthermore, employees need to be allowed to participate in setting environmental goals for organizations and contribute to solving environmental problems.

In addition, organizations should adopt a green rewards policy that inspires employees to participate in environmental activities and to develop their environmental performance by implementing specific green goals. This policy also encourages them to adopt environmental creativity and innovation in their jobs and to lessen the environmental impact of the organization's policies and operations. It is also possible to enhance environmental awareness and improve the sustainable performance of employees through organizing workshops and seminars to provide them with green knowledge that allows them to enhance their green performance and put green initiatives and goals into action.

Similarly, managers need to support environmental learning and environmental creativity by encouraging employees to experiment with new ways of performing work and evaluating their impact on the environment, promoting environmental ideas and stimulating employees to apply them, and sharing their opinions on preserving the environment. Besides, discussing with employees the mistakes associated with implementing green initiatives to avoid their occurrence in the future. Managers should also support and develop environmental competencies by allocating training programs for employees on green initiatives and goals and mechanisms for their implementation, encouraging them to participate in environmental activities outside work to gain environmental expertise and skills, encouraging teamwork in solving environmental problems and exchanging green knowledge. It is also possible to integrate some environmental indicators within the criteria for evaluating the performance of employees to assure employees that their environmental behaviors and practices are important in organizations.

Moreover, green organizational culture needs to be adopted to support and encourage employees to engage in green practices, encourage green voice behaviors, and enhance employees' sense that their organizations value their green behaviors and values. Given the importance of perceived green organizational support in promoting organizational sustainability, managers can increase the perceived green organizational support among employees by providing all the necessary resources to implement green goals, providing information on the various environmental impacts of the organization's activities, mechanisms for reducing harmful environmental consequences, and estimating the environmental efforts of employees. Organizations should also expand their investment in environmental management, whether in administrative processes and practices or the tasks and activities of employees, as well as the products and services they provide and their role in preserving the environment. Finally, managers can adopt leadership styles supporting the environment, such as sustainable and green transformational leadership. These styles encourage green behaviors and values among employees, welcome innovative environmental ideas, promote environmental citizenship, share environmental knowledge, address environmental customer complaints, and support sustainable performance.

Limitations and Future Research

This study possesses important limitations, although it has beneficial results for policymakers. The study sample was collected from EgyptAir. So, it is suggested the future studies to increase the study area and population (e.g., travel agencies and hotels). Furthermore, the current study assessed the effect of GHRM on both PGOS and OS. Future research could assess the impact of green human resource management on other organizational factors (e.g., green reputation, green identification, green marketing) that may affect airline sustainability. Furthermore, this research looked into the role of perceived green organizational support as a mediator in the relationship between green human resource management and organizational sustainability. Other than perceived green organizational support, future research might look at other mediating variables (e.g., green brand, green transformational leadership, green organizational citizenship behaviors, and green jobs). Likewise, this research was applied to EgyptAir. Future research is recommended to include comparative studies of EgyptAir and other airlines in the MENA area. Moreover, the influence of GHRM on perceived green organizational support and organizational sustainability was investigated. Other factors are identified for future research to study their effects on organizational sustainability (e.g., sustainable leadership, strategic flexibility, green supply chain, and green empowerment). Future research may investigate the effect of other factors on perceived green organizational support (e.g., organizational health, green management, and strategic planning).

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Green Human Resource Management and Circular Economy Practices in Green Garment Organizations in Bangladesh: Mediating Effect of Green Innovation

Mohammad Rabiul Basher Rubel and Nadia Newaz Rimi

Abstract This study intends to examine the role of GHRM in influencing employee circular economy (CE) practices with the mediating effect of green innovation (product and process innovation) in green Ready-made garment (RMG) organizations in Bangladesh. The dynamic capability theory is the underlying theory of this study. Results of the perceptions of 354 employees show that GHRM has a direct significant influence on employee CE practices and indirect influence through two-dimensional green innovation. The paper explores what GHRM means to employees in influencing their CE performance in the garment organizations having global identity of green organization and operating in one of the largest labor-oriented industries in Bangladesh. The findings provide insights into the inner mechanisms linking GHRM and CE practices through green innovation that further prove employee dynamic capability requirements to innovate and behave sustainably.

Introduction

It is thought that the industrialization has its first step from the textile and clothing (TC) sector (Brenton and Hoppe 2007) which is currently under excessive global criticism for having negative environmental effects across its supply chain operations (for instance, waste generation, resource consumption, and carbon footprint) (Niinimäki et al. 2020; Islam 2021). Due to the rising consumer demands for fast changing fashion trend, the production and consumption of clothing have dramatically increased (Sobuj et al. 2021), which results in significant waste production at every stage of cloth manufacturing, including spinning, knitting/weaving, dyeing, making and finishing (Akter et al. 2022). With 10% of the world's greenhouse gas

M. R. B. Rubel (✉)
BRAC Business School, BRAC University, 66 Mohakhali, Dhaka 1212, Bangladesh
e-mail: rabiul.basher@bracu.ac.bd

N. N. Rimi
Department of Management, University of Dhaka, Dhaka 1000, Bangladesh

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(GHG) emissions, it is the second most polluting industry behind the oil industry (United Nations [UN] 2019). This industry releases 200,000 tons of untreated dye and about 20% of the world's industrial water pollution (Fashion and Sustainability Report 2021). It is one of the sectors that consumes extensive water (e.g., 7000 L per pair of jeans; UN 2019). In addition to the direct environmental costs including soil degradation, deforestation, micro-fiber in saltwater, and chemical additives, due to the quantity of water needed to irrigate the cotton fields, this sector creates harm to the raw material supply chain as well (Saha et al. 2021).

In response to these environmental challenges, stricter rules are implemented primarily so that polluters pay for sustainability (Saha et al. 2021). Besides, business organizations, especially in the textile industry, are working on finding environmentally conscious and sustainable business practices to address sustainability challenges (Akter et al. 2022; Shamsuzzaman et al. 2021). Additionally, academic studies are also exploring more sustainability-based approaches in the textile industry (Huq and Stevenson 2020; Akter et al. 2022). According to Kleinhückelkotten and Neitzke (2019), in the textile industry, sustainability refers to avoiding negative ecological effects as well as degrading living situations for those involved in the manufacturing, use, reuse, and recycling of clothing as well as the management of clothing waste. Though attention has been given to sustainability measures in the areas of water and energy use, there is still a knowledge gap regarding managing material waste in the supply chain of the textile industry (Islam 2021). If trash generated by the textile manufacturing industry is to be used sustainably within the context of the circular economy (CE), more research is needed to find the ways (Shirvanimoghaddam et al. 2020; Akter et al. 2022). Closing energy and material loops and preventing resource depletion are the goals of the CE business model that promotes sustainable growth (Kalmykova et al. 2018). Material waste has negative consequences on the environment as well as the possibility of a significant loss in value and economic opportunity in the textile-apparel production chain. This study contends that the textile sector may accomplish CE practices to ensure proper material management by adopting green human resource management (GHRM).

Scholars and practitioners have recently focused on GHRM to address CE practices in the organizations (Marrucci et al. 2021). GHRM explores specifically the vital role of the human side of the CE implementations (Jabbour et al. 2019). According to Hopkinson et al. (2018), managerial know-hows and abilities can be regarded as crucial components of any CE program. Furthermore, Daddi et al. (2021) demonstrate that both managers and workers play a crucial role in the transition to a CE. Despite this widespread acceptance and the general importance of the human element of CE practices, the impact of GHRM on the CE performances from the perspective of employees has not yet been studied, the first gap addressed in the current study.

Additionally, the current research also examines the influence of green innovation as a mediator between GHRM and CE. GHRM would not only help the organization to ensure employee green behavior or organizational sustainable performance but also enhance employees' capabilities to identify or innovate something for the society and industry as well (Chang 2011; Kraus et al. 2020). Employee green product and process innovation could lessen the negative environmental impact of the company

and improve its financial and social performance by reducing wastages and costs (Weng et al. 2015; Singh et al. 2020). As such organization uses green innovation as a tool to achieve its green management objectives (El-Kassar and Singh 2019). In today's fast-paced global economy, businesses are prepared to invest more in creating green solutions to green problems (Singh et al. 2020; Saha et al. 2021). It could be assumed that the contradiction between economic growth and environmental fortification can therefore be resolved in an innovative way such as by green innovations that benefits both organization and environment. Therefore, using the dynamic capability theory (DCT), we predict that GHRM enhances employee innovation capability and thus, influences their CE practices.

In earlier research green innovation is found as an outcome variable of GHRM (Singh et al. 2020; Wang et al. 2021; Munawar et al. 2022). In green innovation research it is found as a mediator between different variables such as GHRM and environmental performance (Singh et al. 2020), GHRM and green behavior, corporate environmental ethics and competitive advantage (Chang 2011), leadership and green creativity (Arici and Uysal 2022). A gap is identified considering green innovation as a mediator between GHRM and CE practices, the second knowledge gap this study addresses.

To accomplish this study goal, we conducted a survey among Bangladeshi ready-made garment (RMG) organizations that are Leadership in Energy and Environmental Design (LEED) certified. Due to these organizations' strong ties to the environment, which have given them a distinctively green brand both locally and internationally, we choose to concentrate on them. Bangladesh uses the local word "jhut," to refer to the material waste produced by the clothing sector (Patnaik and Tshifularo 2021). Due to its direct effects on the environment, managing material waste is becoming a significant challenge (Sarkar et al. 2020; Uddin et al. 2021). Recently, both local and global scholars have shown their interest in textile firms to investigate their potential for a CE (Marrucci et al. 2021; Saha et al. 2021) which is further expected to have a positive impact on the material management of this sector (Akter et al. 2022). We aim to measure the impact of GHRM on the CE practices directly and via green innovation for the first time in green garments taken from the world's one of the topmost garment products exporter, Bangladesh. In Fig. 1, the suggested research framework for this study is presented.

Underlying Theory: Dynamic Capability Theory

The present study considers dynamic capability theory (DCT) principles derived from the literature on organizational management in explaining the interactions among the research variables. The ground-breaking article by Teece et al. (1997) and subsequent research on DCT (Chowdhury et al. 2022) have demonstrated that a firm's internal resources, skills and competencies, leadership, processes, and organizational habits would determine its ability to introduce new practices and strategies for instance, CE practices and successfully manage them in an ever-changing environment. For this

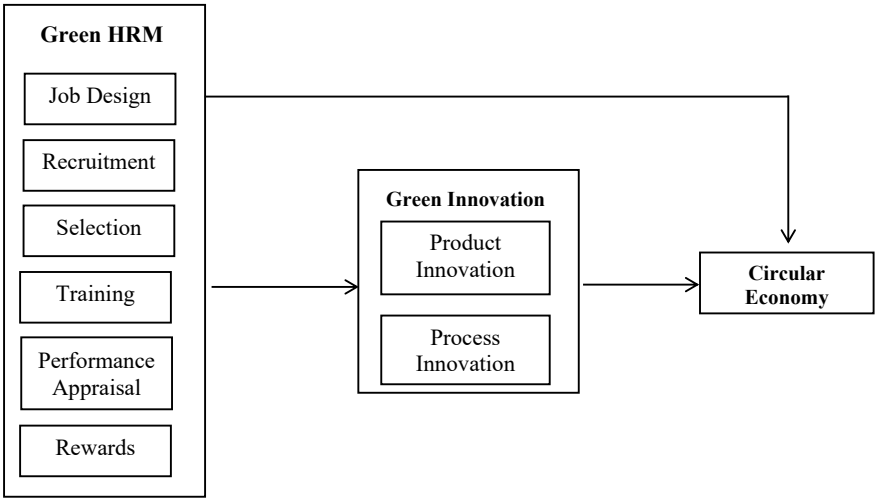

Fig. 1 Proposed research framework

purpose, organizational internal mechanism involves considering human resources and how their skills and competencies could be acquired, developed, and deployed as well as restructuring the business model and operations in the face of environmental dynamism (Apascaritei and Elvira 2021). Using DCT, the currently available literature has also discussed how adopting CE calls for organizational changes to restructure business processes that will help to succeed organization sustainability (Khan et al. 2020) and how organizational factors could influence CE performances (Chowdhury et al. 2022). In this study, DCT would therefore, aid in conceptualizing and examining the interactions among organizational processes (GHRM), employee skill and competencies (green innovation) and CE practices (new business model performance).

Review of Literature and Hypotheses Development

Circular Economy (CE)

The founding principle of CE is that natural resources are limited (Ghisellini et al. 2018). Hence, by determining the value through resource recovery and regeneration after a product has reached the end of its useful life, CE has consequently developed itself as a growing commercial and economic model that offers enterprises an alternative resource use pattern (Jabbour et al. 2019). CE-targeted businesses could make minimum use of natural materials, use recycled and closed-loop materials, avoid energy leaks, lower emissions, and prevent pollution (Bai et al. 2020;

Jabbour et al. 2019). Using circularity principles of CE, organizations have created and accepted business models based on lifespan, renewability, reuse, repair, upgrade, refurbishment, capacity sharing, and dematerialization to ensure proper resource uses (Moktadir et al. 2018). As a result, the main objectives of CE are found to reduce waste and increase resource and energy efficiency (Navarro et al. 2020). That is where the idea of the 3Rs—reduce, reuse, and recycle—comes from. Reduce includes looking for ways to alter raw materials, enhancing production and consumption procedures, and changing the design of the process (Goyal et al. 2018). Reuse is the process of reusing end-of-cycle items to cut down on the consumption of raw materials and other resources used in the design, production, and use of products or components (Goyal et al. 2018). Recycling becomes a helpful alternative when the items can't be reused or decreased because it enables less intensive use of finite resources by converting waste products into valuable commodities (De Corato 2020). The 3Rs when combined allow for the effective use of resources, which has positive effects on the economy, environment, and society (Prieto-Sandoval et al. 2018).

Green Human Resource Management

HRM within the context of environmental issues is referred to as GHRM (Yusliza et al. 2017; Ren et al. 2018). It entails green employee recruitment, equips them with necessary training and development in green management, measuring their performance in sustainability areas and reward them for achieving green goals (Rubel et al. 2021a; Yong et al. 2020). GHRM covers the process of aligning HRM strategy, practices, and systems with significant business sustainability goals as well as with objectives for employee empowerment and organizational culture to support such alignment (Renwick et al. 2016). Therefore, implementing effective organizational sustainability programs requires careful consideration of GHRM (Jackson et al. 2014). GHRM practices cover a wide range of areas, including building an eco-friendly organizational culture, green teams, eco-focused hiring practices, sustainable training and development, green-oriented performance assessment and rewards, and employee empowerment for environmental activities (Rubel et al. 2021b).

