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Green human resource to stimulate low carbon behaviour through the mediation role of innovation practices and organizational commitment

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Abstract

Sustainability issues have long been a critical notion in business, while successful green human resource management (GHRM) has the potential to help organizations perform better in terms of environmental sustainability. The current paper evaluates the mechanism through which green human resource management affects green organizational commitment, green innovation practices and low-carbon behaviour among 610 employees in South Africa. The study further evaluates the mediation connection among the variables and the moderating influence of green transformational leadership through social cognitive theory. The stratified sampling approach was applied in selecting the respondents, and the structural equation

model was applied to test the hypotheses. The empirical outcome of this research is as follows: (1) GHRM has a positive and substantial effect on green organizational commitment, green innovation practices and low-carbon behavioour. (2) The findings also revealed that green organizational commitment and green innovation practices affect low-carbon behaviour among staff. (3) The results suggest that green organizational commitment and green innovation practices have a substantial mediation influence on the connection between green human resource management and low-carbon behaviour. (4) Last, green transformational leadership discovered a positive moderating effect on the link between green human resource management and low-carbon behaviour. The paper makes several practical recommendations for strengthening low-carbon behaviour. Therefore, human resource management managers should outline measures that can be used to empower and engage employees in environmental issues and provide them with autonomy to address these challenges.

Keywords: Low carbon behaviour, Green human resource management, Green organizational commitment, Green innovation practices, Transformational leadership

1. Introduction

Governments are pressured globally to accelerate carbon cuts and align national climate action plans with the Paris Agreement (Cai et al., 2022a; Sampene et al., 2021; Wiredu et al., 2023). Steg et al. (2017) believe these programs and interventions will achieve their target when focused on people's behavioural concepts. Similarly, Wang et al. (2021) proposed that addressing environmental challenges requires behavioural and cognitive changes from all societal sectors and levels. Hence, it is prudent to examine employees' low-carbon behaviour (LCB) and how it contributes to environmental performance (EP) among small and medium-sized enterprises (SMEs) in the Republic of South Africa. South Africa is the world's 14th largest emitter of greenhouse gases (Adebayo and Odugbesan, 2021; Shikwambana et al., 2021). Therefore, South Africa plans to reduce its unemployment rate through SMEs and the manufacturing sector; however, van Staden (2022) believes this may put pressure on the energy sector, contributing significantly to the country's higher levels of environmental

pollution. This is because the country's CO_2 emissions are principally high due to a heavy dependence on non-renewable energy sources from SMEs.

Hence, it is imperative to advance research on pollution from SMEs in this era, where there is a growing debate for SMEs to go into "green initiatives." As Meissner (2022) revealed, green innovation practices (GIPs) and green organizational commitment (GOC) have several implications, such as reducing production costs and improving firms' EP. In addition, GIP helps firms reduce waste generation, reduce harmful emissions, and preserve natural resources. Firms' involvement in GIP also helps attract customers who support environmental management initiatives (Bass, 2020; Meissner, 2022). Therefore, this study identified various drivers to improve LCB among SMEs in light of this discussion. LCB has been described as human activities geared toward protecting the environment. LCB is also known in some studies as "environmentally friendly behaviour", "green environmental behaviour", and "pro-environmental behaviour" (Foster et al., 2022; Yuan and Li, 2023). As a result of the upsurge in climate issues caused by human behaviour, one subject matter that has attracted interest in environmental sustainability research is LCB (Ansari et al., 2021). To understand the concept of employee LCB, the researcher envisioned social cognitive theory (SCT). SCT emphasizes that individual behaviour influences the environment. This relation is reciprocal determinism; thus, people's behaviour is defined as the interplay of environmental factors, behavioural concepts, and cognitive factors. As a result, this article extends SCT and evaluates the effect of employees' LCB.

Moreover, GHRM (green human resource management) has recently garnered the attention of environmental scientists. However, Ren et al. (2022) indicated that more research is required to determine the determinants of GHRM policies among SMEs. Therefore, to bridge this research gap, this paper proposes that GHRM can become a solid foundation for enriching GIP, GOC, and LCB among employees. This argument supports previous studies that highlighted the relevance of firms in aligning their GHRM policies and practices to achieve targeted environmental goals (Sami et al., 2024). Thus, greening SMEs is a new paradigm requiring management and workforce commitment. It occurs not only through GHRM-influence initiatives but also through the promotion of LCB among the members of an enterprise (Nisar et al., 2021). Henceforth, the current study aims to evaluate how GHRM can improve GOC, GIP, and LCB, particularly in an emerging economy such as South Africa. The above discussion reveals that although some research has been conducted on this

topic, several literature gaps must be filled. It can be deduced that most of the concepts explained need further studies to clarify for researchers and policy-makers to find the perfect mechanism to help dissipate the adverse influence of CO_2 on the ecological system. Therefore, to help solve these issues, this study provides critical questions that will guide this study. These questions are enumerated as follows:

RQ (1) How does GHRM affect GIP, GOC, and LCB?

RQ (2) Do GIP and GOC affect employees' LCB?

RQ (3) To what extent do GIP and GOC mediate the relationship between GHRM and LCB?

RQ (4) Does GTFL (green transformational leadership) moderate the nexus between GHRM and LCB?

The motivation, novelty and contribution of this research are as follows. This study was motivated by the extraordinary pace of environmental degradation in South Africa; hence, the researcher analyses factors that determine employees' LCB and how it affects the EP of SMEs. The contributions and novelty of the paper are as follows. First, the research suggests guidelines for policy-makers and managers to monitor the activities of SMEs and businesses to achieve low carbon emissions. Second, the paper sheds light on South Africa's government and environmental protection organizations and the need to set standards that can lead to an increase in the production of green products by SMEs and businesses. , another practical contribution of this paper is that the research advocates for SMEs and businesses to implement measures that will instil appropriate behaviour that can lead to low carbon emissions. Thus, SMEs and businesses can produce products without polluting the environment and provide appropriate GHRM departments to find innovative ways to address environmental degradation issues. This groundbreaking research delves into the novelty of integrating green human resource management strategies to promote low-carbon behavior within organizations. By exploring the uncharted territory of how transformational leadership moderates this relationship, this study pioneers an understanding of the interplay between HR practices and leadership styles in driving sustainable workplace practices. This innovative approach represents a significant step forward in shaping environmentally conscious organizational frameworks.

Furthermore, the study proposes that stakeholders adopt appropriate legislation and policies to encourage SMEs and businesses to engage in LCB. Policy-makers and stakeholders can adopt initiatives such as providing subsidies to SMEs that engage in environmental management initiatives. Simultaneously, it is vital to broaden the options available to SMEs and businesses to produce more green products and improve the teaching and nurturing of LCB among SME employees. For these steps to be practical, SMEs and businesses must assess how they can inspire their employees to engage in sustainable activities through encouragement, inventiveness, and procedures that promote information sharing and shared strategic planning decisions (Awan, 2019). Finally, through theoretical and methodological approaches, this study will serve as reference material where governments and policy-makers can understand the fundamental underlying concept of LCB among SMEs.

This study comprises six main sections. Section 1 focuses on the study's background, objectives, and contribution to ecological sustainability. Section 2 examines the theoretical framework and hypothesis development. Section 3 introduces the methodology adopted. Section 4 expounds on the findings based on PLS-SEM (partial least square- structural equation modelling) analysis. Section 5 presents this work's interpretation, leading to practical and theoretical consequences, and Section 6 presents the conclusion and future research.