Green HRM and CE

GHRM has favorably encouraged the implementation of a variety of sustainability and corporate social responsibility strategies in businesses (Nejati et al. 2017; Rubel et al. 2021b). By achieving improved economic, environmental, and social performance, GHRM practices can improve businesses' sustainability performance (Pham et al. 2019). The beneficial impact of GHRM on businesses' sustainability-related metrics is attributable to GHRM's ability to improve employee eco-behaviors (Pham et al. 2019; Rubel et al. 2021a). Therefore, employing GHRM techniques might help

employees to effectively implement CE practices. Jabbour et al. (2019) highlight the human aspects of the connections between GHRM and CE model. Marrucci et al. (2021) investigate the role that GHRM plays in the shift to a CE. As such, it is logical to think of GHRM as a component of evolving principles of sustainable operations that might develop dynamic human capability to perform CE practices (Koh et al. 2017). Thus, based on the earlier findings and DCT, the current research considers the following hypothesis.

H1: GHRM has positive influences on employee CE practices.

Green HRM and Green Innovation

Green innovation is the development of ecologically friendly goods and procedures (Tang et al. 2018) that seek to reduce negative environmental effects while producing positive environmental outcomes for the industry (Wang et al. 2021). According to Albort-Morant et al. (2017), organizations that uphold green innovation outperform their rivals in terms of overall performance and success. Previous studies have emphasized that HRM enhances employees' skills, knowledge, and competencies and thus, promotes the development of new corporate procedures and products (Seeck and Diehl 2017). Singh et al. (2020) advocate that the association between GHRM and green innovation is dynamic and that the existing findings are inconsistent and mixed, even if the earlier authors established a relationship between GHRM and green innovation with consistent results. This opinion encourages the present study efforts to further investigate GHRM and employee innovation relation. Here, it is assumed that to create and retain innovation, the textile sector must first include green issues in formal job structure, hire personnel who would actively participate in environmental initiatives and train them to support and enhance their green inspiration and invention. Finally, employing eco-friendly performance management and rewards could help textile employees think out of the box to support organization's environmental objectives. Therefore, the following hypothesis is presented:

H2: GHRM has positive influences on employee green innovation.

Green Innovation and CE

Green innovation typically highlights the adjustments that must be made to the core business operations of organizations to move toward sustainability performance (Durán-Romero and Urraca-Ruiz 2015; Iqbal 2020) and reduce their material waste while producing goods that are environmentally friendly (Díaz-García et al. 2015). In this regard, eco-innovation has been acknowledged as one of the key elements in the expansion of the CE practices of corporate operations (de Jesus et al. 2019). CE focuses on the design of products and processes that minimize the negative effects on the environment and society at large through the substantial decline of

the utilization of nonrenewable resources and the amplification of the capacity for reprocess of materials and goods, the exclusion of toxic materials and pollutants, and the escalation in the shelf life of products (Maldonado-Guzmán et al. 2020). Thus, eco-innovation (improvement of new products and processes) activities are viewed as one of the paramount approaches for implementing CE practices as well as a means of obtaining a greater level of sustainability (de Jesus et al. 2019). With respect to the mechanisms of eco-innovation, eco-products can be produced that permit increasing their stability and superiority and eco process that reduce resource utilization and wastage (Cainelli et al. 2020). Based on DCT, it is further posited that employee's dynamic innovation capabilities would facilitate their CE practices in the organization. Considering the previous debate, it is therefore possible to provide the third research hypothesis.

H3: Employee green innovation has positive influences on their CE practices.

Green Innovation as Mediator Between GHRM and CE

The ideas of the CE and the implementation of eco-innovation initiatives are taken as a few outstanding alternatives to traditional approaches to reduce material and energy waste (Cainelli et al. 2020). By reducing waste and costs, green product and process innovation improve a company's financial and social performance in addition to reducing the negative environmental effects of the business (Weng et al. 2015). Through the creation of eco-products or eco-services, particularly in terms of the expansion and efficiency of the organization's resource pool as well as their eco-production system, CE goals could be achieved (Maldonado-Guzmán et al. 2020). Prior studies indicate that GHRM impacts green innovation (Singh et al. 2020; Munawar et al. 2022). Using the DCT, we anticipate that organizations that appreciate and make the most of their human capacity would institutionalize GHRM methods to help people become more innovative and make the most of their potential for new green processes and products. CE practices require a change in collective and individual behaviors (Pieroni et al. 2019) and GHRM might be the mechanism to make such transition through its effect on enhanced dynamic innovative capability (generation of cleaner products and processes) of human factors of the organization. Hence, according to the DCT it can be claimed that GHRM implicitly affects employee CE performance due to the intervening function of their green process and product innovation. Hence, it is predicted that.

H4: Employee green innovation mediates the relationship between GHRM and CE practices.

Methodology

Sample and Data Collection

This was a cross-section type of research using a structured questionnaire to collect data in 2022 (January to February 2022). The hypotheses were tested on the perceptions from a sample of employees working in the different departments of the LEED-certified RMG organizations in Bangladesh. There were 163 LEED-certified RMG organizations in Bangladesh in three different categories (https://www.dhakatribune.com/business/2022/06/28) including 49 in platinum, 100 in gold and rest 14 in silver ranked. The selection criteria for the employees were included in the survey to confirm that all participants: (1) worked in LEED-certified RMG organizations; (2) had at least two years of experience working in the same organization; (3) were members of the operations team and in a full-time/permanent capacity; and (4) had information about green issues. The researchers used a judgmental sampling technique to choose samples because the selected samples would serve the purposes of the present research. 720 sets of questionnaires were distributed equally to the 72 organizations that wanted to participate. Among all the distributed questionnaires, 378 were reverted, and 354 surveys were identified as valid with a response rate of 48.7% which outperforms the response rates of previous studies (Rubel et al. 2021b).

Measures

All replies were scored on a 5-point Likert scale, with 1 being the least significant and 5 being the most significant. Six dimensional (job design, recruitment, selection, training, performance appraisal, and rewards) GHRM were measured by 15 items and adapted from the work of Rubel et al. (2021b). Green innovation was measured by product and process innovation with three items for each and adapted from the work of Chang (2011). Finally, CE practices were measured using four items adapted from Chowdhury et al. (2022). The Cronbach's alphas for all variables ranged from 0.73 to 0.92 considering acceptable.

Data Analysis

To assess both measurement and structural model, the Smart PLS 4.0 was used, as this technique does not require the survey data to always be normally distributed (Hair et al. 2019). The present model was complicated including higher-order GHRM and green innovation with mediation analysis and therefore, regression analysis using SPSS was insufficient to analyze the model simultaneously (Rubel et al. 2021b). Thus, PLS-SEM was utilized in current research.

Table 1 Common method variance (marker variable)

Latent variable	Original R-square	Measured marker	Unmeasured marker
Circular economy practices	0.266	0.271	0.269
Green innovation	0.121	0.128	0.125

Common Method Variance (CMV)

The likelihood of CMV cannot be overlooked because of the self-report measurements. To address the CMV issue, the current research used Podsakoff et al. (2003) methodological separation technique and Harman single-factor. Harman single-factor assessment showed that the un-rotated factor analyses produced only 39.06% of variance explained by the first factor, verifying CMV was not a problem of the current research. Additionally, both measured and unmeasured latent method factors were used in the current investigation to address CMV (Fischer and Fick 1993). The R^2 was kept close to the baseline (10%) by using the exploratory factor analysis (EFA) scores of the endogenous variable to determine the scores of the unmeasured maker variable (Kock 2015) (Table 1). CMV was thus not a problematic issue in the ongoing investigation.

Result

Hierarchical Green HRM and Green Innovation Model

The current research employed six first-order reflective dimensions considering 15 items to explain GHRM as second-order construct. Moreover, green innovation was explained by two first-order dimensions namely, green product and green process innovation comprising of six items in total. Wetzels et al. (2009) advise looking at the relationships between first-order variables to establish whether the second-order model is a mirror of its first-order counterparts. According to the results, all first-order constructs were substantially connected, and the relationship between GHRM and its components and green innovation and its components were statistically accepted at $p < 0.01$. The results of the average variance extracted (AVE) and composite reliability (CR) of both GHRM and green innovation were found to be considerably distinguished (see Table 2).

Table 2 Hierarchical GHRM and green innovation

Green HRM (AVE = 0.507, CR = 0.855)						Green innovation (AVE = 0.761, CR = 0.864)	
GJD	GREC	GSEC	GT	GPA	GRWD	GPDI	GPRI
R^2 = 0.467 β = 0. 770 $P < 0.01$	R^2 = 0.345 $\beta = 0.698$ $P < 0.01$	R^2 = 0.351 $\beta = 0.735$ $P < 0.01$	R^2 = 0.502 $\beta = 0.707$ $P < 0.01$	R^2 = 0.204 $\beta = 0.507$ $P < 0.01$	R^2 = 0.590 $\beta = 0.788$ $P < 0.01$	R^2 = 0.590 $\beta = 0.761$ $P < 0.01$	R^2 = 0.590 $\beta = 0.762$ $P < 0.01$

Note GJD = Green job design, GREC = Green recruitment, GSEC = Green selection, GT = Green training, GPA = Green performance appraisal, GRWD = Green rewards, GPDI = Green product innovation and GPRI = Green process innovation

Measurement Model

To examine the measurement model's convergent validity, the current research assessed item loading, AVE, and CR. The item's standard loading, AVE, and CR should be equal or higher than 0.708, 0.50, and 0.70, respectively (Hair et al. 2019). All required values of the present analysis were found accepted and significant. The lowest AVE (0.568) and CR (0.797) were found for green product innovation (Table 3).

Furthermore, the discriminant validity was assessed using both Heterotrait–Monotrait (HTMT) ratio and the Fornell–Larkar criterion. Henseler et al. (2015) recommend two different cut-off values for HTMT ratio, such as 0.85 and 0.90. All values of the current research were found much lower than the cut-off value 0.85. To assess the Fornell–Larkar criterion, Hair et al. (2019) suggest that the square root of AVEs (value of the diagonal number) must be higher than the correlational value of all the constructs of the off-diagonal ones. The results in Tables 4 and 5 corroborate that the constructs' discriminant validity were significant and acceptable.

Structural Model

To assess the goodness-of-fit of structural models, coefficients of determination (R^2), path coefficients (β), cross-validated redundancy (Q^2), and effect size (f^2) are evaluated (Hair et al. 2019). The result exhibited that CE practices were explained 20.9% by GHRM and green innovation whereas, green innovation was described 18.7% of the variance by GHRM. Thus, R^2 was found moderate for both CE practices and green innovation and considered accepted following Cohen (1988). Results of the structural model showed the substantial positive influence of GHRM on CE practices ($\beta = 0.256$, $p < 0.01$) GHRM on green innovation ($\beta = 0.433$, $p < 0.01$) and green

Table 3 Measurement model

Constructs	Items	Loading	AVE	CR	VIF
Circular economy	CE1	0.771	0.654	0.885	1.66
	CE2	0.883			2.25
	CE3	0.808			2.05
	CE4	0.779			1.51
Green job design	GJD1	0.734	0.568	0.797	1.26
	GJD2	0.722			1.27
	GJD3	0.802			1.18
Green performance appraisal	GPA1	0.857	0.698	0.874	1.80
	GPA2	0.836			1.72
	GPA3	0.812			1.48
Green product innovation	GPDI1	0.837	0.625	0.833	1.47
	GPDI2	0.730			1.30
	GPDI3	0.801			1.38
Green process innovation	GPRI1	0.920	0.809	0.927	3.00
	GPRI2	0.916			3.04
	GPRI3	0.861			2.01
Green recruitment	GREC1	0.840	0.691	0.817	1.20
	GREC2	0.822			1.27
Green rewards	GRWD1	0.862	0.737	0.849	1.30
	GRWD2	0.855			1.29
Green selection	GSEC1	0.863	0.770	0.870	1.41
	GSEC2	0.892			1.42
Green training	GT1	0.762	0.597	0.816	1.29
	GT2	0.812			1.40
	GT3	0.741			1.23

innovation on CE practices ($\beta = 0.284$, $p < 0.01$). Therefore, all current direct paths showed significance as hypothesized (Tables 6 and 7).

Additionally, this research examined the intervening effects of green innovation between GHRM and CE practices grounded on the guideline of Preacher and Hayes (2008). The results demonstrated a substantial mediating effect of green innovation between GHRM and CE practices ($\beta = 0.123$, $p < 0.01$). Finally, the predictive relevance (Q^2) of the model was evaluated by blindfolding procedures with a distance of 7. The findings showed Q^2 was 0.181 for green innovation, 0.131 for CE practices, which were higher than 0 specifying that the predictive relevance was satisfactory.

Table 4 Heterotrait–Monotrait (HTMT) ratio

	CE	GJD	GPA	GPRDI	GPROI	GR	GRWD	GS	GT
CE									
GJD	0.155								
GPA	0.337	0.222							
GPRDI	0.503	0.505	0.257						
GPROI	0.327	0.15	0.126	0.591					
GR	0.337	0.274	0.678	0.319	0.253				
GRWD	0.321	0.259	0.29	0.428	0.17	0.453			
GS	0.359	0.286	0.279	0.607	0.378	0.462	0.573		
GT	0.356	0.383	0.293	0.594	0.287	0.389	0.905	0.671	

Note CE = Circular economy, GJD = Green job design, GREC = Green recruitment, GSEC = Green selection, GT = Green training, GPA = Green performance appraisal, GRWD = Green rewards, GPDI = Green product innovation and GPRI = Green process innovation

Table 5 Fornell–Larcker method

	CE	GJD	GPA	GPRDI	GPROI	GR	GRWD	GS	GT
CE	0.811								
GJD	0.119	0.754							
GPA	0.282	0.153	0.836						
GPRDI	0.401	0.339	0.195	0.790					
GPROI	0.288	0.082	0.104	0.472	0.899				
GR	0.236	0.172	0.448	0.201	0.177	0.831			
GRWD	0.238	0.177	0.206	0.291	0.129	0.270	0.858		
GS	0.277	0.209	0.21	0.436	0.303	0.287	0.386	0.878	
GT	0.269	0.251	0.21	0.412	0.218	0.234	0.589	0.459	0.772

Note CE = Circular economy, GJD = Green job design, GREC = Green recruitment, GSEC = Green selection, GT = Green training, GPA = Green performance appraisal, GRWD = Green rewards, GPDI = Green product innovation and GPRI = Green process innovation

Table 6 Result of the structural model (hypotheses analysis)

Direct hypotheses	Std. beta	Std. error	*t*-value	*P* value	95% UL	95% LL	f^2	VIF	Decision
Green HRM -> circular economy	0.256	0.056	4.54**	0	0.144	0.363	0.067	1.23	S
Green HRM -> green innovation	0.433	0.039	10.98**	0	0.353	0.509	0.23	1.00	S
Green innovation -> circular economy	0.284	0.053	5.31**	0	0.18	0.39	0.083	1.23	S

**$p < 0.01$, *$p < 0.05$. S = Supported

Table 7 Result of the mediation analysis (hypothesis analysis)

Indirect hypothesis	Std. beta	Std. error	*t*-value	*P* value	95% UL	95% LL	Decision
Green HRM -> green innovation -> circular economy	0.123	0.027	4.502**	0	0.071	0.181	S

**$p < 0.01$, *$p < 0.05$. S = Supported

Discussion

The main goals of this study are to investigate how GHRM influences employee CE practices directly and indirectly with the intervening effect of green innovation following DCT. Results from the perceptions of the green RMG employees indicate that GHRM has a direct and significant impact on employee CE practices as well as an indirect impact through green innovation, suggesting that green innovation can be used as a tool to clarify how GHRM promotes employee CE practices at work. The results provide insight into the psychological mechanisms connecting GHRM and CE practices through green innovation, which further supports the need for employees with dynamic innovative capability.