2. Theoretical Underpinning and Hypothesis Development

2.1 Theoretical Underpinning (Social Cognitive Theory)

The SCT argues that engagement and learning about a specific task or behaviour are impacted by the connection between the individual, behaviour, and the external environment, as indicated in Fig. 1 (Bandura, 2001; Beauchamp et al., 2019; Stajkovic and Luthans, 2003). The theory proposes that the dynamic interplay of individual affective and cognitive traits, behavioural patterns, and the social environment affect how a person engages in a particular action. The SCT stresses two key components: the outcome expectation of one's action and the belief in one's ability to carry out specific initiatives (Bandura, 2014; Beauchamp et al., 2019). To inform an individual's specific behavioural goals or intentions, these two internal

cognitions are validated experience and understanding of the various aspects of behaviour. While behavioural learning is self-regulated, individual authority is shaped by the cultural environment (Cai, et al., 2022b; Roxas and Marte, 2022). This study's theoretical analysis is based on SCT, and the research adds new variables (employees LCB) to test this theory. Based on SCT theory, the researcher assumes that an employee's engagement in LCB will be influenced by the interaction between the social environment, individual behavioural patterns, and cognitive factors (GIP, GOC, GTFL). This theory has been used extensively in environmental and behavioural research and the behaviour of employees and managers from different academic fields (Burger et al., 2020; Rauthmann et al., 2019; Cameron et al., 2021). Thus, SCT is an essential theoretical model for gaining insight into individual decision-making about whether to engage in a particular action.

2.2 Hypothesis Formulation

2.2.1 Hypothesis on GHRM

To guarantee ecological health, SMEs must offset the adverse ecological effects of their business activities by adopting GIP or policies (Ahmad et al., 2021). Hence, many firms are beginning to implement GHRM practices in their greening process. It is a critical approach for achieving the firm's target of a cleaner environment. GHRM promotes environmental awareness by integrating green initiatives into HRM plans and actions (Irani et al., 2022). GHRM includes top communication of the environmental plan, policy, and pertinent information to staff (Ansari et al., 2021). Irani et al. (2022) asserted that the significant role of GHRM in improving staff knowledge, skills, ability, and motivation could help facilitate the adoption and acceptance of GIP in an enterprise. Based on the SCT theory, this study identifies three concepts of GHRM practices that SMEs can apply to improve employees' GIP and GOC. First, green hiring, which refers to recruiting employees with a green orientation, can result in staff engaging in GOC and GIP-related activities in a firm. As suggested by Iqbal et al. (2021), employees who appreciate the environment would benefit from putting in time and energy to help SMEs be more creative in the execution and presentation of new ideas that can aid in promoting ecological stability. Second, green training organized through GHRM helps employees recognize environmental challenges, which can help them participate in GIP in the workplace (Karatepe et al., 2022). Similarly, providing green training to workers will empower them to gain environmental management knowledge and skills, thereby fostering the development of GIP ideas (Islam et al., 2022).

Finally, green performance compensation and management practices can enable staff to align themselves with the sustainability strategies of the enterprise (Sampene et al., 2023; Yusoff et al., 2020). Businesses can show their workers their unwavering dedication to the cause of environmental sustainability by employing these GHRM measures.

Recent studies have also established that the policies and strategies adopted by GHRM can influence the level of GOC of the workforce in a firm (Ahmad et al., 2021; Elshaer et al., 2021; Iqbal et al., 2021; Shoaib et al., 2021). Accordingly, this research incorporates SCT theory and argues that GHRM practices can promote GOC. Hence, drawing upon SCT theory, this research predicts that SMEs that leverage and value the potential of their GHRM practices can result in higher GIP among employees. Empirical findings by Ercantan and Eyupoglu (2022) revealed that when a firm adopts GHRM approaches such as a green rewarding scheme and the provision of green training, it allows staff to participate and engage in LCB, which is opined by SCT theory. The findings of Muhammad et al. (2022) revealed that among 208 employees in Pakistan, GHRM practices have a direct and positive association with LCB. Moreover, Darvishmotevali and Altinay (2022) indicated that GHRM practices affect LCB among 220 workers in Kazakhstan's hospitality industry. Hence, in line with SCT theory and the previous literature, this analysis suggests that GHRM may directly influence employees' LCB. Accordingly, this study proposed the following:

H1: GHRM practices will positively and significantly affect GIP.

H2: GHRM practices will positively and significantly affect GOC.

H3: GHRM practices will positively and significantly affect LCB.

2.2.2 Nexus between GIP and low-carbon behaviour

GIP encourages a company's production strategy and technology to be innovative, and it drives its equipment to evolve from outdated, integrated instruments to more contemporary, networked equipment that supports a sustainable environment (Khan et al., 2022). Suganthi (2019) examined the association between GIP and LCB among SMEs in India; the study outcome indicated that GIP directly influences LCB. Moreover, empirical studies conducted by Ansari et al. (2021) have shown that SMEs' efforts to reduce environmental consequences through the production process and produce novel products might increase customers' demands for eco-friendly products. Hence, pollution prevention measures by firms might increase employees' LCB. There is a higher chance for SMEs engaging in GIP to increase the level of LCB among employees. Empirical studies have reported that introducing GIP in

SMEs' operational activities enhances employees' LCB (Song et al., 2021; Wang et al., 2022b). Although GIP has been examined concerning sustainable business practices, more research is necessary to determine how strongly GIP and LCB are connected. Accordingly, this study proposes that if SMEs adopt GIP in their business operations, it will encourage employees in the workplace to exhibit LCB. Therefore, this study posits the following:

H4: GIP positively and significantly affects employees' LCB.

2.2.3 Nexus between GOC and low-carbon behaviour

The concept of commitment is a psychological phenomenon that describes how enclosed employees are in their firms. Generally, people demonstrate their level of commitment through behaviour (Daily et al., 2009; Paille et al., 2022). GOC denotes the state of internal temperament, psychological conditions, and mindset, indicating employees' obligation and duty to promote environmental sustainability (Afsar and Umrani, 2020). Moreover, firms' GOC includes investment in the behaviour and actions that lead to LCB and the willingness to engage in initiatives that benefit the environment (Robertson and Carleton, 2018). Similarly, Davis et al. (2020) believe that individuals with higher levels of green commitment are prepared to take plans and actions that protect the biosphere. According to Shahriari et al. (2022), owing to the direct impact of GOC on LCB, employees committed to ecological preservation are also likely to engage in LCB in the workplace. Prior studies have also indicated that GOC is a psychological construct that indicates attachment to environmental challenges (Shahriari et al., 2022). Thus, GOC is a competitive tool that firms can harness to build on their image (Paille & Valeau, 2021). GOC denotes employees' desire to thrive to actualize predetermined objectives. As a result of environmental issues and the importance of sustainability issues in recent times, firms' efforts and ability to change and provide long-lasting solutions are rooted in the concept of GOC (Cheng et al., 2022). Hence, this research suggests that GOC leads to higher LCB. The study stipulates the following:
H5: GOC positively and significantly affects employees' LCB.

2.2.4 Mediation of GIP

GIP relates to all aspects of innovation targeted at pollution control, energy conservation, waste reduction, waste recycling, and environmental management initiatives (Reyes-Santiago et al., 2019). GIP also includes employee involvement in developing sustainable initiatives and ideas and sharing knowledge among SMEs (Fatoki, 2021). The importance of GIP to SMEs is that it lowers cost, improves environmental sustainability,

improves the green corporate image, and attracts customers interested in purchasing green products (Wang et al., 2022). This study factored the mediation of GIP in the proposed model because several studies have indicated that GIP helps SMEs develop staff LCB, which ultimately affects EP (Guo et al., 2020; Makhloufi et al., 2022; Meirun et al., 2020; Wang et al., 2021). Moreover, there has been a call for prior studies that SMEs need to engage in GIP to mitigate the effects of the enterprise's process on the natural environment (Soewarno et al., 2019; Wang and Yang, 2021). Thus, SMEs need initiatives and strategies to address the present environmental challenges; hence, producing eco-friendly products through GIP efforts can help the firm win the market and establish an advantage over competitors (Soewarno et al., 2019). The mediation effect of GIP between GHRM and LCB was established in the research of Ercantan and Eyupoglu (2022); the outcome of their study espoused that GHRM had a direct association with LCB and an indirect influence by the mediation of GIP and the perception of climate issues. Similarly, Haldorai et al. (2022) believe that GIP will improve in a firm when the GHRM department is firmly committed to pursuing strategies and initiatives that promote LCB. Therefore, based on SCT, this research proposes the following:

H6: GIP will positively and significantly mediate the association between GHRM and LCB.

2.2.5 Mediation of GOC

This analysis focuses on the ideology that SMEs can efficiently address environmental pollution issues by improving employees' GOC. As Shahriari et al. (2022) suggested, if a firm cares about GOC, it pays critical attention to its employees, provides green incentives, and treats them with high ethics. Moreover, firms' "green" plans compel them to provide various schemes in shaping GOC, enhancing the likelihood of optimizing LCB and EP (Iqbal et al., 2021). When staff pledge to work toward achieving sustainable development goals, they show a suitable shift in behaviour and attitudes to pursue the firm's GIP (Pham et al., 2019). Additionally, because their attitudes and perspectives regarding the innate benefits of GOC have become more firmly established, they are prepared to put up additional work to reach an improved EP level (Ansari et al., 2021). Drawing from SCT theory, this analysis analyzes the impact of intangible assets (GOC) influencing the LCB and EP of SMEs' employees. In support of SCT theory, employee attitudes such as green commitment and behaviour may mediate the nexus between GHRM and LCB (Katou et al., 2014; Ogbonnaya and Aryee, 2021). In addition, when staff positively perceive GHRM plans,

they believe in demonstrating a certain level of commitment toward the firm, improving their LCB in the workplace (Manuti et al., 2020). Effective GHRM may significantly increase employees' GOC, which, from an environmental perspective, would affect their LCB (Ren et al., 2018, 2022). The present paper, therefore, suggests the following:

H7: GOC will positively and significantly mediate the association between GHRM and LCB.

2.2.6 Moderation of GTFL

One of the pivotal resources of a firm's environmental strategies is the role of the leader. The leader models a positive, exemplary lifestyle for employees to follow when they make prudent choices and take the necessary steps to help the company's ecological system (Huang et al., 2021). As an innovative leadership strategy, GTFL can motivate a green vision to inspire a workforce to complete environmental chores actively, enhancing the company's green potential and reputation (Zhang et al., 2020). Additionally, followers may pick up and mimic GTFL's viewpoint and conduct regarding the workplace environment. As a result, GTFL stimulates employees' desire to safeguard the ecosystem by following their standards (Begum et al., 2022). Moreover, several studies have reported that GTFL positively affects GHRM and employee LCB (Huang, 2022; Riva et al., 2021; Xia et al., 2022). However, studies recommend that GTFL has an iteration effect (moderation) on the link between GHRM and LCB (Singh et al., 2020; Zhou et al., 2018). In this study, the researcher argues that GTFLs such as inspirational motivators, charismatics, individualized considerations, and intellectual stimulators enhance the implementation of GHRM policies, ultimately affecting employees' interest in engaging in LCB. For example, Zhu et al. (2022) concluded that GTFL stimulates green creativity among employees, whereas Hameed et al. (2021) also asserted that GHRM promotes LCB. The outcomes of these studies support various research that has indicated that GTFL could nurture LCB through the strategies implemented by GHRM policies (Niazi et al., 2023; Veerasamy et al., 2023). Nevertheless, few studies have revealed the iterative effect of GTFL on the nexus between GHRM and LCB. Accordingly, this research suggests the following:

H8: GTFL will positively and significantly moderate the association between GHRM and LCB.

2.3 Conceptual Model

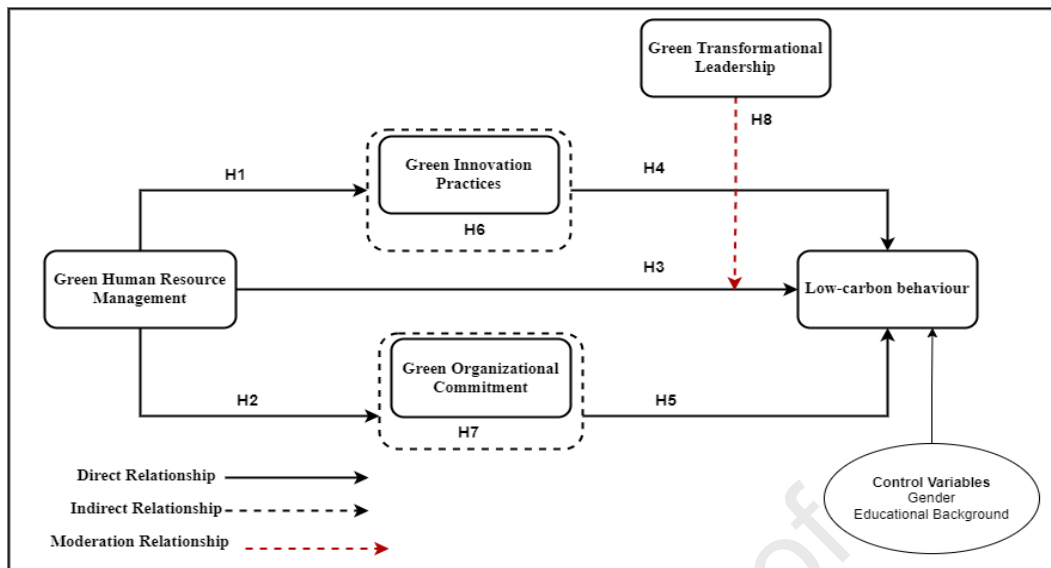The conceptual framework for the study is depicted in Fig. 1.

Fig. 1: Research model for the study

3. Research Methodology

3.1 Rational for the selection of the study area

Since the primary objectives of this study were to examine what factors contribute to employees' LCB, the study identified employees in SMEs in South Africa as the targeted population. The selection of SMEs is imperative because of the country's current level of environmental pollution through business activities. The selection of SMEs as the population target is justifiable because of this sector's contribution to economic development in South Africa. Despite these contributions, there is a need to find appropriate ways to curb the SME sector's pollution challenges. Moreover, recent policy-makers, stakeholders, investors, consumers, and governments have raised concerns about the country's environmental challenges. As a result, evaluating the LCB of employees who work in these SMEs is critical for the nation's progress in environmental sustainability. Moreover, studies that explore concepts such as LCB, GOC, GIP and GHRM have also indicated that SMEs' EP and employees' green behaviour are worthy of examination to help provide a better solution for overcoming environmental issues confronting the globe (Latif et al., 2022; Waqas et al., 2022; Yahya et al., 2022). The study's sample size comprised 610 respondents (employees) from different SMEs across the City of Cape Town in South Africa, selected through the stratified sampling technique.