Implications

Numerous theoretical consequences flow from our study. First, it directly contributes to the existing knowledge base in the broader field of HRM, with a specific focus on GHRM. With this effort, an understanding of CE practices has been developed through GHRM as an enabler. Accordingly, the ideas put forward in this article have ramifications for creating theories to better comprehend the CE. We emphasize that for CE practices to contribute to long-term organizational performance, there must be explicit support from HR practices, here is GHRM. Moreover, DCT is also used when discussing the personal impact of CE practices. GHRM could promote employee capability to innovate green product and process which could have further impact on their CE practices. Thus, this research includes a planned discussion of how to reveal CE practices by addressing human factors carefully through GHRM in developing their innovative capabilities that might help CE experts and professionals. Particularly, this study highlights the organizational actions in terms of GHRM related to human dimensions of CE practices for CE legislators and non-governmental organizations working for sustainability in creating and implementing CE plans and targets. Additionally, associations for HR may decide to make employee CE practices a top focus in their HRM initiatives to support a more sustainable community. Furthermore, it is contended here that universities and other higher education institutions

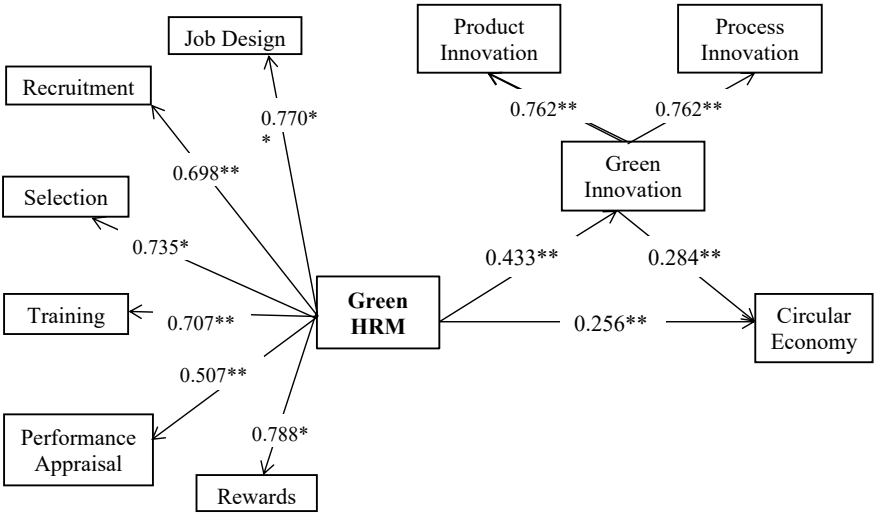

Fig. 2 Output of structural model

must align their academic curriculum with CE targets (Mendoza et al. 2019) to equip potential human capital with capabilities in achieving CE goals (Fig. 2).

Limitations and Future Research Directions

Even though this study has a specific contribution to the literature by investigating GHRM, green innovation and CE practices for the first time solely in LEED certified organizations, literature could be added by the different outcomes if the same models were tested in other non-green organizations. Hence, future research might examine the effects of GHRM on employee innovation and CE performances in both green-certified and non-certified organizations across various industries. Furthermore, this study surveyed employees in different departments of the RMG organizations. Therefore, if the same models were tested on management levels, different results might show up. Future studies could investigate how different groups of employees directly contribute to the success of an organization's CE initiatives to provide us with a more complete knowledge. Furthermore, while we focused on unidimensional CE practices in our study, future research might also consider other aspects of CE with their individual measurements. Additionally, to understand the overall consequences of GHRM activities, a hierarchical model of GHRM practices was explored here. In future separate GHRM practices might be analyzed in determining their distinct impact on CE. Future research might assess the moderating effects of the CE setting in which organizations operate and the mediating effects of CE adoption. GHRM and

CE connection using both organizational (social identity or institutional theory) and individual frameworks (self-determination theory or ethical theory) could be studied.

Conclusion

CE practices have become one of the most promising areas for creating a society that wants to be broadly sustainable. Although available studies have highlighted the technological aspects of the CE, its human component, which is centered on the employee perceptions and performances in CE, has largely been disregarded. In this regard, GHRM literature is still in search of examining its impact on CE practices of organizational employees. As such the present study connecting GHRM, green innovation and the CE practices could be considered as one of the few initiatives taken to recognize the seriousness of how human factors affect CE performances in the organizations. The current findings lead us to the conclusion that pursuing CE practices at individual level could be successfully accomplished if sufficient support from eco-based GHRM practices is properly developed and implemented that would eventually boost employee green innovation as well. Accordingly, our study supports the idea that GHRM should facilitate employee CE practices directly and indirectly via green innovation as well as the crucial function of GHRM in modern organizations to encourage individual-level CE performances to implement firm-level CE models (Jabbour et al. 2019; Marrucci et al. 2021).

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Cultivating Green Human Resource Management and Employee Environmental Behaviour in Local Governments: Evidence from Malaysia

Nurul Liyana Mohd Kamil, Wan Noor Azreen Wan Mohamad Nordin, and Awang Bhukhari Matsat

Abstract The current research investigates how green human resource management affects employee environmental behaviour and the potential mediation mechanism of environmental passion. Our hypothesis suggests that the adoption of successful green human resource management would stimulate employees to become more concerned about environmental issues by allowing them to demonstrate a positive emotion towards achieving an organisation's environmental goals. By using hierarchical linear modelling, a multilevel approach was used to obtain information from 300 civil servants from 34 Malaysian local governments. Our findings confirmed the effect between green human resource management, environmental passion, and how employee their behaviour towards the environment. Green human resource management heavily relies on the employees' environmental passion to motivate them to change their behaviour in favour of environmental performance. Organisations that employ green human resource management enable employees to exhibit their competences and get a deeper grasp of supporting environmental initiatives and activities that stimulate environmentally responsible behaviour. However, the use of multilevel research remains in its infancy when it comes to understanding how to oversee green human resource managements, particularly when it comes to boosting employee environmental behaviour. Therefore, the current research concentrates on employees' environmental passion, which is still under-addressed, and might be a mediating mechanism in ensuring that an efficient green human resource management system is able to motivate their behaviour towards the environment.

N. L. M. Kamil (✉) · W. N. A. W. M. Nordin · A. B. Matsat
Faculty of Business and Economics, Universiti Malaya, 50603 Kuala Lumpur, Malaysia
e-mail: nurulliyana@um.edu.my

N. L. M. Kamil
Department of Management, London School of Economics and Political Science, Houghton St, London WC2A 2AE, UK

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Introduction

The concept of employee behaviours towards the environment in the workplace has been extensively addressed by scholars in the past decade. These behaviours are a series of actions taken by an organisation to promote or enhance environmental sustainability (Paillé and Mejía-Morelos 2014; Norton et al. 2015). The impetus for this study has been the global climate change caused by the release of carbon dioxide from human activities such as excessive tree cutting and coal burning (Fawehinmi et al. 2020). To address this issue, we propound that organisations have a crucial responsibility for dealing with environmental issues and strategising environmental behaviours among their employees. The human resource management of an organisation, in particular, must strive towards having a significant impact on how effective strategic goals are implemented and how well the organisation as a whole performs (Kamil et al. 2021).

Human resource management encompasses a variety of activities such as recruiting, selecting, organising tasks and rewarding, and evaluating managers who guide, inspire, and encourage employees to behave in a manner that is considerate of the environment. Human resource are crucial to sustainability because they have the ability to influence employee attitudes and encourage them to engage sustainability at work. An organisation must adopt human resources management that can present ideas, procedures, and strategies while fostering a corporate culture of social responsibility and environmental awareness. A green human resource management system must be developed to encourage employee behaviour towards the environment.

Organisations should place a strong emphasis on the following three main factors of green human resource management: green ability, green motivation and green opportunity to tackle complex environmental issues (Renwick et al. 2013). Employees develop their "green ability" through green recruitment, selection and training, which is the ability to take an active role in environmental issues and to be motivated to execute environmentally friendly work. An organisation should emphasise green motivation (by aligning performance evaluation, pay and rewards to green practices) to boost employee participation in environmental initiatives. Organisations should promote employee participation in a diverse range of environmental programs at work to focus on green opportunities (through green involvement).

Green human resource management essentially helps employees to become more passionate about the environment. The management would also influence how employees behave towards the environment. Employees that are more passionate about protecting the environment will make suggestions and participate in organisational initiatives and activities.

It is imperative that local governments practise green human resource government as they strive to deliver community goods and services that support sustainable development and the environment. Yet, they are still having difficulty coming up with innovative strategies and integrative governing systems. Additionally, it becomes essential for organisations that use human resource management systems to adopt a sustainability practices in an effort to motivate employees' behaviour to participate

in organisational environmental activities and initiatives. Although earlier research (Ansari et al. 2021; Fawehimi et al. 2020; Ren et al. 2018) have acknowledged the influence of human resource management with a green concept is able to influence employee behaviour to practise environmentalism, the field of human resource management, especially with a green concept is still emerging and presents a gap that needs to be filled. Since there is lack in existing literature about the exploration of the mediating mechanism in ensuring that green human resources are able to influence employees 'behaviour to practice green within organisation, therefore it is imperative for this study to fill the gap. Our study intends to investigate the benefits of how adopting green human resource management is able to assist employees become more passionate about the environment and change their behaviour to be more environmentally friendly.

In essence, Chen et al. (2021) pointed out that there was a lack of a multilevel perspectives in the research on employee behaviour towards environment, and we responding to the gap by providing numerous contributions. First, it advances the use of multilevel studies, which look into relationships between organisations (i.e., green human resource management) and individuals (i.e., environmental passion and employee behaviour towards the environment). Second, the study seeks to investigate how organisations adopted green human resource management in an effort to practise sustainability within the organisation and to inspire employees to act in a manner that is considerate of the environment. Third, the study looks the strategies utilized in green human resource management to promote employee behaviour towards the environment, by taking into account their levels of environmental passion.

Literature Review and Hypothesis

Ability, Motivation, and Opportunity Theory (AMO Theory)

The important impacts of human resource management based on green practices improve employee job performance and organisational effectiveness which have been studied in the past using the ability, motivation and opportunity (AMO) theory. Jiang et al. (2012) asserted that ability (A) is closely related to employees' capability to carry out tasks in light of their knowledge, competencies, and skills. Employee behaviour and influence on their willingness to put forth effort at work are known as motivation (M). Whereas, opportunity (O) is closely related to the concept of psychological advocacy, where it looks at how an employee's skills and behaviour lead to results.

The AMO theory proposes that human resources management practices (i) assist employees in developing their skills, (ii) promote participation, and (iii) help them accomplish their tasks as effectively as possible. The theory also explains that organisations have adopted green human resource management practices widely because they view their employees as unique and valuable resources. The employee can

promote undertaking more recycling and waste management, which in the end will promote the organisation's environmental practices (Lado and Wilson 1994; Renwick 2018). Thus, the effective application of green human resource management would contribute to the achievement of their organisational goals without having an adverse impact on the climate change.

Green Human Resource Management and Employee Behaviour Towards Environment

Organisations use the "green human resource management" initiative to increase employee involvement in tasks and activities that are relevant to the environment and demonstrate how they will behave in that regard (Jabbour and Santos 2008). Green human resource management encompasses the full range of actions implemented to make organisations more environmentally friendly. Green ability, green motivation and green opportunity are considered as essential factors for green human resources management.

The term *green ability* refers to the application of green-based of recruiting, selection and training systems offered by organisations to raise environmental knowledge and skills. Green recruitment and selection refer to an organisation's ability to identify and hire individuals who are dedicated, physically fit, and have an attitude of action that enables them to engage in environmentally friendly behaviour. Job candidates with green awareness are able to assess organisations that share their awareness to positively address the environmental challenges of their organisations (Anwar et al. 2020).

Green motivations include green-based performance management, pay and rewards processes that might persuade employees to align their environmental behaviour with their organisation's goals. Organisations that are concerned about their employees' environmental impact in their initiatives and tasks will assess their performance and pay them appropriately. Organisations are accountable for implementing a green performance management system by giving employees clear information and feedback to increase their knowledge, skills, and capabilities in environmental management (Anwar et al. 2020). Aside from that, organisations that provide green pay and rewards can encourage employees' behaviour toward the environment by offering them financial (i.e., bonuses) and nonfinancial benefits (i.e., promotion). Offering these two benefits to employees would encourage them to consider the environment in completing their tasks.

Consequently, it is crucial for organisations to use green opportunities, such as green involvement, to motivate employees to adopt environmental practices. Green involvement refers to an organisation's practice to provide employees with an opportunity to share their ideas and suggestions for environmental management and environmental problem-solving (DuBois and Dubois 2012; Guerci and Carollo 2016). This practice would aid organisations to create an environmentally concerned culture

by encouraging open communication, idea sharing, and exchange of information about the environment. The aforementioned arguments led us to infer the following hypotheses:

H1: Green ability is positively correlated with employee behaviour towards the environment.

H2: Green motivation is positively correlated with employee behaviour towards the environment.

H3: Green opportunity is positively correlated with employee behaviour towards the environment.

Green Human Resource Management and Environmental Passion

Through green human resource management, it is possible to change the workplace culture, sometimes referred to as employee feelings, attitudes, and behaviours. Green human resource management is a strategy used by organisations to encourage employees to commit to participating in green activities and to make them feel passionate about them. According to Robertson and Barling (2013), *"positive emotions that cause employees to desire to engage in environmental behaviours"* constitute environmental passion. Thus, employees are more inclined to display a strong desire for engaging in sustainable and environmental activities that span several human resource attributions (such as green recruitment and selection, green training, green performance management, green pay and rewards, and green involvement). For instance, green training encourages employees' cognitive and psychological initiatives to safeguard the environment and increase their knowledge and experience in pursuing goals of sustainable development (Afsar et al. 2016a). In addition, organisations that offer green pay and rewards are in a position to recognise and appreciate employees' efforts and contributions to the environment, which is beneficial for fostering a more environmental passion (Tang et al. 2018).

Thus, we assume that organisations that provide green ability, green motivation, and green opportunity would increase employee environmental passion, hypothesised as follows:

H4: Green ability is positively correlated with environmental passion.

H5: Green motivation is positively correlated with environmental passion.

H6: Green opportunity is positively correlated with environmental passion.

Environmental Passion and Employee Behaviour Towards Environment

Employees that feel passionately about the environmental and engage in environment activities within their organisations would encourage their behaviour towards the environment. Employees who are concerned with environmental protection would exhibit environmental behaviour and become environmental admirers by demonstrating environmental passion (Afsar et al. 2016b). Employees who participate in activities and jobs related to the environment would have a positive and strong emotional reaction. A study by Afsar et al. (2016b) proved that employees who have environmental passion are able to enhance employee behaviour towards the environment. Consequently, we hypothesise that:

H7: Environmental passion is positively correlated with employee behaviour towards the environment.