3.3 Data collection approach

The questionnaire was emailed to the respondents by the researcher, who used an online data collection approach. The collaborative Google Forms tool was used to collect the data. The respondents received an email from the researcher outlining the study's goals and providing a link to the questionnaire. Every month, at the start of the data collection phase, a reminder message was issued to the companies to remind them of the significance of their participation in this survey. As previously mentioned, a self-administered questionnaire was created for this study. The researcher gathered responses from participants from March to July 2023. The study conducted a pilot test to assess the quality of the research questionnaires. In doing so, sixty employees with extensive and enormous experience in GHRM, GIP, GOC and LCB participated during the prior study assessment phase. Based on the outcome of the pilot analysis, the current research improved the questionnaire's wording and altered the research instrument. After changing some of the instruments, the main questionnaires were sent out for the respondents to answer.

3.4 Measurement development

The questionnaire was "closed-ended," from which the participants could select various options. To analyze the research data, the researcher converted the responses into codes. Transforming the collected questionnaire into codes facilitates the ease of representing each respondent more coherently and meaningfully (Sekaran and Bougie, 2016; Sovacool et al., 2020). In this study, the first section of the questionnaire focused on participants' background information, which included gender, educational background, job position, industrial sector, and firm size. The second section of the questionnaire covers the research's main variables, including GHRM, GOC, GIP, GTFL, and LCB. The measures for the study are provided in Appendix 1.

3.6 Construct and Items

The GHRM scale was measured with eight items (6) retrieved from the study (Ren et al., 2022; Saeed et al., 2019). The internal validity shows a strong Cronbach's alpha (CA) of $\alpha = 0.832$ for this construct. The scale for GOC was extracted and modified from the studies of (Iqbal et al., 2021). The consistency of the scale was acceptable, with a CA value of $\alpha = 0.901$. The GIP questions were obtained from Fatoki (2021) and Makhloufi et al. (2022). GIP had a CA statical value of $\alpha = 0.811$. The research-derived construct of LCB was derived

from these prior studies (Lange, 2022; Muhammad et al., 2022; Saeed et al., 2019). The internal reliability was $\alpha = 0.832$. The measures of GTFL items were retrieved from these studies (Hameed et al., 2021; Mansoor et al., 2021). The CA for this construct was $\alpha = 0.833$, indicating that the construct was reliable. Appendix 1 details the questionnaires for the study.

3.7 Control Variables

Previous studies have indicated that other control factors can influence green-related behaviour (Chen and Cao, 2023; Song et al., 2023). Thus, educational background, age, sex, employee experience, and gender might affect the research outcome. Therefore, controlling these factors may be essential in addressing multicollinearity issues in the research model. Hence, consistent with existing studies, this study controlled these variables (educational background of employees and gender) to evaluate their potential influence on LCB. Educational background was measured as ("1" = High School, "2" Degree, "3" = Master, and "4" = PhD). Gender was assessed with ("1" =Male and "2" =female).

3.8 Data analysis approach

The researcher applied the PLS-SEM analytical approach for analysis for the following reasons. First, this technique provides accurate and reliable estimates of the path coefficient of the constructs by evaluating the measurement and structural model simultaneously (Hair et al., 2020). Second, PLS-SEM is a more robust model with fewer identification concerns, and it can function with much smaller and much larger samples. It also quickly includes formative and reflective structures (Hair et al., 2017; Stephen Ibidunni et al., 2021). Third, PLS-SEM is considered an appropriate statistical approach for analyzing exploratory research and can be used to evaluate the moderation and mediation relationships among proposed theoretical concepts (Hair et al., 2012; Lindblom et al., 2020). Finally, subsequent studies have argued that this tool enables researchers to analyze complex relationships among study models best (Afraz et al., 2021; Boubker et al., 2021).

3.9 Ethical approval

The study ensured anonymity, confidentiality and verbal informed consent from all the survey participants. In addition, the research design was approved and reviewed by the ethical standards committee of the School of Management, Jiangsu University. The research does not violate the rights of the respondents.

4. Results and Analysis

4.1 Descriptive Analysis

The study provides relevant information regarding the gender, age of the firm, industrial affiliation, educational background, position, and size of SMEs. Table 1 presents the descriptive analysis of the survey respondents. The data reveal a gender distribution with 58% male and 42% female representation, while the age distribution of firms shows that 44% fall within the 6-15 years range, followed by 24% within 1-5 years. Educational backgrounds vary, with 45% having a degree, 21% with a Master's degree, and 14% holding a PhD or higher. Job positions are predominantly middle-level managers (41%), followed by supervisors (33%) and senior managers (26%). In terms of industrial sectors, the largest representation comes from petroleum and chemical products (29%) and wood products, paper, and printing (20%). Additionally, 56% of the firms are classified as medium-sized, whereas 44% are small enterprises.

Table 1: Profile of Respondents

Demographic Indicator	Characteristics	Frequency	Percentage (%)
Gender			
	Male	358	58
	Female	252	42
Age of firm			
	1-5 years	145	24
	6-15 years	268	44
	16-20 years	121	20
	More than 20 years	76	12
Educational Background			
	High School	117	20
	Degree	278	45
	Master	127	21
	PhD and above	88	14
Job Position			
	Senior Manager	157	26
	Supervisor	203	33
	Middle-level Manager	248	41
Industrial Sector			
	Food and Beverage	110	18
	Petroleum and Chemical Products	178	29
	Wood Products, Paper, and Printing	122	20
	Motor Vehicles and Accessories	98	16
	Furniture and Others	102	17
Firm Size			
	Small	268	44

				Medium		342		56	

4.2 Measurement Model

4.2.1 Validity and Reliability Test

Testing for reliability and internal consistency enables the researcher to evaluate the extent to which the phenomenon's scale provides consistent and stable outcomes (Taherdoost, 2017). As Sampene et al. (2022) suggested, the minimum value for Cronbach's alpha and composite reliability should exceed 0.70, while the average extracted variance (AVE) should also exceed 0.50. As indicated in Table 2, the data analysis of this research has shown higher Cronbach's alpha and Composite 0.70, values greater than the suggested threshold. Hence, the statistical values of all the constructs were within the recommended threshold, indicating that the scales in this research are valid and reliable.

Table 2: Outcome of the measurement model

Indicators	Items	Factor Loadings	Cronbach's alpha (α>0.7)	Composite reliability(ρc) (>0.7)	AVE (>0.5)	VIF
GHRM	GHRM1	0.893	0.832	0.878	0.516	1.400
	GHRM2	0.870				2.013
	GHRM3	0.843				2.920
	GHRM4	0.825				3.204
	GHRM5	0.817				2.239
	GHRM6	0.726				2.238
GIP	GIP1	0.704	0.811	0.825	0.531	1.707
	GIP2	0.738				2.242
	GIP3	0.821				2.880
	GIP4	0.855				3.294
	GIP5	0.845				3.460
	GIP6	0.804				1.425
GOC	GOC1	0.807	0.901	0.923	0.627	2.585
	GOC2	0.854				2.934
	GOC3	0.827				2.516
	GOC4	0.836				2.796
	GOC5	0.879				3.265
	GOC6	0.705				1.529
LCB	LCB1	0.731	0.832	0.841	0.516	1.906
	LCB2	0.871				1.425
	LCB3	0.853				2.015
	LCB4	0.826				1.937

	LCB5	0.812				3.204
	LCB6	0.862				2.293
	LCB7	0.873				
	GTFL1	0.713	0.833	0.841	0.611	1.897
	GTFL2	0.713				1.400
GTFL	GTFL3	0.770				1.013
	GTFL4	0.740				1.920
	GTFL5	0.758				1.204
	GTFL6	0.803				2.239
	GTFL7	0.844				2.238

Note: GHRM: green HRM, LCB: low-carbon behavior, GIP: green innovation practices, GOC: green organizational commitment, GTFL: green transformational leadership, VIF: variance inflation factor

4.2.2 Multicollinearity Test

To overcome the issue of common method bias (CMB), the study applied Harman's (1976) single factor, which suggests that the total variance inflation factor (VIF) among the constructs should be less than 50% (<5.00). As shown in Table 2, the results of this research demonstrate that all of the indicator's VIF scores are below the suggested threshold, proving that the study was free of collinearity and CMB problems. More specifically, the VIF in this research was 32.65%, excluding the likelihood of CMB challenges with the study dataset.