Environmental Passion as a Mediator between Green Human Resource Management and Employee Behaviour towards the Environment

In this study, we suggest that an employee's environmental passion will promote green human management and affect their behaviour towards the environment. Green ability, green motivation and green opportunity (which are factors for green human resource management) contribute to an organisation's success by cultivating a culture of environmental passion among employees. Employees would exhibit a passion for the environment if their organisation encourages their involvement in environmental programmes, thereby enhancing their behaviour towards the environment. Their positive emotions, such as happiness and pride for taking environmentally friendly activities, would increase in organisations that generate green ability, green motivation, and green opportunity. Such organisations would encourage their employees to contribute to environmental behaviour.

Previous research has demonstrated that human resource management improves employee's environmental performance by fostering their environmental passion (Gilal et al. 2019). An efficient system, such as performance management, pay and rewards tailored to the green concept, would boost employee passion for environmental culture and act as a catalyst for their behaviour towards environment (Bhatti et al. 2022). Therefore, we hypotheses that:

H8: Environmental passion mediates the relationship between green ability and employee behaviour towards the environment.

H9: Environmental passion mediates the relationship between green motivation and employee behaviour towards the environment.

H10: Environmental passion mediates the relationship between green opportunity and employee behaviour towards the environment.

Methodology

Participants and Procedure

Our study conducted a multilevel cross-sectional design with 300 civil servants from 34 organisations of Malaysian local governments. Using the snowball approach, we contacted at least 50 local authorities to request approval from the divisional secretary or directory to take part in this study. Thirty-four organisations were keen to be involved in our study. Due to the low response rate in Malaysian social research, we used professional and purposive with the organisation's approval for choosing the respondents. We selected local government civil servants as our respondents because they are involved in urban planning, development control, and management of green urban systems. The employees of each organisation received an email with a link to the survey and an information sheet on how to participate in this study. The respondents received guarantees that their answers would be considered confidential. Most of the respondents were male (58%) and those with 1–10 years of job experience. The number of respondents per organisation is between 7 and 10.

Measures

Unless otherwise stated, all of the instruments used were back-translated into Malay, which adopting from back translation method (Brislin 1970).

We used the Tang et al. (2018) questionnaire to measure the *green human resource management*, which is divided into three categories: green ability, green motivation, and green opportunity. An individual's green ability was assessed using six items, including *"My organisation attracts green job candidates who use green criteria to select organisations"* and *"My organisation uses green employer branding to attract green employees*". The measures of green motivation are based on seven items, including *"My organisation uses green performance indicators in our performance management system and appraisal"* and *"My organisation sets green targets, and responsibilities for managers and employees"*. The five items that are used to measure the presence of green opportunity, such as *"My organisation has a clear developmental vision to guide the employees' actions in environment management"* and *"My organisation provide a mutual learning climate among employees for green behaviour and awareness"*.

Environmental passion was assessed using 10 items from Robertson and Barling (2013). The items include *"I am passionate about the environment"* and *"I enjoy practising environmentally friendly behaviours"*. Both the green human resource

management scale and environmental passion scale score responses on a range of 1 (*strongly disagree*) to 5 (*strongly agree*).

We used a six-item scale for *employee behaviour towards the* environment¸ which was developed by Bissing-Olson et al. (2013). The items include *"I took chance to get actively involved in environmental protection at work"* and *"I took the initiative to act in environmentally-friendly ways at work"*. Each item was rated on a seven-point Likert scale with responses ranging from *never* to *every time.* All of the items passed the reliability test based on Alpha Cronbach, which recorded an internal consistency of the following steps: green ability (0.90); green motivation (0.93); green opportunity (0.92); environmental passion (0.93), and employee behaviour towards the environment (0.94).

Control variable. The variables analysed in this study include length of work experience because this variable may have an impact on how an employee's behaviour towards the environment is practised in the organisation.

Aggregation Procedures

Green human resource management was investigated for indicators of agreement between groups using the r_{wg} mean. To create an appropriate level of agreement within the organisation, the r_{wg} value needs to be $\geq$0.70 (Chen et al. 2004). The result indicates that the value of green human resource management exceeds the following cut-off: green ability, $r_{wg} = 0.94$, SD = 0.07; green motivation, $r_{wg} = 0.91$, SD = 0.11; green opportunity, $r_{wg} = 0.89$, SD = 0.24. Group measurement should reveal significant variations between groups. We discovered significant F values for the following variables: green ability [F(III) = 8.76, $p > 0.001$], green motivation [F(III) = 6.38, $p > 0.001$], and green opportunity [F(III) = 7.15, $p > 0.001$], using a one-way random effects ANOVA. Additionally, the intraclass coefficients of ICC (1), which evaluate the between-group variance for green ability, are as follows: 0.48, green motivation is 0.38 and green opportunity is 0.42. These values indicate that 38% to 48% of the variance in these categories is attributable to random organisation effects.

Hypothesis Testing

We used hierarchical linear modelling to test each hypothesis of a multilevel study (where individuals are nested within organisations). In the multiple levels of this study, Level 2 (an aggregation of organisational data) and Level 1 (individual data) were shown using HLM 7.0 software. We present the findings following Aguinis et al. (2013) recommendation that the input on the intercept value (γ_{00}), the within-organisation Level-1 variance level (σ_2), the Level-2 intercept variance (τ_{00}), 2-log likelihood (full information maximum likelihood estimate, FIML), the number of estimated parameters, and pseudo-R2 value be provided. In addition, we utilized

a sequence of steps to develop a mediation model, starting with a null model, for employee behaviour towards the environment and environmental passion.

To test Hypotheses 1 to 3, we assumed that green ability, green motivation and green opportunity are related to employee behaviour towards the environment, using the following example of an HLM equation (Model 2, Table 2):

$$\text{Employee behaviour towards environment} = \beta_0 + \beta_1(\text{Green Ability}) + r$$

$$\beta_0 = \gamma_{00} + u_0$$

$$\beta_1 = \gamma_{10} + u_1$$

Hypotheses 4 to 6 propose that green ability, green motivation, and green opportunity are related to environmental passion; we employed the following example of the HLM equation (Model 1, Table 3):

$$\text{Environmental passsion} = \beta_0 + \beta_1(\text{Green Ability}) + r$$

$$\beta_0 = \gamma_{00} + u_0$$

$$\beta_1 = \gamma_{10} + u_1$$

For Hypothesis 7 (environmental passion is related to employee behaviour towards the environment), we regressed employee behaviour towards the environment on environmental passion with the equation (Model 1):

$$\text{Employee behaviour towards environment} = \beta_0 + \beta_1(\text{Environmental passion}) + r$$

$$\beta_0 = \gamma_{00} + u_0$$

$$\beta_1 = \gamma_{10} + u_1$$

There are two essential paths in mediating analysis. First, we used a step to assess the predictor variables to the mediating variables (known as *path a*). Second, we examine the interaction between the mediating variable and the dependent variable, which controls the predictor variables (referred to *path b*). Hypotheses 8 to 10 propose that ability, green motivation, and green opportunity (*independent variable*) indirectly influence employee behaviour towards the environment *(dependent variable)* through environmental passion (*mediating variables*). From the *path a*, which is the relationship X → M, we used parameter estimates from Model 1 in Table 3.

Then, we used the following equation (Model 1 in Table 2) to estimate the *path b* (which is M → Y) by regressing employee behaviour towards environment on environmental passion with green human resource management in the model.

$$\text{Employee behaviour towards environment} = \beta_0 + \beta_1(\text{Environmental passion}) + r$$

$$\beta_0(\text{Environment passion}) + r$$

$$\beta_0 = \gamma_{00} + \gamma_{01}(\text{Transformational leadership}) + u_0$$

$$\beta_1 = \gamma_{10} + u_1.$$

Results

Descriptive Analysis

Table 1 displays the variables' mean, standard deviation, and correlation. The predicted direction of all relationships was valid. Corresponding to our hypothesis, there is a positive correlation between green ability with environmental passion ($r = 0.54$, $p > 0.01$) and employee behaviour towards the environment ($r = 0.45$, $p > 0.01$). Green motivation significantly correlates with both environmental passion ($r = 0.49$, $p > 0.01$) and employee behaviour towards the environment ($r = 0.41$, $p > 0.01$). Additionally, green motivation exhibits a favourable correlation with both environmental passion ($r = 0.55$, $p > 0.01$) and employee behaviour towards the environment ($r = 0.45$, $p > 0.01$). Environmental passion was also found to have a positive and significant correlation with employee behaviour towards the environment ($r = 0.70$, $p > 0.01$).

Hypothesis Testing

Tables 2 and 3 provide a summarised of the findings of the study. We examined the null model of employee behaviour towards environment and environmental passion to confirm the level of between-group variance in the variables (Null Model, Tables 2 and 3). Hypothesis 1 to hypothesis 6 were examined as cross-level direct effect hypotheses. Model 2 in Table 2 depicts the results for Hypothesis 1 (H1), which indicates a substantial relationship between green ability and employee behaviour toward the environment ($\gamma = 0.32$; SE = 0.14; $p > 0.05$).

Table 1 Means, standard deviations and correlations

Variable	Mean	SD	α	1	2	3	4	5	6
1. Green ability	4.09	0.68	0.90	1					
2. Green motivation	3.94	0.78	0.93	0.80**	1				
3. Green opportunity	4.10	0.75	0.92	0.75**	0.83**	1			
4. Environmental passion	4.09	0.64	0.93	0.54**	0.49**	0.55**	1		
5. Employee Behaviour towards Environment	5.01	0.12	0.94	0.45**	0.41**	0.45**	0.70**	1	
6. Length of work experience	1.50	0.67	–	−0.06	−0.07	−0.05	−0.02	−0.05	1

Note Correlations are at the individual level (N = 2300); ** p < 0.01

Table 2 Multilevel analysis predicting Employee behaviour towards environment

Effect	Employee behaviour towards the environment				
	Null model	Model 1	Model 2	Model 3	Model 4
Lower-level effects intercepts (γ_{00}) Environmental Passion (γ_{10})	5.02 (0.13)	−0.30 (0.42) 1.30 (0.10)***	−1.20 (0.53) 1.20 (0.10)***	−1.22 (0.48) 1.18 (0.10)***	−1.07 (0.43) 1.21 (0.13)***
Cross-level effects Green ability (γ_{01}) Green motivation (γ_{01}) Green opportunity (γ_{01})			0.32 (0.14)*	0.35 (0.13)**	0.28 (0.15)$^{+}$
Variance components Within-team (L1) variance (σ^2) Intercept (L2) variance (τ_{00}) Slope (L2) variance (τ_{11})	1.04 0.49	0.72 0.06	0.71 0.05	0.71 0.04	0.71 0.05
Additional information ICC −2 log likelihood (FML) Number of estimated parameters Pseudo R^2	0.32 918.18 2 0	0.08 775.34 2 0.31	0.07 770.66 2 0.32	0.05 768.97 2 0.32	0.07 771.60 2 0.32

Note. Individuals, $n = 300$; Teams, $n = 34$. FML = full information likelihood estimation; L1 = Level 1; L2 = Level 2. For the cross-level effects, the first value is the parameter estimate (γ); for the lower-level effects, the first value is the parameter estimate (β) and the value in parenthesis is the standard error
$^{+}$p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001

The second hypothesis (H2) suggests that green motivation is positively correlated with employee behaviour toward the environment. This hypothesis is supported. The results in Model 3 (Table 2) indicate a substantial association between green motivation and employee behaviour towards the environment ($\gamma = 0.35$; SE = 0.13; p > 0.01). The third hypothesis (H3) contends that green opportunity will be favourably predicted by the development of employee behaviour towards the environment. The result showed there is a significantly correlated between green opportunity and employee behaviour towards the environment ($\gamma = 0.28$; SE = 0.15, p > 0.10) (Model 4, Table 2).

Hypotheses 4 to 6 (H4 to H6) proposed that green ability, motivation, and opportunity predict environmental passion, and all three hypotheses are supported. We

Table 3 Multilevel analysis predicting Environmental Passion

Effects	Environmental passion			
	Null model	Model 1	Model 2	Model 3
Lower-level effects Intercepts (γ_{00})	4.09 (0.07)	1.21 (0.45)	1.38 (0.36)	1.21 (0.30)
Cross-level effects Green Ability (γ_{01}) Green Motivation (γ_{01}) Green Opportunity (γ_{01})		0.70 (0.11)***	0.69 (0.09)***	0.70 (0.07)***
Variance components Within-team (L1) variance (σ^2) Intercept (L2) variance (τ_{00}) Slope (L2) variance (τ_{11})	0.25 0.16	0.25 0.04	0.25 0.03	0.25 0.03
Additional information ICC −2 log likelihood (FML) Number of estimated parameters Pseudo R^2	0.61 499.10 2 0	0.14 467.27 2 0	0.11 464.45 2 0	0.11 462.33 2 0

Note. Individuals, $n = 300$; Teams, $n = 34$. FML = full information likelihood estimation; L1 = Level 1; L2 = Level 2. For the cross-level effects, the first value is the parameter estimate (γ); for the lower-level effects, the first value is the parameter the estimate (β) and the value in parenthesis is the standard error

$^{+}p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

discovered a significant association between green ability ($\gamma = 0.70$; SE = 0.11; $p > 0.001$), green motivation ($\gamma = 0.69$; SE = 0.09; $p > 0.001$), and green opportunity ($\gamma = 0.70$; SE = 0.07; $p > 0.001$) with environmental passion. A significant positive relationship between environmental passion and employee behaviour towards the environment ($\gamma = 1.30$; SE = 0.10; $p > 0.001$) was discovered for hypothesis 7 (H7) (see Model 1, Table 2).

For hypothesis H8, we assumed that green ability will be related to employee behaviour towards the environment through environmental passion. The parameter estimates for the association between green ability and environmental passion ($\gamma = 0.70$; SE = 0.11, $p > 0.001$) (as shown in Model 1, Table 3), and the parameter estimates of the association between environmental passion and employee behaviour towards the environment, with the green ability ($\gamma = 1.20$; SE = 0.10; $p > 0.001$) (as shown in Model 1, Table 2), were used to predict the mediation effect. The findings demonstrate that green ability significantly influences employee behaviour towards the environment through environmental passion with a 95% confidence interval (CI) [0.557, 1.145]. It should be noted that if CI does not contain zero, the association is substantial. H8 is therefore supported.

For hypothesis 9 (H9), we propose that environmental passion serves as an intermediary in the interaction between green motivation and employee behaviour towards the environment. Using the path in mediating analysis, the results demonstrated that *path a* exhibits the interaction between green motivation and environmental

passion ($\gamma = 0.69$; SE = 0.09; $p > 0.001$) (Model 2, Table 3), and *path b* showed the results interaction between environmental passion and employee behaviour towards the environment, with green motivation ($\gamma = 1.18$; SE = 0.10; $p > 0.001$) are significantly positive (Model 3, Table 2). With a confidence interval (CI) of 95% [0.364, 1.323], it can be demonstrated that green motivation significantly influences employee behaviour towards the environment.