4.2.3 Discriminant validity

In social science research, it is imperative to establish the validity of the construct to operationalize the theoretical concept applied in this research (Roemer and Schuberth, 2021). Henseler et al. (2015) suggested that a study model is valid when the structural model constructs do not exceed the threshold of 0.90. The findings in Table 3 support all of the previous scholars' standard principles. As a result, the results show that the HTMT and Fornell and Larcker (1981) discriminant level approval are present in this study because all the construct values are less than 0.90. The HTMT and Fornell and Larcker (1981) results demonstrate that the proposed model of this study has good psychometric properties.

Table 3: Results of discriminant validity

Fornell and Larcker, (1981) Criteria					
	GHRM	GIP	GOC	GTFL	LCB
GHRM	0.718				
GIP	0.661	0.709			
GOC	0.550	0.735	0.620		
GTFL	0.699	0.842	0.719	0.708	
LCB	0.498	0.674	0.593	0.513	0.623
HTMT Criteria					

	GHRM	GIP	GOC	GTFL	LCB
GHRM					
GIP	0.827				
GOC	0.667	0.854			
GTFL	0.671	0.518	0.658		
LCB	0.202	0.827	0.667	0.771	

Note: GHRM: green HRM, LCB: low-carbon behavior, GIP: green innovation practices, GOC: green organizational commitment, GTFL: green transformational leadership

4.3 Structural Model

The researcher explored the co-efficient path and examined the significance level of the model by employing the bootstrapping approach with a large subsample number of 5000, as proposed by (Hair et al., 2017; Hair et al., 2020). This estimation technique provides information such as the original sample, path estimates, t-value, and the proposed model's significance level (Andrej et al., 2022). The suitability of the measurement model provides a baseline for further statistical analysis to examine the proposed link between the study variables.

4.3.1 Control Variable Analysis

Regarding the control variables, the study outcome revealed a significant connection between gender ($\beta = 0.528$, $t = 25.094$; $p - value = 0.000$) and the study model. Similarly, the analysis outcome revealed that educational background ($\beta = 0.340$, $t = 18.422$; $p - values = 0.002$) has a significant association with the study's model. This finding supports previous studies demonstrating that essential characteristics such as individual educational level and gender impact their LCB (Li et al., 2022; Zhang et al., 2019). In addition, prior studies have concluded that educational level can act as a control variable, provided their potential association with green behavioural outcomes and EP (Mi et al., 2020; Vicente-Molina et al., 2018).

4.3.2 Direct path analysis

In this study, five (5) direct hypotheses, two mediation hypotheses and one iteration connection were explored. The outcomes of the study findings are presented in Table 4 and Fig. 2. The outcome of the survey revealed that GHRM has a positive and substantial influence on this construct, namely, GIP H1 ($\beta = 0.549$, $t = 18.693$; $p - value = 0.001$), GOC H2 ($\beta = 0.736$, $t = 21.188$; $p - value = 0.000$) and LCB H3 ($\beta = 0.206$, $t = 16.471$; $p - value = 0.000$). In addition, the research outcome proved that GIP ($\beta = 0.381$, $t = 23.890$; $p - value = 0.000$) significantly affects LCB, confirming the

papers' Hypothesis 4. Likewise, the findings highlighted that GOC ($\beta = 0.604$, $t = 21.169$; $p - value = 0.000$) has a direct and significant nexus with LCB.

Table 4: Outcome of hypothesis testing

Hypothesis	Relationships	β	t-stats	p-value	Hypothesis Supported
Control Variables					
	Gender	0.528***	25.094***	0.000	Significant
	Educational Background	0.340***	18.422***	0.002	Significant
Direct Relationship					
H1	GHRM→ GIP	0.549***	18.693	0.000	Yes
H2	GHRM→ GOC	0.736***	21.188	0.000	Yes
H3	GHRM→ LCB	0.206***	16.471	0.001	Yes
H4	GIP→ LCB	0.381***	23.890	0.000	Yes
H5	GOC→ LCB	0.604***	21.169	0.000	Yes
Mediation Relationship					
H6	GIP → GHRM→ LCB	0.631***	45.127	0.000	Yes
H7	GOC → GHRM→ LCB	0.407***	34.431	0.002	Yes
Moderation Relationship					
H8	GTFL*GHRM-LCB	0.327***	30.673	0.000	Yes

4.3.3 Mediation analysis

This paper proposed two mediation relationships in the proposed model. Thus, Hypothesis 6 focused on the meditation impact of GIP on the association between GHRM and LCB. The empirical outcome of the study revealed that GIP mediates H6 ($\beta = 0.631$; t-value $= 45.127$; $p = 0.000$) the connection between GHRM-LCB. Similarly, the intermediary role of GOC on the linkage between GHRM and LCB was analyzed in this study. The empirical findings from the study revealed that the indirect effect of GOC on the nexus between GHRM-LCB was statistically significant (H7) ($\beta = 0.407$; t-value $= 34.431$; $p = 0.000$). The inference from this outcome indicates that GIP and GOC have a significant mediation impact on GHRM-LCB linkage.
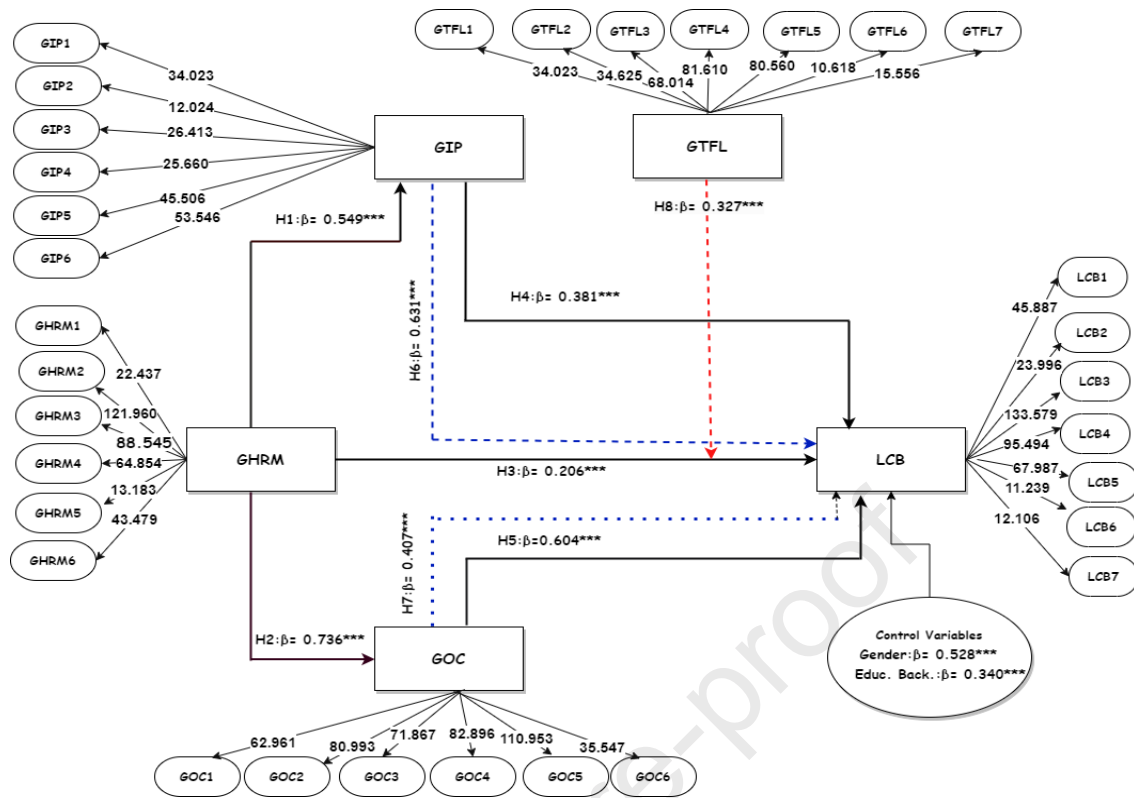
Fig. 2: Results of the structural equation research model