The analysis for hypothesis 10 (H10) proposes that environmental passion mediates the relation between green opportunity employee behaviour towards the environment through parameter estimates for the relation between green opportunity and environmental passion ($\gamma = 0.70$; SE = 0.07; $p > 0.001$) (Model 3, Table 3), and the association between environmental passion and employee behaviour towards the environment, with green opportunity ($\gamma = 1.21$; SE = 0.07; $p > 0.001$) (Model 4, Table 2). This hypothesis is supported by a substantial mediation effect with a 95% confidence interval of [0.615, 1.1]. In summary, the final model reflects the direct and mediation paths shown in Fig. 1.

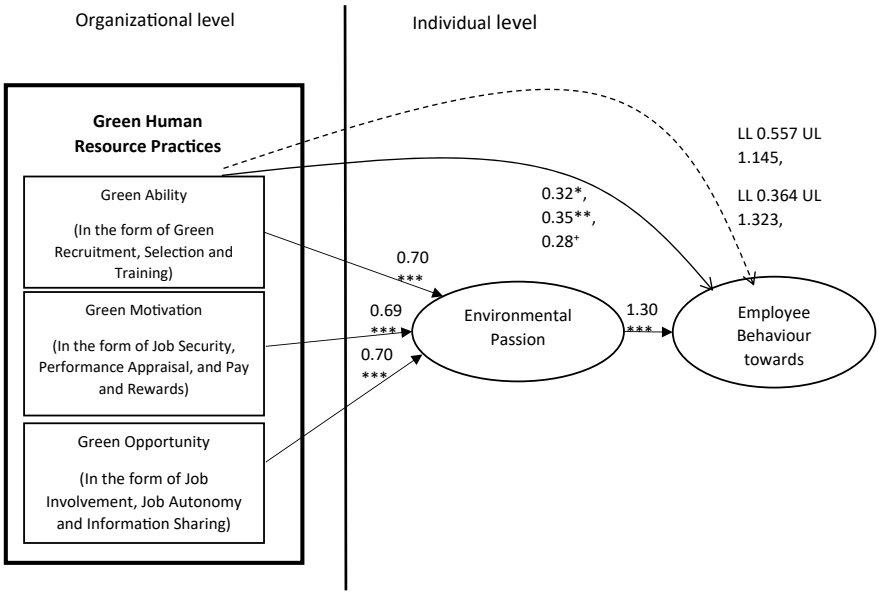

Fig. 1 Research model

Discussion

Theoretical Implication

Initially, we looked into how green human resource management–specifically, the adoption of ability, motivation and opportunity that have been transformed into the green concept–affected the local government civil servants' behaviour towards the environment. The findings offer a more nuanced knowledge of the benefits that green human resource management which is claimed to be able to foster environmentally friendly behaviour among employees. We found that when organisations take the initiative to adopt green human resource management at the organisational level, it can improve employee behaviour towards the environment on an individual level. Our findings of the study provide relevance towards the theory of ability, motivation, and opportunity, which contends that employees represent a unique and precious resource for implementing environmental policies in organisations (Lado and Wilson 1994). Previous research has demonstrated that organisations that offer a green concept of performance management, pay and rewards as a green motivation approach, allow employees the chance to exchange information, suggest solutions, and effectively alleviate environmental issues facing the organisation by enhancing its environmental knowledge (Anwar et al. 2020; DuBois and Dubois 2012).

Aside from that, we discovered that green human resource management at the organisational level can cultivate employees' positive emotions (i.e., environmental passion) to improve employees' behaviour towards the environment. Our finding corresponds with earlier studies from Afsar et al. (2016a) and Tang et al. (2018), who claimed that green training, green pay, and rewards that recognise employees' contributions to the environment can boost employees' environmental passion by enhancing their environmental skills and knowledge. We believe that green human resource management has the potential to boost employee morale in achieving environmental organisational goals in addition to assisting employee behaviour towards the environment.

We also examined how employee behaviour towards the environment is enhanced by those who are passionate about the environment. The high environmental passion among employees will manifest itself in employee behaviour towards the environment, thus demonstrating that they are environmentalists and care about environmental protection in their workplace (Afsar et al. 2016b). This finding corroborates earlier research (Afsar et al. 2016b) that shows how employees' environmental passion influences how they behave towards the environment.

The research, which looked at how environmental passion as a potential mediating mechanism, adds to the extensive literature that exists on the beneficial effects of green human resource management having a favourable impact on employee behaviour towards the environment. We discovered that the interaction between green human resource management and employee behaviour towards the environment has been mediated by environmental passion. Our study enhances how earlier studies conceptualise this relationship (Gilal et al. 2019; Bhatti et al. 2022). Organisations

which practice effective green human resource management give their employees the chance to become passionate about the environment through their participation in green initiatives and activities within the organisation, which in turn improves employee behaviour towards the environment.

Practical Implication

Our findings stress the necessity for green human resource management to be implemented to promote employees' participation in organisational environmental initiatives and activities. Organisations that successfully implement green human resource management are able to influence employee behaviour in favour of a healthy environment. The employees are able to demonstrate their skills and knowledge in addressing environmental issues within the organisation. Therefore, it is imperative that organisations provide green initiatives such as recruitment and selection, training, performance management, pay and rewards, and involvement of employees, which are crucial for enhancing employee behaviour towards the environment.

In addition, the organisations that pioneered green human resource management have proven vital in inspiring employees to genuinely care about the environment in their organisation. Organisations that are successful in cultivating an environmental passion in their employees exhibit the effectiveness of their green human resource management and actively encourage employees to take part in initiatives and activities that will achieve their environmental goals. The level of satisfaction and pleasure felt from an employee in the workplace when executing duties with an environmental focus can be influenced through how successfully green human resource management is implemented.

Additionally, employees who exhibit a strong environmental passion for addressing the environmental issues of an organisation can enhance their behaviour towards the environment by adopting various strategies of environmental management. Therefore, organisations play a crucial part in implementing effective green human resource management, particularly by boosting their employees' positive feelings and encouraging them to engage in the behaviour. Environmental passion is a significant aspect in encouraging employees to adopt green human resource management, which is coordinated by the organisation with the goal of changing employee behaviour towards the environment.

Limitations and Recommendations for Future Research

Despite the fact that our study brings to the theoretical and practical implications, it still has numerous limitations. First, the data came from a single source, hence the possibility of a common method bias due to the agreement, implicit theory,

and consistency of response. According to Podsakoff et al. (2003), the relationships reported could partly be attributed to measurement methods rather than local construct in this study. Therefore, future studies should use a longitudinal method to clarify the direction of the relationship being researched. However, we were able to conduct a multilevel analysis to examine the outcomes of the relationships examined in this study, particularly by combining data at the organisational level. This method decreases the probability that individual subjective bias will result in cross-level effects.

Also worth noting is that the sample of this study comprises Malaysian local government civil servants. Future researchers may determine whether our findings apply to green human resource management across countries. Replicating the study on various samples (e.g., civil servants at the federal and state levels, and employees in the service or industry sector) will increase the generalisability and external validity of the findings.

We also solely research green human resource management as an organisational strategy for enhancing employee behaviour towards the environment. Therefore, we recommend that future research improve organisational factors by examining leadership or supervisory support, where leaders or supervisors can support employee behaviour towards the environment by helping them comprehend the vision of environmental management.

Conclusion

In summary, our study provides a new perspective on identifying green human resource management which could encourage employees, particularly public local servants, to act in a manner that is considerate of the environment by increasing their passion for carrying out any tasks that is directly related to the environment. We explore the relationships between green human resource management, employee behaviour towards the environment, and environmental passion using a multilevel approach. Thus, we demonstrate theoretically and empirically that green human resource management can increase employees' positive emotions to conduct organisational environmental initiatives and activities to adapt employee behaviour towards the environment which provides the green ability, green motivation and green opportunity. We anticipate our study to spark interest in a further investigation of the subject matter.

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The Influence of Green Human Resource Management on Corporate Sustainability Performance in the Malaysia Automotive Industry

W. L. Lin, J. Y. Yong, F. Feranita, and T. Rathakrishnan

Abstract This study delves into the impact of green human resource management (GHRM) practices on the sustainability performance of 385 automotive companies across the globe. To gauge GHRM, the study uses the Thomson Reuters Sustainability World Index, and for measuring corporate sustainability performance, it employs ESG scores from Bloomberg. Using a Resource-Based Theory (RBT) framework, this research assesses the degree to which GHRM practices are implemented in the automotive sector and how they impact sustainability performance. The study adopts a balanced panel data estimation approach, controlling for time and nation fixed effects, and uses the System-Generalized Method of Moments (System-GMM) to estimate the dynamic model. The results indicate a significant positive correlation between GHRM practices and corporate sustainability performance. The study concludes that pro-green HRM practices such as training, hiring, evaluation, and rewarding play a vital role in establishing a green organizational culture and improving sustainability performance in the automotive industry.

Introduction

In recent years, corporate sustainability issues have gained significant attention globally due to concerns about Sustainable Development Goals (SDGs) and the adverse impact of industrialization on the environment (Griggs et al. 2017). Research has shown that green businesses are more sustainable in their practices compared

W. L. Lin (✉) · J. Y. Yong · F. Feranita · T. Rathakrishnan
School of Management and Marketing, Taylor's University, Subang Jaya, Malaysia
e-mail: WoonLeong.Lin@taylors.edu.my

J. Y. Yong
e-mail: Serene.Yong@taylors.edu.my

F. Feranita
e-mail: Feranita@taylors.edu.my

T. Rathakrishnan
e-mail: Thanuja.Rathakrishnan@taylors.edu.my

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to their traditional counterparts (Monaka et al. 2017). Today, an eco-friendly product image has become a crucial aspect that integrates technological adoption, processes, and systems in the corporate world (Muster and Schrader 2011; Ren et al. 2018). In emerging nations, the automotive sector faces several environmental challenges, which necessitate enterprises to assess, monitor, and improve their management-related operations (Rehman et al. 2016).

Literature suggests that businesses that adopt sustainable practices exhibit a competitive advantage in cost reduction and profits (Muster and Schrader 2011). By implementing green strategies, it is possible to achieve pollution prevention and create a better living environment. The adoption of sustainable business practices has broader benefits for society and demonstrates the social responsibility of firms. Therefore, it is essential for the automotive sector to actively promote and adopt green management methods to tackle the mounting environmental problems in emerging nations. Previous research indicates that the automotive sector in these regions faces various environmental issues, and it is imperative for business enterprises to assess, monitor, and rectify their management-related actions accordingly.

In modern times, environmental management has a considerable impact on various areas of business, including marketing, operational management, and others. Industrialised nations have taken the lead in developing innovative programs under the banner of 'green HRM (GHRM)' to promote environmental sustainability. GHRM practices are known to enhance workers' performance and dedication towards improving environmental efficiency. These practices involve modifying company policies, tactics, setups, and HRM culture to protect the environment. Therefore, GHRM plays a critical role in the long-term success of enterprises (Amjad et al. 2021). The primary objective of GHRM is to help companies improve their sustainability performance (Renwick et al. 2013). Many businesses are quickly adopting GHRM to create an environmentally friendly organisational culture that reduces environmental impacts during this era of advanced industrial growth. All departments in an organisation, rather than only specific teams, are responsible for maintaining the ecological environment. GHRM thus contributes significantly to promoting the sustainability of businesses.

There is a scarcity of international studies that examine the relationship between GHRM and organisational performance. The automotive industry, facing significant environmental challenges worldwide, is currently impacting the global automobile industry. More research is necessary to bridge the knowledge gap regarding the impact of GHRM strategies on the environmental performance of the global automotive industry. While most industrialised economies have successfully implemented environmental regulations in response to growing pollution, emerging nations, such as ASEAN, face difficulties in enforcing environmental laws due to factors such as inadequate capacity, resource shortages, and opposition at the official level. The sustainability of the global environment is one of the most significant challenges facing human civilisation in the twenty-first century. All countries must strive to protect the quality of natural resources, ecosystems, and various plant and animal species in both the short and long term, in addition to the environment in which people live. Environmental degradation, human well-being, and environmental behaviour

have been the focus of research in the social and behavioural sciences over the last few decades (Dunlap et al. 2009).

Academic scholars have pointed out that there is a lack of research on the role of GHRM practices in businesses striving for corporate sustainability performance. Therefore, it is necessary to integrate GHRM practices with sustainable management. GHRM actions involve the application of HRM policies to encourage the efficient use of organisational resources and, more importantly, support environmental sustainability initiatives. GHRM programs have become an integral part of overall corporate social responsibility initiatives.

In recent years, GHRM practices have become a critical concern in the automotive industry. Unethical management practices can result in reputational damage and harm the industry's image, as demonstrated by the scandals that have plagued the car sector since the 1960s, as highlighted in a Fortune news release in September 2015. One of the most notable controversies was Volkswagen's fraudulent diesel emission tests, which sparked global outrage. Consequently, Volkswagen had to recall approximately 8.5 million affected vehicles in Europe (1.2 million in the UK and 2.4 million in Germany), with 500,000 units recalled in the US due to deliberate violations of the Clean Air Act. Volkswagen incurred €6.7 billion in expenses and reported its first quarterly loss (€2.5 billion) in 15 years (Fortune Global 500 2015). Therefore, the adoption of GHRM practices has emerged as a crucial component in promoting corporate sustainability and preventing unethical behaviour.

Engaging in sustainable practices offers numerous benefits, such as better risk management, increased shareholder wealth, increased market appeal, greater transparency, and easier access to the financial system, among others. In the vehicle industry, sustainability practices are essential for strategic planning, reputation building, and competitiveness (Sukitsch et al. 2015; Szász et al. 2021). If implemented skilfully, sustainability measures can provide businesses with a competitive edge through effective communication, corporate culture, and management (Szász et al. 2021). Firms that practice sustainability for society ultimately benefit their own businesses. They enjoy lower operational expenses, increased earnings, enhanced customer retention, greater productivity, a better capacity to recruit and retain skilled staff, and easier access to capital from interested investors. In contrast, the adoption of unsustainable practices would damage businesses' reputations, degrade staff performance, negatively affect relationships with stakeholders, and lead to the loss of crucial clients. Amjad et al. (2021) and Mishra (2017) have expanded the literature on state-of-the-art GHRM business models by considering the human side of such issues. They propose creating a GHRM framework that offers firms a practical approach. This study is based on the theoretical component of the dynamic capabilities approach and the resource-based view (RBV), which serves as a "middle-range theory" for the research. The primary objective of this study is to assess how GHRM practices affect an entity's sustainability performance.