4.3.4 Moderation Analysis

A statistical approach, "moderation analysis," examines how a third variable may affect or modulate the trajectory or degree of interaction between two other variables. It assists researchers in determining the circumstances under which the relationship between the independent and dependent variables strengthens, deteriorates, or even reverses (Edwards and Lambert, 2007). The empirical outcome indicated that GTFL, H8, ($\beta = 0.327, t = 30.673; p - value = 0.00$) has a significant and positive moderating influence on the association between GHRM-LCB. The graphical representation of the moderation impact of GTFL is shown in Fig. 3. The figure indicates that the simultaneous increase of GTFL can be enhanced and strengthen the linkage between GHRM-LCB. Thus, as depicted by the graph, a higher level of PRS leads to a more substantial effect on improving GHRM, thereby enhancing their LCB.
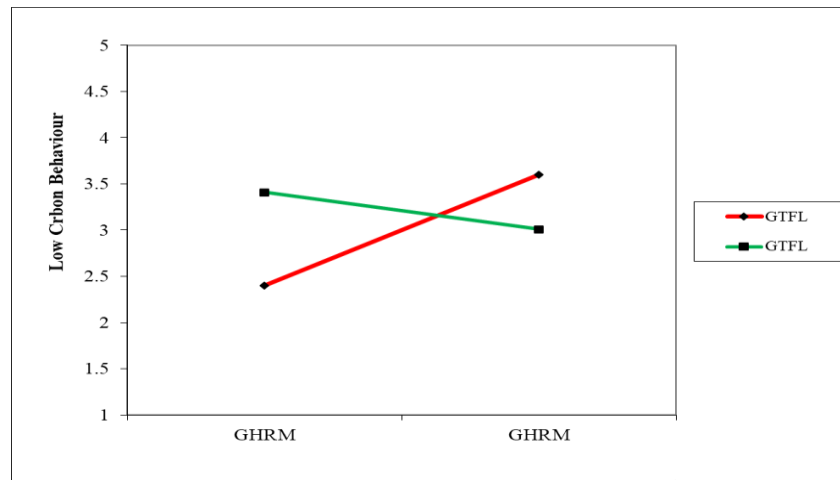
Fig. 3: Moderation role of GTFL between GHRM and LCB

4.4 Effect size analysis and predictive model relevance

R^2 in PLS-SEM quantifies the proportion of variance in the dependent latent constructs explained by the independent latent constructs. A high R^2 value indicates that the model has substantial explanatory power. Coefficient of determination (R^2): This indicates the amount of variance in the endogenous latent variable (dependent variable) that is explained by the exogenous latent variable(s) (independent variable(s)). According to Manley et al. (2021), three main levels of R^2 determine its strength in any structural model analysis, and the outcome is displayed in Table 5. The weak effect is between 0.19-0.20, the moderate effect is between 0.33-0.35, and the powerful effect is between 0.63-0.65). In this study, it can be seen that all R^2 values of the study's variables interpret a strong effect (significant effect). A series of tests were applied to examine this research model's performance, and the findings for both the saturated and estimated models are provided in Table 5. These assessment techniques include RMSE, RMS_theta, NFI, and Chi-square. The test outcome in Table 5 reveals that all the various goodness-of-fit values meet the required criteria. This outcome confirmed that the outcome from this analysis is robust and reliable and that policy-makers can formulate relevant decisions on the basis of this paper.

Table 5: Goodness-of-fit indices

Variables	R^2	F^2	Q^2
GHRM	0.876	0.868	0.347

Green Innovation Practices	0.886	0.447	0.384
Green Organizational Commitment	0.711	0.255	0.587
Green Transformational Leadership	0.762	0.848	0.707
Low carbon behaviour		0.830	0.450

Model Fitness Indicators	Saturated Model	Estimated Model
RMSE	0.030	0.036
NFI	0.968	0.981
Chi-Square	366.176	362.642
(RMS_theta)		0.008

5. Discussion

The concept of GHRM has garnered significant attention among scholars in firm environmental management strategies. However, few studies exist to outline how GHRM influences GOC, GIP, and LCB, especially among emerging regions such as South Africa. The outcome of the research is discussed below. First, the findings from the research confirmed that GHRM positively and substantially affects GIP, GOC and LCB among SMEs in South Africa. This outcome confirms the H1-H3 of the proposed hypothesis in this study. Interestingly, the findings of this study align with the conclusions of these studies (Ansari et al., 2022; Ercantan and Eyupoglu, 2022; Hussain et al., 2021; Rehman et al., 2021; Singh et al., 2022). For example, the study by Muisyo and Qin (2021) highlighted that GHRM in the recruitment process, selection, performance management, and reward systems significantly impacts GIP and EP. In support of the present study outcome, Iqbal et al. (2021) also proved that the conceptualization of GHRM is built on green selection, recruitment, and compensation. Their study also revealed that GHRM practices positively interact with GIP in emerging nations such as Pakistan.

Moreover, the reason for such an intriguing outcome is that if SMEs establish an effective GHRM system solely committed to addressing environmental challenges, it will serve as a guideline for employees and increase their GOC toward achieving set environmental goals and targets (Aboramadan, 2022). The outcome of this study further implies that when enterprises effectively adopt GHRM principles, staff strongly identify with them and engage in performances that are advantageous to SMEs and improve GOC. As espoused by SCT theory, the staff's comprehension of the necessity and urgency of adjusting the GHRM system would facilitate the accomplishment of higher-level LCB among

employees in the workplace (Shoaib et al., 2021). The empirical analysis from this paper is comparable to previous findings that highlighted that GHRM predicts LCB (Aboramadan, 2022; Fawehinmi et al., 2020; Foster et al., 2022; Ojo et al., 2022; Sabokro et al., 2021).