Literature Review and Hypothesis Development

Dynamic Capabilities Approach

According to the dynamic capabilities approach, businesses can adjust and organise their operational resources and competences to meet the evolving environmental demands (Teece et al. 1997). The degree of dynamism in the environment where a company operates affects how those capabilities are applied, as stated in existing literature (Salvato and Vassolo 2018). Teece et al. (1997, p. 516) describe dynamic capabilities as "the entity's ability to assimilate, build, and reconstitute internal as well as external skills to handle the quickly evolving environments." This strategy encourages businesses to take advantage of all available opportunities to gain a competitive edge and outperform their competitors (Eisenhardt and Martin 2000; Teece et al. 1997). This can be achieved by developing, updating, and reorganising their activities, such as GHRM, as necessary to bring about or adapt to environmental changes (Teece et al. 1997).

In addition, "dynamic capabilities" describe how businesses can organise their resources to perceive and respond to unpredictable environmental changes that affect their business processes (Teece et al. 1997). Previous research has demonstrated that the application of dynamic competencies enhances companies' performance (Hernández-Linares et al. 2021) by developing GHRM-based capabilities for effective handling of environmental matters (Frank et al. 2017). For example, Kerdawy et al. (2019) argue that companies can restructure their routines to maintain a strategic fit between available resources and external GHRM expectations, thanks to dynamic capabilities. Additionally, businesses can develop pro-sustainability capabilities by drawing on the GHRM principles of their owners and management to win the approval of stakeholders. According to Stekelorum et al. (2018), using co-evolving capabilities, companies can expand the appeal of their GHRM practices to their market stakeholders. Furthermore, businesses can build stakeholder-oriented dynamic capabilities by interacting with their stakeholders, which can help manage social and environmental challenges (Dentoni et al. 2016). Thus, businesses can assess and prioritize stakeholders' GHRM concerns, which is crucial because their actions can help the societies in which they operate gain legitimacy and trustworthiness (Ciravegna and Nieri 2022). In this context, we aim to apply the principles of the dynamic capabilities approach, which links competencies, environment, and performance (Teece et al. 1997), in our study to propose a theoretical model that highlights a possible direct link between GHRM and sustainability performance.

Corporate Sustainability Performance (CSP)

Sustainability refers to the ability to enhance quality of life and well-being, conserve natural resources and ecosystems, and establish and maintain conditions necessary

for a delicate balance between business and human needs. The origin of sustainability is attributed to Brundtland's report (WCED, 1987), which emphasizes the triple bottom line of environmental, social, and economic sustainability, thus indicating sustainable development. On the other hand, Corporate Sustainability Performance (CSP) is regarded as a component of the sustainability objective (Baumgartner 2008; Osobajo et al. 2022) and a social perspective within the context of stakeholders in the organization.

Due to environmental changes, legislation, and societal pressure for environmental and social accountability, sustainability has become a top priority for many enterprises. Executives have increased their focus on sustainability, and for many organizations, it has become a critical component of their strategic objectives (Osobajo et al. 2022). Society's sustainability includes the business from a human perspective, emphasizing the fair distribution of opportunities among humans and relevant issues such as health, education, income inequality, and poverty levels (Baumgartner 2008). The essence of sustainability is that environmental and social elements, along with financial factors such as return on investments and profitability, are considered in measuring the success of any entity (Baumgartner 2008). Organizational practices, particularly those that prioritize green management and people-focused approaches, are crucial for sustainability. According to scholars, in the current climate, businesses require a standard development plan that is equally beneficial for all aspects of environmental, social, and economic progress (Zhang et al. 2019). The generation of solutions for societal and environmental sustainability issues can be used as a benchmark, and sustainability can move the business agenda forward.

Green Human Resource Management (GHRM)

Ren et al. (2018) define 'Green HRM (GHRM)' as a system that supports environmental management initiatives through organisational activities that influence the environment and the development, evolution, application, and influence of HRM systems. This system must represent green ideals, motivate employees to act in ways that align with these values, ensure the implementation of policies through GHRM processes, and be updated regularly using green technological procedures. Thus, GHRM can be seen as a subset of sustainable HRM, with a specific focus on environmental management. Past studies have also defined GHRM as HRM practices related to environmental management (Renwick et al. 2013) or HR guidelines and practices for environmental protection, including hiring, selection, performance management, training, rewards, and involvement (Tang et al. 2018). In addition, Kim et al. (2019) emphasised the importance of communicating the environmental policy along with training, empowerment, and incentives to increase environmental accountability.

Tang et al. (2018) identified five main practices that make up GHRM: green reward, green hiring, green performance management, green engagement, and green training. However, these practices can vary depending on the organization, sector, and region, making GHRM a diverse and fragmented concept (Renwick et al. 2013).

Reviews of GHRM practices have highlighted the need for further research in this area (Renwick et al. 2013). While Renwick et al. (2013) identified GHRM practices as core functions of contemporary HRM, Zibarras and Coan (2015) categorised them into five groups: employee life cycle, education and training, reward, employee empowerment, and management participation. GHRM practices are essentially HRM procedures that support an organization's environmental objectives (Renwick et al. 2013).

Relationship Between GHR and CSP

Employees are crucial stakeholders in corporate sustainability initiatives and their participation significantly impacts a business's success. Ren et al. (2018) assert that employees are primarily responsible for executing corporate sustainability projects and their related outcomes, making them the most important stakeholders (Baumgartner 2008). As a result, corporations require their employees' support and buy-in to achieve their objectives, in addition to policies and control mechanisms (Baumgartner 2008). Corporate sustainability policies mandate that all functional departments implement green initiatives (Jamali et al. 2015), indicating that human resources' dynamic involvement is essential for any organization's corporate sustainability efforts.

As previously mentioned, recent research has focused on the role of human resource management practices in promoting environmental outcomes. Empirical evidence suggests that specific GHRM actions have a positive association with environmental performance. The AMO theory has been used in several studies, such as those by Jabbour and Santos (2008) and Jabbour et al. (2010), as well as papers published in a special issue of Human Resource Management (Vol. 51, No. 6, 2012), to assess the extent to which HRM practices affect environmental outcomes for firms.

Businesses that commit to preserving the environment and display measurable operational indicators compliant with environmental care standards are considered to have positive environmental outcomes (Paillé et al. 2014). Previous studies, such as those by Kim et al. (2019), have examined the impact of GHRM practices on environmental outcomes. These studies have investigated topics such as the relationship between GHRM practices and green supply chain management (Mauricio and Jabbour 2017), individual green behaviour (Pinzone et al. 2019), and green engagement by employees (Pham et al. 2019). Alongside quantitative research, literature reviews on GHRM have also been conducted (e.g., Ren et al. 2018).

The impact of certain GHRM activities on environmental outcomes can be significant, as suggested by Ren et al. (2018). Green training can equip employees with relevant information, attitudes, and skills to identify environmental challenges and take appropriate measures to improve their green performance (Vidal-Salazar et al. 2012). Monitoring employee environmental performance can promote accountability, emphasise environmental goals, and align behaviour, all of which can improve environmental outcomes (Guerci et al. 2016). Employee involvement can provide

opportunities for workers to utilise their skills and knowledge in environmentally friendly activities, implement green practices at work, and offer innovative solutions to reduce waste and improve resource efficiency, which can improve the environmental outcomes of the organisation (Florida and Davison 2001). When effectively implemented, GHRM practices can enhance environmental performance. Studies specific to the automotive sector have also shown that the adoption of GHRM practices can enhance environmental outcomes (Kim et al. 2019), leading us to propose the following hypothesis:

Hypothesis 1: Green human resource management has a positive influence on corporate sustainability performance.

Data and Methodology

Sample Selection, Variables, and Models

In this study, a balanced panel dataset with firm-year observations was utilized for analysis. Panel data is a research technique that combines cross-sectional and time-series data to provide a more comprehensive understanding of economies. It involves observing individual units over a significant time period and is also known as event study, cohort analysis, or pooled and longitudinal data. Many studies have utilized panel data to explore problems that cannot be investigated by cross-sectional or time-series settings. Considering that this study examined both cross-sectional and time-series data for the years 2016–2022, panel data was deemed an appropriate methodology. The study aims to investigate the relationship between GHRM practices and CSP in the global automotive industry, utilizing a sample of 385 automakers from 185 countries over a 7-year period (2016–2022).

In our study, we use ESG scores as indicators of CSP to measure the sustainability performance of companies. We follow the existing literature on sustainability and gather ESG scores from the Bloomberg database, including the ESG combined score (CSR), governance pillar score (GOV), environment pillar score (ENV), and social pillar score (SOC), to assess the sustainability performance of firms.

$$\text{Corporate Sustainabilty Performance} = \frac{\text{Enviromental score} + \text{Social score} + \text{Governance score}}{3}$$

For the GHRM practices, we utilize social scores obtained from Thomson Reuter DataStream. These scores include the workforce score, which evaluates a company's performance in terms of job satisfaction, maintaining a safe and healthy work environment, promoting diversity, and ensuring equitable opportunities. The human rights score evaluates a business's adherence to fundamental human rights principles, while

the community score measures its commitment to ethical business practices, public welfare, and corporate social responsibility. The product responsibility score assesses a company's ability to create high-quality products and services while prioritizing customer health and safety, data privacy, and integrity.

The score can be calculated by following equation.

$$\text{GHRM score} = \frac{(\text{Work force score} + \text{Human right score} + \text{Community score} + \text{Product responsibility score})}{4}$$

Econometric Strategy

Previous research has used various methods such as Fixed Effect, Pooled Ordinary Least Square (OLS), and Random Effect for studying the relationship between CSR and CFP. Recently, the Generalised Method of Moments (GMM) approach has been used for panel data analysis. However, previous studies have noted some limitations when trying to forecast the complex relationship between GHRM and CSP. One of the main challenges is the endogeneity problem, which has been observed in both the OLS and fixed effect models. The endogeneity problem can manifest in different ways, including unobserved heterogeneity, dynamic endogeneity, and simultaneity, which need to be addressed when analysing the CSR-CFP relationship.

In this study, the General Method of Moments approach for dynamic panel data systems was used, following the work of Arellano and Bover (1995) and Blundell and Bond (1998). This approach is well-suited for situations where there are a small number of time periods but a large number of individuals, a linear functional relationship, a single left-hand-side dynamic variable based on prior realisations, independent variables that are not strictly exogenous and relate to past and present realisations of error, fixed individual effects, and heteroscedasticity and autocorrelation among individuals but not across them.

This study refers to Snell and Youndt (1995). and is dependent on the model specification as follows:

$$\text{CSP}_{it} = \vartheta \text{CSP}_{1t-1} + \alpha_0 + \beta \text{GHRM}_{it} + \text{Control}_{it} + \varepsilon_{it} \tag{1}$$

$$\begin{aligned}\text{CSP}_{it} = {} & \vartheta \text{CSP}_{1t-1} + \alpha_0 + \beta \text{GHRM}_{it} + \text{ROA}_{it} + \text{Advertisment}_{it} \\ & + \text{FreeCashFlow}_{it} + \text{ASSET}_{it} + \text{Revenue}_{it} + \varepsilon_{it}\end{aligned} \tag{2}$$

In this study, the subscripts i and t indicate the nation and year of observation. CSP_{it} is a vector representing CSP participation, including dependent variables such as foreign value-added export (backward linkages) and indirect value added (forward linkages). GHRM captures the independent variables. Four control variables, namely total revenue, total assets, free cash flow, and leverage, were considered

in the research. Company size, defined as a firm's total assets plus total revenue, is expected to have an impact on the relationship between GHRM and CSP, firm, and free cash. The control variable was kept constant during the entire inquiry to assess the relative relationship between the explanatory and dependent variables. The error term is represented by ε_{it}. The System-GMM estimation is the basis of the estimate technique, as established by Blundell and Bond (1998) and Roodman (2009).

The system-GMM estimation approach is apt for this investigation because it considers potential endogeneity, potential reverse causality, and potential heteroskedasticity. The study also estimates Eq. (1) using a pooled ordinary least square (OLS) approach for benchmarking reasons, and then gradually controls for time and country fixed effects. Since we anticipate a delay in the adjustment of the dependent variables to alterations in the independent variables, these independent variables are one year lagged. This somewhat solves the estimation's potential simultaneity. To address potential endogeneity issues, deeper lags to the order of five of the dependent variables are utilised.

Result and Discussion

Descriptive Statistics

Table 1 presents the descriptive statistics of the data for the automotive sector, including the mean, standard deviation, and minimum and maximum values of the main variables. The results indicate that the mean GHRM score for the sample is 48.47%, suggesting that the majority of cases fall within the average level of GHRM scores. The standard deviation of 6.84 suggests that the GHRM scores in the data are distributed around the mean. In addition, the CSP variable has the highest standard deviation of 25.20, with an average value of 53.99.

Correlation Analysis

According to Gujarati and Porter (2009), the presence of significant correlations between variables can cause a multicollinearity issue, which can result in biased estimates and difficulties in determining the importance of variables in regression. Therefore, it is crucial to check the overall correlation among independent variables. The Pearson correlation matrix is a useful tool to identify multicollinearity, with a correlation coefficient higher than 0.80 indicating high correlation between two variables. In this study, Table 2 presents the Pearson correlation matrix for each dependent and independent variable, which indicates that all correlation coefficients are relatively low and less than 0.80. As a result, multicollinearity between variables is acceptable.

Table 1 Descriptive statistics

Variable	Unit of measurement	Obs	Mean	Std. dev	Min	Max
ROA	Net income before extraordinary items to a total asset of the firm	2695	6.001	5.841	−30.491	40.270
GHRM	Social scores	2695	48.470	6.839	0	89.635
CSP	ESG scores	2695	53,991	25.203	5.210	99.800
Leverage	Long-term debt of firms to their total equity	2695	5.267	28.596	2.120	91.210
Free cash	Free cash flow to the total of sales	2695	8.510	16.558	−218.360	241.110
Advertising	Advertising expenses to total net sales of firm	2695	11.284	14.107	0.268	108.480
ln total assets	Log of total asset of the firm	2695	11.470	1.267	7.382	12.632
ln revenue	Log of total net sales of firm	2695	11.157	1.206	4.121	13.095

Notes All statistics are based on original data values

Table 2 Correlation

	1	2	3	4	5	6	7	8	9
CSP	1								
GHRM	0.1448	1							
ROA	0.1422	0.1561	1						
Leverage	−0.0423	0.5465	0.0676	−0.0299	1				
Free cash	0.2115	0.0540	0.0432	0.1167	−0.0322	1			
Advertising expenses	0.0569	0.0188	−0.0765	−0.0244	0.0503	0.0144	1		
ln total assets	−0.1345	−0.0376	0.3271	0.0787	0.0413	0.1536	0.0253	1	
ln revenue	0.0232	0.0654	0.3257	0.1234	0.0808	−0.0435	−0.2176	0.6854	1

Notes All statistics are based on original data values

Relationship Between GHRM and CSP

This study aimed to test the hypothesis that GHRM affects CSP. Table 3 presents the results of regressing GHRM on CSP along with control variables. The models used were static and dynamic OLS, fixed effects, and system GMM. Misspecification tests, such as the second-order serial correlation test (AR 2) and the Hansen test,

were also conducted to validate the model specifications. The positive and significant constants associated with the lagged dependent variable indicate the persistence of CSP, which depends on its previous CSP. The GMM model performed well, with positive and significant constants related to the lagged dependent variables, and the coefficients were consistent with those of the fixed effects model and the pooled OLS. These results suggest that the GMM two-step estimator was effective and unbiased. Overall, the findings were promising and support the use of GHRM as a means to enhance CSP.

Table 3 The impact of GHRM on CSP

	Static		Dynamic		
Variables	Pooled OLS	Fixed effect	Pooled OLS	Fixed effect	System GMM
CSP_{t-1}			0.564[a]	0.244[a]	0.278[a]
			(0.0345)	(0.0359)	(0.1670)
GHRM	0.457[a]	0.177	0.236	0.297	0.219[a]
	(0.0839)	(0.277)	(0.0488)	(0.288)	(0.0071)
Leverage	−0.00878[c]	−0.00472	−0.00246	−0.00414	−0.000833
	(0.00377)	(0.00540)	(0.00516)	(0.00288)	(0.0000899)
Free cash flow	0.00856[a]	0.0184[b]	0.0254[a]	0.0224	0.0134
	(0.00879)	(0.00788)	(0.00827)	(0.00874)	(0.0224)
Advertising expenses	0.0277	−0.188[a]	0.00763	−0.233[a]	−0.168[a]
	(0.0172)	(0.0266)	(0.00898)	(0.0535)	(0.0067)
ln total assets	−1.753[a]	−3.125[a]	−0.764[a]	−5.265[a]	−3.247[a]
	(0.223)	(0.558)	(0.244)	(0.788)	(1.468)
ln revenue	1.215[a]	2.898[a]	0.355[b]	6.719[a]	4.154[b]
	(0.292)	(0.642)	(0.255)	(0.765)	(1.755)
Year dummy	Yes	Yes	Yes	Yes	Yes
Constant	4.893[b]	12.878[b]	1.875	−11.455[c]	58.643
	(1.925)	(5.788)	(1.992)	(6.325)	(10.842)
Observation	2695	2695	2695	2695	2695
number of firms		385		385	385
Number of instruments					22
AR(1)					−3.77 (0.000)
AR(2)					−0.19(0.759)
Hansen test					48.33 (0.188)
Different-in-Hansen test					7.45 (0.275)

Notes The standard errors are reported in parentheses, except for Hansen test, AR (1), AR (2) and Difference-in-Hansen which are p-values. a , b, and c indicate significance at 1%, 5% and 10% levels, respectively. Time dummies are included in the model specification, but the results are not reported to save space. System GMM model is estimated by using the Blundell and Bond (1998) dynamic panel system GMM estimations and Roodman (2009)—Stata xtabond2 command

The results for the control variables in Table 3 were consistent with expectations. Leverage was found to be statistically significant and positive, while firm size (total assets) was significantly negative, indicating that firm size does not have a significant impact on profitability. Neither leverage nor free cash flow had any significant impact on CSP, but total revenue had a positive effect on CSP. The intensity of advertising had a negative impact on CSP. Additionally, the lagged dependent variables were statistically significant and positively related to current CSP, indicating that previous CSP has a dynamic effect on current CSP.

The study found a positive correlation between GHRM and CSP, which supports Hypothesis 1a. The regression analysis showed that GHRM was significantly and positively related to CSP ($\beta = 0.219$, p-value < 0.01). This means that for a one-unit increase in GHRM, holding all other variables constant, there will be a 0.219-unit increase in CSP, on average. This result confirms Hypothesis 1, which proposed that GHRM has a positive impact on CSP. The findings suggest that GHRM practices have a significant effect on sustainability performance, and they provide evidence of the importance of GHRM in promoting environmental outcomes.

Conclusion

In conclusion, this study provides empirical evidence for the positive impact of GHRM practices on CSP in the automotive sector, making a significant contribution to the GHRM literature. The study employed a balanced panel dataset, covering a seven-year period from 2016 to 2022, with 385 automakers from 185 countries. To estimate the dynamic relationship between GHRM and CSP, the system GMM approach was employed to address the endogeneity problem. The findings supported Hypothesis 1, revealing a positive and significant relationship between GHRM and CSP. Additionally, the control variables, including leverage, business size, free cash flow, and overall revenue, were found to have significant impacts on CSP.

Our study's findings are consistent with previous research by Masri and Jaaron (2017) and Kim et al. (2019), which have emphasized the importance of GHRM practices in improving sustainability outcomes. It is interesting to note that the inter-relationship between GHRM practices and CSP has not been extensively explored in the literature, particularly concerning environmental sustainability. Moreover, the implementation of GHRM practices in the automotive industry has received limited attention, as highlighted by Pham et al. (2019). Hence, our research contributes to the existing literature by shedding light on the relationship between GHRM and CSP in the automotive sector, offering insights to scholars and practitioners alike.

The study's findings indicate that companies in the automotive industry should prioritize GHRM practices to improve their sustainability performance, instead of simply avoiding socially unethical behavior. This research contributes to the GHRM literature by highlighting the interactive relationship between GHRM practices and sustainability outcomes in the automotive sector. Future studies should delve into the

mechanism underlying the positive effect of GHRM practices on CSP and examine whether these findings can be generalized to other industries.

This study makes several contributions to the literature on GHRM and CSP. Firstly, it adopts an instrumental perspective in examining the relationship between the two constructs, following the recommendations of Voegtlin and Greenwood (2016). This approach helps to substantiate the hypothesis that strategic utilisation of GHRM can lead to improved financial and environmental outcomes in the organization's performance results. Secondly, the study provides empirical evidence for the positive effect of GHRM on CSP outcomes, bridging a gap in the literature which has traditionally focused on examining how GHRM implementation influences sustainability performance (Kim et al. 2019). This contribution further extends the GHRM literature by proposing GHRM as an antecedent factor, as suggested by Ren et al. (2018). Finally, the study provides a contribution to the literature by examining the relationship between GHRM and the automotive sector, an area that has received limited attention compared to the manufacturing or service industries.

The research findings have important practical implications for executives of automotive firms, as they highlight the importance of GHRM in promoting a sustainable CSP. Human resources departments should be encouraged to integrate green practices and responsibilities into their HR management systems, as this can contribute to employees' pride in their company's role in environmental protection. Implementing relevant GHRM practices can reinforce employees' organizational commitment and help them achieve success in environmental outcomes. This can be achieved by developing opportunities, motivation, and abilities, such as attracting and selecting candidates interested in green issues, and providing green training programs to retain, develop, and improve employees' knowledge and skills. It is also important for organizations to define clear green goals and connect them to a system of green reward and appraisal, including green indicators that offer financial and non-financial rewards to employees, thereby strengthening their interest, participation, and commitment to green issues.

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Sustainable Development Efforts in Malaysian Education Institute: A Key Stakeholder View

Nik Hazimah Nik Mat, Aina Syuhaila Muhamad, and Umar Hassan

Abstract Realising the importance of environmental conservation, higher education institutions (HEIs) around the globe are moving towards adopting Environmental Management Practices (EMPs). In order to enhance the success of these practices, a clear standard to evaluate the environmental management performance of HEIs is needed. Unfortunately, limited literature is currently available on this topic. This situation necessitates a study to explore students' perceptions about the EMPs implementation in the HEIs. As a key stakeholder, the university students' insights are valuable in evaluating the effectiveness of the environmental management system. In the current study, interviews involving 21 students were conducted and thematic analysis was employed to analyse the interview data based on Gioia qualitative data analysis framework. It was discovered that although majority of the respondents were aware of environmental issues and participated in environmental-related programmes, their understanding of the definition and implementation of EMPs was unclear. This is largely due to their perceptions about the sustainability efforts being undertaken by the university. Hence, the management of HEIs should focus on clarifying sustainability messages to achieve a shared understanding among organisational members. These findings call for future research aimed at exploring whether addressing student's opinion as an important university's stakeholder can increase the effectiveness of EMP implementation and thereby enhance the adoption of sustainability practices in HEIs.

N. H. Nik Mat (✉) · A. S. Muhamad · U. Hassan
Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia
e-mail: nikhazimah@umt.edu.my

U. Hassan
e-mail: p4523@pps.umt.edu.my

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Introduction

In the efforts of achieving social and economic development, these are often accompanied by excessive developmental activities which can be disastrous for the environment. The impacts of irresponsible human activities on the environment have resulted in many unexpected climate-related disasters such as tsunamis, toxic haze, extreme flooding, and wildfires. The depletion of the ozone layer, rising sea level, and greenhouse effect are among the signals felt by humans prior to the eventuality of any climate-related disaster. Realising the effects of these disasters on the human health, well-being, and livelihood, initiatives must be taken to alleviate the detrimental impacts of climate change and environmental disruptions around the world (Mat et al. 2020). To ensure that social and economic development can be achieved without sacrificing our planet, sustainable human activities must be adopted through Environmental Management Practices (EMPs) (Irwan and Harlina 2016).

Ideally, by adopting the EMPs, corporations are able to perform their business activities by utilising the natural resources without posing adverse impacts on the environment. The implementation of the EMPs requires long-term planning through the use of a quality management system (Zutshi et al. 2008; Irwan and Harlina 2016). To enforce the sustainable practice, the organisations need to incorporate a range of techniques, policies, procedures, or guidelines to monitor operational and business activities (Montabon et al. 2007). The success of this practice is highly dependent on the organisations' capability to integrate their resources with their environmental management efforts. Despite the evidence demonstrating the positive influence of the EMPs on business performance, this is not sufficient to attract researchers' and practitioners to apply these green practices (Jamali and Karam 2018). The lack of interests could be due to the lack of environmental awareness. To ensure that the future workplace practitioners are conscious about environmental issues, High Education Institutions (HEIs) are expected to nurture the young generations' awareness and understanding on environmental sustainability.

In a recent study on sustainability management at the executive level, Ross et al. (2020) suggested that the framework for sustainability efforts in HEIs should be holistic and include all stakeholders. By gathering perceptions from students as the largest stakeholder group, this can guide the formulation of an effective sustainability strategy at the university management level and facilitate the students to continue embracing the EMPs. However, little is known on how students perceive the implementation of EMPs at HEIs. Thus, this study aims to gather perceptions about EMPs among university students and exploring their experiences of the environmental management-related activities that have been conducted by their university.This paper is structured into several parts. After an introduction of the sustainable development with regards to EMPs implementation, a discussion on the relationship between HEIs and environmental management issue is presented. The problem statement and literature gaps focussing on EMPs implementation and sustainable development are then discussed. The next part of the paper describes the research methodology, followed by the Results and Discussion section. The paper ends with

concluding remarks that demonstrate the contributions of the study, its limitations, and some notes for future research on the sustainable development efforts.

Literature Review

Higher Education Institutions and Environmental Efforts

In the modern environment, HEIs play a pivotal role in achieving the three main sustainability pillars: economic, environmental, and social development. As the institutions are closely associated with knowledge that encompasses various aspects of life, the HEIs are considered as effective platforms to nurture the adoption of pro-environmental behaviour among the future generations (Roos et al. 2020). This can be achieved by incorporating the environmental element into university programmes and encouraging environmental management efforts through conserving resources, saving energy, and managing waste (Alshuwaikhat and Abubakar 2008). Furthermore, policy makers in the universities need to adapt and implement a rigorous pro-environmental approach for all stakeholders especially the students. Emphasis needs to be given on identifying the necessity for environmental protection and highlighting the impact of environmental degradation on the individual health and social well-being of the members of the community. By creating awareness of environmental concern, this will lead to better involvement in sustainable development in the future (Figueiro and Raufflet 2015).

University students play important roles in the university's development since their behaviours can sustain a university's position and competitive advantage in the long run (Walker et al. 2008). After graduation, the university alumni will act as the ambassadors who can promote the image and reputation of the university to the public and future students. Therefore, to promote the continuous implementation of green practices, it is imperative to ensure that the future generations have a high degree of environmental awareness.

Drivers of Environmental Efforts

To guarantee the success of environmental efforts, this requires high involvement and support of university management (Sammalisto et al. 2015). Plus, a shared understanding on the importance of environmental performance among the management at a university is crucial to develop appropriate activities at the strategic and operational levels for sustainable development (Roos et al. 2020). This shared understanding would ensure consistency and continuity in the implementation of environmental efforts by all members of the organisation. Additionally, considering the nature of sustainability issues with high uncertainty and complexity, this demands a flexible

decision-making at all level of management (Reed 2008). In ensuring the decision-making flexibility, stakeholders' participation is increasingly being sought to achieve sustainable development (Bell et al. 2012). Their participation is important not only for legitimacy and quality decision, but also for knowledge production (Hage et al. 2010).

Participation often starts with awareness which is defined as an understanding of activities that explains one's own knowledge about those activities (Reinhardt et al. 2012). According to Freud's model of personality structure (Toro et al. 2013), awareness can be divided into three levels: conscious, preconscious, and unconscious. The conscious state describes a situation where people are aware about something at some point which includes in their current thoughts. The preconscious refers to the limited information that is owned by individuals below their awareness state. It can be viewed as memory or recollection of previous experience. Lastly, the unconscious only contains memories and thoughts that are difficult to connect with a current situation. To put it briefly, in the context of environmental efforts at the HEIs, the staffs and students are required to develop environmental awareness and form a shared understanding to participate actively in the implemented green initiatives.

Problem Statement

As environmental issues have become a major concern globally, EMPs have been prioritised by many countries to manage environmental impacts. Generally, the EMPs act as a guideline for organisations on how to manage business activities and simultaneously mitigate the negative environmental impacts of the activities. Although the EMPs were introduced nearly three decades ago in the 1990s, their application is still new in some countries and sectors. While EMPs have been implemented widely in North America and Europe (Guimares and Sato 1997; Othman 2013), only one per cent of 370 registered companies in Malaysia have implemented them (Pheng and Tan 2005). Among the factors that contributed to this low percentage is uncertainty about the implementation process and its effect on business operations (Yu and Ramanathan 2016). The low rate of implementation in Malaysia is worrying considering the burgeoning environmental disruptions and incidents that have negatively affected communities and businesses. Since the number of registered firms in Malaysia has continued to increase, the number of business activities likely posing environmental concerns are also on the rise.

Although sustainable efforts are being increasingly adopted in universities in European countries, this is not the case in some other parts of the world (Disterheft et al. 2012). As the shift towards sustainability in universities in Malaysia seems to be gaining momentum, the establishment of performance measures for their sustainability efforts should be incorporated into university management systems. A clear standard in evaluating the environmental management performance of HEIs would enable university management to increase the effectiveness of any environmental effort or practices. In this regard, Toro et al. (2013) proposed three indicators for total

importance of environmental assessment: importance of the project, importance of the activity, and importance of the vulnerability. Nevertheless, assessing the performance of the environmental efforts can hardly be established if the efforts are not integrated as part of organisational performance. Some researchers claimed that a standard that can be used to systematically evaluate environmental efforts is non-existent at the university level (Trumpp et al. 2015; Caeiro et al. 2020). Further, a review of environmental assessment tools conducted by previous researchers suggests that each HEI face its own challenges and thus, the development of measurement for sustainability achievement should be made on its own contextual basis because a single model of assessment is not appropriate to cater all situations (Alghamdi et al. 2017).