The fourth hypothesis of this paper confirmed that GIP has a substantial and favorable influence on LCB. Concordant with SCT theory, actions through GIP promote firms' operational performance and improve their green brand image, enterprise reputation, and consistency in environmental performance. Research by Sun et al. (2022) espoused that when SMEs embark on these business activities and processes by investing in GIP, such as a green change in product design, green recruitment, green equipment usage, green marketing, and advertising. In addition, Muisyo and Qin (2021) highlighted that GIP is essential in enabling staff to support the design and implementation of firms' green strategies and plans and improve green behaviour, such as LCB among the workforce. Accordingly, this study outcome agrees with the assertion by extant studies that to improve LCB at work, the infusion of GIP into business operations and models is critical (Huang, 2022; Irani et al., 2022; Sharif et al., 2022; Xiao et al., 2021; Yahya et al., 2022).

Furthermore, the fifth hypothesis outlined in this research enunciated that GOC directly benefits LCB. Thus, the level of GOC verifies the mechanism and way the workforce is passionately and unequivocally attached to their enterprise. Such practice helps identify whether the staff is willing to participate in LCB at the workplace. The findings reinforce the results of Kim et al. (2019), who reported that GOC affects the green behaviour of employees in an organization. Their study opined that staff with a strong and loyal commitment to their enterprise GOC results in proactive LCB and eco-friendly conduct, enhancing their firms' EP. The present study confirms that GOC is an essential determinant of individual staff LCB behaviour and is congruent with these existing studies (MacInnes et al., 2022; Pham et al., 2019; Saleem et al., 2021).

Regarding the mediation effect of GIP on the link between GHRM and LCB, empirical evidence from the research confirmed that a positive intermediary influence exists on this connection. This finding confirmed the sixth hypothesis of this paper. In pragmatic discourse, this paper's findings have proven that if firms focus on establishing GHRM initiatives to improve services, products, and processes and reduce adverse effects on the ecological system, these actions can influence workers to engage in LCB in the workplace. Likewise, other empirical studies have suggested that GIP serves as an effective mechanism

through which green GRM can improve employees' behavioural concepts such as LCB (Chen et al., 2021; Fatoki, 2021; Hussain et al., 2021; Khan et al., 2021, 2022; Rehman, Kraus, et al., 2021; Waqas et al., 2021).

The outcome obtained from the survey also highlighted that GOC substantially affects the connection between GHRM and LCB, confirming the seventh proposed hypothesis. This finding suggests that through a higher level of GOC, the direct impact of GHRM on LCB is enhanced. When GOC is lower, which indicates that staff perceives minimal support from firms, the influence of GHRM is lessened. Most importantly, employees will avail themselves of GHRM policies, such as acceptance of staff environmental duties, suggestions about environmental plans, and care about staff well-being and environmental efforts, when they realize that firms support GOC. These circumstances will influence workers to engage in LCB in the workplace. The findings of the study agree with the SCT theory and prior studies that outlined that GOC can serve as an intermediary mechanism through which the interaction between GHRM and LCB of staff can be strengthened (Aboramadan, 2022; Aboramadan et al., 2021; Hameed et al., 2022; Tang et al., 2018).

Finally, the study explored the iterative influence of GFTL on the association between GHRM and LCB. This finding supported the proposed hypothesis (H8). An explanation for this outcome can be linked to the fact that existing environmental leadership studies have established that GTFL motivates a workforce and provides material support and opportunity that can enable GHRM strategies to function well in the organization, which enables staff to improve on their LCB (Riva et al., 2021; Zhang et al., 2020; Zhou et al., 2018). This study, therefore, contends that GTFL is a strategic tool that SMEs should devise and implement GHRM policies to influence employees' LCB. Advancing the SCT, this study concludes that employees and leadership roles are equally essential as any other firm's resources are. Hence, SMEs should cherish these factors in a manner that makes it challenging for rival enterprises to emulate and imitate. Extant studies have also confirmed that GTFL can serve as an effective catalyst through which GHRM can be stimulated, which will eventually influence employees' LCB (Hameed et al., 2021; Huang, 2022; Iqbal et al., 2021; Peng et al., 2020).

6. Conclusions and Research Implications

6.1 Conclusions

International organizations such as the United Nations and the recent Glasgow Agreement are championing the need for carbon emissions and preserving the environment

for future generations. This call has necessitated the importance of this study, which focuses on low-carbon behaviour among employees of SMEs from an emerging country (South Africa). The research hypothesis was evaluated through the SEM-PLS methodology and the IPMA (importance-performance map analysis) analysis approach. The analysis from this research revealed that (1) GHRM has a positive and substantial effect on GIP, GOC, and LCB. (2) The findings also revealed that GOC and GIP positively influence LCB among staff. (3) The results suggest that GIP and GOC have a substantial mediation influence on the connection between GHRM and LCB. (3) Last, GTFL revealed a positive iterative effect on the link between GHRM and LCB. The following is an explanation of the theoretical and practical contributions based on the empirical results of the current analysis.

6.2 Theoretical Implications

An integral theoretical contribution of this study is that while some evidence has been provided on the influence of GHRM on LCB (Shoaib et al., 2021), little environmental research has examined the intermediary effect of GOC and GIP on these concepts. More specifically, the evidence outlined in this paper demonstrated that GOC and GIP mediate the connection between GHRM and LCB. This research outcome indicates these variables' significance in developing green innovation actions. In other words, the commitment levels and innovation practices exhibited by staff members can be influenced by GHRM policies, eventually affecting staff LCB. Furthermore, the study provided empirical evidence indicating that SMEs should invest in GIP and improve their staff's GOC, as it has been established to be an effective tool for improving EP. Thus, GIP and GOC are future initiatives that bring about dynamic changes in institutions, technologies, and commercial strategies and help improve environmental sustainability. In addition, incorporating GTFL as a moderator provides a novel perspective on leadership's role in promoting GHRM and LCB. Thus, the research proved that GTFL inspires workers to achieve better results. The research has revealed how vital GTFL is in improving the connection between GHRM-LCB. Therefore, managers must practice the GTFL approach to help foster the improvement of both ecological behaviour and firms' EP.

Moreover, the novelty of this research is that it fills the literature gap on the moderating role of GTFL in the interplay between GHRM and employees LCB. The study also sheds light on the new concept of GTFL as a building block that motivates and inspires employees to engage in LCB. Notably, few studies have used the term "low carbon

behaviour"; this study is among the pioneering studies that have applied this term. Hence, this study has coined LCB, which other researchers can use in their research to investigate employees' green behaviour in the workplace.

6.3 Practical implications

First, GHRM managers should outline measures that can empower and involve staff in green issues and help them have autonomy in addressing these challenges. These actions can be instituted under the firm's HRM auspices and captured under these themes (green empowerment and involvement strategies). Providing green feedback to workers on green performance can also be a strategic tool to enhance GOC.

Second, from a practical perspective, since LCB influences the EP of firms, managers, stakeholders, and scholars are advised to pay attention to the various predictors of LCB. The empirical outcomes of the study revealed that LCB contributes significantly to the overall EP of SMEs. As a result, managers can stimulate staff LCB by portraying charisma, defining a common prospective goal, providing support to staff, and developing positive psychological interactions with workforce members. If implemented coherently, these significant efforts can improve LCB at the workplace. Third, the study further suggests a novel lifestyle term, such as low-carbon or green, that enterprises can enforce. These LCBs can, for example, empower employees to volunteer for environmental activities and group and office recycling initiatives, embracing an LCB lifestyle at the workplace.