Previously, studies on environmental sustainability in HEIs have focussed on the challenges related to the sustainability effort (Amaral et al. 2015; Trumpp et al. 2015; Leal et al. 2017) and sustainability engagement (Lozano 2006; Savely et al. 2007). Unfortunately, the environmental management efforts in HEIs are still underresearched (Roos et al. 2020). It is unclear whether more effort needs to be made to nurture pro-environmental behaviour among the HEI community especially the younger generation. To gain insight on this issue, studies involving university students is necessary. Although students are not directly involved in the management or the policy-making process, they are the main customers of the university. Hence, their views are important and need to be considered when evaluating the effectiveness of environmental management strategy at HEIs.

Methodology

Case Context

The single case study approach was chosen to capture any influencing element on the respondents' experience of environmental issues. The research was conducted at a public university located on the East Coast of Peninsular Malaysia. As a university that focusses on fisheries and marine sciences, the university's mission has been linked to sustainable development through contributing to the community and environmental sustainability. The university has five faculties and four research and innovation institutes to support its objectives in exploring knowledge the areas of science, technology, and natural resource management.

Established in 2015 aiming to manage the university in a greener manner, the Sustainable Campus Blueprint has two approaches: immediate actions programme and long-term projects. The immediate action programmes last for six months solving current environmental issues, while the long-term projects have a longer time frame. The blueprint contains seven main components: Academic Excellence–Blue is Green, Eco-friendly Facilities, Green Energy and Water Resources, Sustainable Food Ecosystems, Natural Heritage Conservation, Sustainable Acquisition, and

Eco-friendly Transport. One of the sustainability programmes at this university is the Green Curriculum which promotes sustainable development in the classroom. This initiative also encourages university departments to share space and facility to avoid unnecessary infrastructure development and other overhead costs. Furthermore, a centralised parking system was created to solve the parking issues by limiting the parking space and developing more walkways for pedestrians. Other sustainability projects involve a recycling centre development, a paper usage policy, and a waste management schedule.

The university was ranked 431st in 2017 among 912 participating universities in the University Institute Green Metric for World University Rankings, which is an initiative to rank the universities based on their commitment towards environmental sustainability. In 2020, the university reached the 338th place in the green metric ranking, suggesting that the blueprint has enhanced the university's sustainability efforts.

Research Inquiry and Respondents

The present study adopted the qualitative research process which allows the topic to be explored in depth (Carlsen and Glenton 2011). In this study, interviews were conducted among students to understand their perception of EMPs in their university. The respondents were asked about their awareness of environmental issues surrounding the campus and nearby community, understanding of EMPs, and experience of implementing EMPs.

A purposive sampling was used to recruit participants from different academic years to provide a variety of conditions that may influence perceptions. The number of respondents is considered appropriate when the collected data reach the point of saturation (Trotter 2012). For this research, a total of 21 students were recruited from the Social Science faculty. The number is also considered appropriate since the gathered responses show the same pattern; thus, the data saturation has been achieved. Unlike quantitative research that achieve generalisability based on numbers of respondents who represent the population, the generalisability of this study is achieved when the data gathered from the respondents can produce evidence that can support the conceptualisation of environmental impact assessment for explaining the student's perception of EMP. One way to refine the conceptualisation of environmental impact assessment assumptions is through replication (Polit & Beck 2010). This replication is aimed at strengthening the analytic generalisation and robustness of the findings if equivalent results can be produced under different contextual elements.

Data Analysis

The researcher analysed the data manually through thematic analysis based on Gioia's approach of data structure (Gioia et al. 2012). In the first-order analysis, the interview data was arranged based on the respondents' exact words to see the true variation of responses for each participant. Next, the second-order analysis was performed by arranging the data based on the underlying assumption of environmental impact assessment as proposed by Toro et al. (2013). Similar responses were grouped together to identify the emerging themes from the interview data. Lastly, the aggregate dimensions were developed based on the personality structure model, institutional theory, and environmental activity assessment. The data structure revealed the students' experiences of the EMPs implementation in the university were based on the importance of project, importance of activity, and importance of vulnerability.

Results and Discussion

Respondents' Demography

This study aims to investigate university students' perceptions of EMPs and to explore their experiences of the environmental management-related activities conducted by the university. The background of the respondents is provided in Table 1. Out of 21 respondents, most of them are female, aged between 20 and 25 years old, and Malay. Although there are representatives from each academic year, third year students form a majority of the respondents.

The respondents' level of understanding and perception regarding the issue was assessed based on the values in Table 2, which were adopted from Conesa (2006).

Awareness About Environmental Issues

The respondents' awareness on environmental issues was assessed based on their knowledge on environmental issues surrounding the campus and nearby community. In this study, direct responses were gathered through the respondents' spontaneous answers to the questions, meanwhile indirect responses were observed through the respondents' reactions and the number of words used to describe their answers. Inability to elaborate on a particular issue or clarify their response to a specific question usually means that the respondents had a limited understanding about the issue. The levels of awareness and perception of each respondent according to their interview feedback are presented in Table 3.

As illustrated in Table 3, most respondents possessed a preconscious level of awareness. In the interviews, the respondents used phrases such as 'a little bit', 'just

Table 1 Background of respondents

Demographic characteristic	Category	Frequency	Percentage (%)
Gender	Male	7	33.33
	Female	14	66.67
Age	Less than 20 years	0	0
	20–25 years	15	71.43
	26–30 years	6	28.57
Race	Malay	19	90.48
	Chinese	2	9.52
Religion	Islam	19	90.48
	Buddhism	2	9.52
Year of study	1st year	6	28.57
	2nd year	4	19.05
	3rd year	11	52.38
	Total	21	100

Table 2 Categorisation of Perception Levels

Expected importance	Level of perception/response
Impact of less than 25	Low
Impact between 25 and 49	Moderate
Impact between 50 and 74	High
Impact of 75 and more	Very high

a few', 'moderate awareness' and 'about 50 percent' which indicate their limited understanding about environmental issues. Only one respondent (R8) had no prior knowledge of environmental issues. Meanwhile, almost half of the respondents in the conscious group related their awareness of environmental issues with events that had happened in or around the university, including coastal erosion, air pollution caused by motor vehicle emissions, and improper waste management by cafes in the university as well as nearby community areas. They also involved in the university's programmes that were related to environmental management and sustainability, particularly a recycling programme. Through this initiative, they were able to gain additional funds for clubs or associations in the university from the profit of selling the recyclable items. Although the generated income was not for their personal use, they gained satisfaction from contributing to their communities while participating in environmental management activity. The value of the experience and knowledge gained through joining environmental management-related programmes were expressed as follows:

> We enjoy getting involved with environmental-related programmes because we actually get a lot of information and knowledge about environmental issues that we often take for granted. (R1)

Table 3 Awareness and Perception levels of respondents

Respondent ID	Type of awareness	Level of perception
1	Conscious	High
2	Conscious	High
3	Conscious	High
4	Conscious	High
5	Conscious	High
6	Preconscious	Moderate
7	Preconscious	Moderate
8	Unconscious	Moderate
9	Preconscious	Moderate
10	Preconscious	Moderate
11	Preconscious	Moderate
12	Preconscious	Moderate
13	Preconscious	Moderate
14	Preconscious	Moderate
15	Conscious	High
16	Conscious	High
17	Preconscious	Moderate
18	Preconscious	Moderate
19	Preconscious	Moderate
20	Preconscious	Moderate
21	Conscious	High

> As a student, I voluntarily joined the environmental programme as part of my learning experience in the university. (R2)
>
> I don't expect to get money but mostly to have an experience of being involved in a programme organised by the university and it is experienced outside of the lecture room. (R3)

Although the responses from the conscious respondents are convincing in terms of representing a satisfactory level of environmental awareness, the overall findings indicate that the level of awareness of environmental issues among all the respondents was not similar. This is potentially influenced by their values and individual perceptions about a particular thing which likely differs among individuals (Gaber 2020). Hence, an awareness gap is identified among the respondents even though they enrolled in the same faculty and university.

The finding suggests that the value of environmental concern is not similarly shared by all members of the university, which explains the different responses regarding the environmental events that had happened in the proximity of the university area. This is potentially contributed by different course concentration across faculties in the university since the environmental concerns are not formally integrated across the curriculum. The inconsistent levels of awareness may also be due

to challenges in communicating the sustainability message through implementing EMPs. A similar predicament was also reported in a previous study highlighting that communicating the sustainability messages effectively has been challenging since the exact and common definition of environmental management for all organisation members with individual value differences is non-existent (Djordjevic and Cotton 2011). Lack of marketing activities promoting a culture of environmental concerns and supporting the sustainability efforts in the university could have also contributed to low level of awareness. This is supported by previous researchers who stated that promoting environmental management activities could influence the environmental performance of an organisation (Yu and Ramanathan 2016) and can assist an organisation to promote expected behaviours (Mat and Noorhadi 2020). This would prompt internal stakeholders to participate in environmental management and sustainability efforts towards achieving the sustainable development goals.

Since students' perception of EMPs in the university were based on the importance of the project, importance of activity, and importance of vulnerability, the findings of this study support the understanding about environmental activity management as among the indicators to assess the total importance of environmental assessment (Toro et al. 2013). While no standardised execution of EMPs has been done to send the same sustainable development message to all stakeholders, the identification of related environmental management activities contributes to the understanding and effectiveness of the sustainability effort.

Importance of Implementing EMPs

It was found that most respondents were not fully aware of the concept of EMPs. Those respondents who have acknowledged knowing the term, however, were uncertain of the details. The respondents' feedback on EMPs is summarised by the following statements:

> Yes, I know, [it involves] several actions to save natural environments. (R18)
>
> Yes, I think [it's] like the 3R programme. (R16)
>
> Yes, I know [what EMPs stands for], but I am not sure [what it entails]. (R15)
>
> Yes, I know [that it means] we need to manage the environment wisely. (R13)

When EMPs were explained to the respondents, most respondents recalled similar programmes and activities organised by the university. However, rather than relating their experience to the implementation of EMPs by the university, they simply viewed those programmes as part of the activities in the course that have to be completed.

Once the respondents had a clear understanding of the EMPs, their responses seemed to be more encouraging. For example, most of the respondents perceived the EMPs implementation as something significant in their daily life as illustrated by the following statements:

> What we learned in the university programme, we actually apply in our life. As simple as separating the bottles and other recyclable items and giving them away when anyone does the recyclable items collection. (R1)
>
> Although we are not staying in the university hostels, we do keep the recyclable items at home. We know the importance of doing that because it can help the effort for environmental cleanliness and better waste management. (R2)
>
> Sometimes, what I have done is pick up any rubbish in the walkways, finish meals to avoid any waste, and separate the rubbish for recycling. I did it voluntarily because it is just the right thing to do for the university environment and cleanliness. (R4)

The findings from the interviews show that the respondents had applied some of the norms that they had learned in the university in their daily life in their own community. This finding contradicts the previous research which reported that although students understand the concern towards sustainable practices towards environmental protection, they still do not implement green practices (Dagiliūtė et al. 2018). This study also suggests that the shared understanding about the implementation of EMPs among the respondents is yet to be achieved. The respondents perceived that the attitude among all students towards EMPs might not be the same, but they believed that other students were also aware of the importance of implementing EMPs. They related their perceptions to the difficulty of changing an existing culture when people are not familiar with a new situation at the beginning of any transformation. Some respondents also commented on the motivating factors in changing students' attitudes. These factors include psychological and emotional influences that can motivate people to implement a practice in their daily life or business operation (Mei et al. 2016). The respondents mentioned that the importance of implementing EMPs should be clearly linked to environmental disruptions during university events.

From the lens of institutional theory, the students' insights on the implementation of EMPs could assist the university management in assessing the existing policies and implementation to enhance sustainable development initiatives. Besides, since students represent the largest number of stakeholders within the university community, they can also help the management to assess the effectiveness of EMPs in terms of the importance of project, importance of activity, and importance of vulnerability.

Support for EMPs

The data from the interviews reveal that the respondents perceived the importance of support from the university management for the implementation of EMPs. Some respondents shared their experience of being involved in previous conservation events organised by the student club or association, while others had experience of being committee members of an environmental management activity conducted as part of their degree programme. They stated that the lecturers gave them full support in handling the programmes, guided them in managing the events smoothly, and helped them to engage with other agencies such as the iSolid Waste Management and Public Cleansing Corporation. These responses reveal that the students were excited about

the value of the activities when they had the opportunities to interact with external parties or agencies.

In addition, the management of the faculty or university assisted students by promoting the student-led events not only to the university staff, but also to the public. This finding is consistent with previous studies that identified that the main factor in improving environmental continuity, pollution prevention, regulatory compliance, and well-managed resource allocation has been intense commitment and great support from top management (Da Silva and De Medeiros 2004; Puvanasvaran et al. 2010). From the feedback, it is deduced that without this high level of commitment, the implementation of environment-related student activities might not have been successful.

The above findings can also be described clearly through the lens of institutional theory. This theory emphasises the influence of social and cultural forces in the configuration of organisational practices and structure (Scott, 1992; Mat & Barrett, 2017). In the case of public HEIs, institutional theory is applicable due to the pressures experienced by the university management team, emanated from the government, community, environmental interest groups, and other related entities. For the case study university, these pressures were manifested in the university's move to establish an environmental blueprint for its campus to integrate EMPs and sustainability efforts into the university programmes. This finding therefore supports the finding of a previous research study that reported a positive relationship between institutional pressures and organisational characteristics in determining the implementation of EMPs (Delmas and Toffel 2004).

Conclusions

This research presents a preliminary investigation on the implementation of the EMPs in Malaysia from tertiary-level students' perspective which offer avenues for future research on sustainability in HEIs. It has been discovered that a shared understanding on the significance of the EMPs has not been achieved as there are differences in the level of understanding among the students about the implementation of these practices. The students' perception of the EMPs is highly subject to their engagement in environmental management programmes, activities, and policies throughout their studies at the university. This suggests that more strategies need to be formulated to enhance students' sustainability knowledge and awareness to increase their willingness to participate in sustainability efforts. Besides, universities could integrate more activities into the university programme or course structure to foster the adoption of EMPs. Early adoption by the young generation would enable them to transfer the practices in their current and future community.

Although the sample of respondents in this study was too small to represent the perceptions of all the students at the case study university, the fact that the adopted qualitative research methodology is exploratory in nature implies that the findings are still useful in achieving the purpose of the study. Conducting such a study on a large

number of respondents to obtain qualitative data may be difficult as the thematic process requires multi-level of analysis before the final themes can be confirmed. For future works, the organisational motivation in respect of the sustainability effort could be investigated further, especially at a time when universities have to deal with many uncertainties and cost implications. Such a study could illuminate the possible effects of situation and uncertainty on the university's concentration for sustainability programmes.

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