Finally, the outcomes of the papers revealed that GTFL stimulates the connection between GHRM and LCBC. Thus, firms are most likely to improve their employees' LCB by improving their leaders' assessment, development, and selection process, which the HRM department can implement. Hence, firms are recommended to cultivate a GTFL system to stimulate workers' GHRM actions and employees' LCB. SMEs must demonstrate their concern for ecology by creating projects and motivating their managers to adopt the GTFL style to enhance employees' LCB. The study proposes that GTFL acts as a driver to foster staff's innovative thinking and the green behaviour of the workforce. To stay competitive, this research advises that firms' transformational leadership supports an environment in which staff with green affinity and commitment feel inclined and are provided with the opportunity to maximize their green talent. In addition, this study suggests that managers improve and strengthen employee interaction and provide a conducive atmosphere that can help enforce the relationship between GHRM-LCB.

6.4 Limitations and Future Directions

Despite this study's numerous merits, subsequent studies should consider some limitations. Thus, GTFL is a relatively novel concept; future analysis can explore how it influences other employees' actions and behaviours, such as innovative work, employee task performance, and a firm's financial and social performance. In addition, the statistical approaches employed in this analysis are generally modeled to evaluate net effects and linearity, inhibiting the ability to measure asymmetric and combinatory impacts. Accordingly, future work can adopt other approaches, including fuzzy Bayesian and neural network approaches.

Declaration of competing interest

The author(s) declare no conflict of interest.

Compliance with Ethical Standards

Disclosure of potential conflicts of interest: No potential conflict of interest was reported by the author

Research involving Human Participants and/or Animals: Not applicable

Informed consent: Not applicable

Consent to Publish: All authors reviewed and approved the manuscript for publication.

Appendix 1

Construct	Item Code	Items	Source
GHRM	GHRM1	At our enterprise, environmental issues are a necessity for job descriptions.	(Ren et al., 2022; Saeed et al.,
	GHRM2	My firm chooses candidates sufficiently knowledgeable about greening to fill open positions.	
	GHRM3	Recruitment communications incorporate environmental commitment and conduct requirements.	
	GHRM4	This firm establishes an environment management system and environmental audit.	

	GHRM5	Our enterprise engages the employees in establishing environmental strategies.	2019)
	GHRM6	Our firm recognizes employees as essential actors in environmental decisions and initiatives.	
	GHRM7	Our enterprise provides ecological education to employees promptly and frequently.	
	GHRM8	Compared to other firm training programs, environmental training is given priority.	
GIP	GIP1	Our enterprise has enhanced environmentally friendly packaging for used and new product lines.	(Fatoki, 2021; Makhloufi et al., 2022).
	GIP2	Our enterprise produces goods and offers services while taking ecological considerations into mind.	
	GIP3	Our enterprise uses modern technology to neutralize pollution.	
	GIP4	Our enterprise uses repurposed and recycled materials when providing services to consumers.	
	GIP5	Our enterprise uses less material when providing services to clients.	
	GIP6	Our enterprise is better able to meet the needs of its customers by lowering emissions of harmful substances and pollution.	
GOC	GOC1	I have an emotional attachment to the environmental goals of my enterprise.	(Iqbal et al., 2021)
	GOC2	I have a stronger sense of responsibility for the environmental goals of my enterprise.	
	GOC3	I feel ethically bound to support this enterprise's ecological goals, which is one of the reasons I will not leave this firm to work elsewhere.	
	GOC4	Despite a better employment opportunity from another firm, I wouldn't think it was appropriate to leave my current employer because of its commitment to the environment.	
	GOC5	A great deal of my career would be disrupted if I decided I wanted to quit my job immediately because I identify with its environmental obligations.	
	GOC6	Despite the company's environmental goals, I would find it quite tough to leave at this time.	
	GOC7	I have no concern for what would occur if I quit my job without a backup plan due to environmental concerns.	
LCB	LCB1	I take part in eco-initiatives at the workplace.	(Lange, 2022; Muhammad et al., 2022; Saeed et al., 2019)
	LCB2	I educate and share knowledge about environmental issues with my co-workers.	
	LCB3	I generate various proposals for procedures to help my company operate better regarding environmental sustainability.	
	LCB4	I enjoy being mindful of turning off technological devices to save energy.	
	LCB5	I use ecologically friendly methods to complete jobs that are required of me.	

	LCB6	I enjoy being mindful of turning off technological devices to save energy.	
	LCB7	I appreciate recycling and practising energy efficiency.	
GTFL	GTFL1	My firm's leadership leverages his environmental goals to inspire the group's participation.	(Hameed et al., 2021; Mansoor et al., 2021).
	GTFL2	My firm's leadership outlines a clear environmental strategy for the group.	
	GTFL3	My firm's leadership encourages the group to collaborate on common environmental goals.	
	GTFL4	My firm's leadership urges the team members to implement environmental plans.	
	GTFL5	My firm's leadership places greater emphasis on achieving environmental goals.	
	GTFL6	My firm's leadership is open to implementing suggestions for enhancing the company's environmental performance.	
	GTFL7	My firm's leadership has confidence and trust in my abilities to enhance our company's environmental performance.	

References

Aboramadan, M. (2022). The effect of green HRM on employee green behaviors in higher education: the mediating mechanism of green work engagement. *International Journal of Organizational Analysis*, *30*(1), 7–23. https://doi.org/10.1108/IJOA-05-2020-2190

Aboramadan, M., Kundi, Y. M., & Becker, A. (2021). Green human resource management in nonprofit organizations: effects on employee green behavior and the role of perceived green organizational support. *Personnel Review*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/PR-02-2021-0078/FULL/XML

Adebayo, T. S., & Odugbesan, J. A. (2021). *Modeling CO 2 emissions in South Africa : empirical evidence from ARDL based bounds and wavelet coherence techniques*. 9377–9389.

Afraz, M. F., Bhatti, S. H., Ferraris, A., & Couturier, J. (2021). The impact of supply chain innovation on competitive advantage in the construction industry: Evidence from a moderated multi-mediation model. *Technological Forecasting and Social Change*, *162*(June 2020), 120370. https://doi.org/10.1016/j.techfore.2020.120370

Afsar, B., & Umrani, W. A. (2020). Corporate social responsibility and pro-environmental behavior at workplace: The role of moral reflectiveness, coworker advocacy, and environmental commitment. *Corporate Social Responsibility and Environmental Management*, *27*(1), 109–125. https://doi.org/10.1002/csr.1777

Ahmad, S., Islam, T., Sadiq, M., & Kaleem, A. (2021). Promoting green behavior through ethical leadership: a model of green human resource management and environmental knowledge. *Leadership and Organization Development Journal*, *42*(4), 531–547. https://doi.org/10.1108/LODJ-01-2020-0024

Andrej, N., Breznik, K., & Natek, S. (2022). Managing Knowledge to Improve Performance : the Impact of Leadership Style and Knowledge Management on Organizational Performance with Moderation Effects. *Journal of the Knowledge Economy*, *0123456789*. https://doi.org/10.1007/s13132-022-00957-4

Ansari, N., Raza, A., Huma, S., & Baig, A. (2022). The Role of Green Human Resource Management Practices and Eco-innovation in Enhancing the Organizational Performance. *SAGE Open*. https://doi.org/10.1177/09722629221092133

Ansari, N. Y., Farrukh, M., & Raza, A. (2021). Green human resource management and employees pro-environmental behaviours: Examining the underlying mechanism. *Corporate Social Responsibility and Environmental Management*, *28*(1), 229–238. https://doi.org/10.1002/csr.2044

Aslam, S., Elmagrhi, M. H., Rehman, R. U., & Ntim, C. G. (2021). Environmental management practices and financial performance using data envelopment analysis in Japan: The mediating role of environmental performance. *Business Strategy and the Environment*, *30*(4), 1655–1673. https://doi.org/10.1002/bse.2700

Awan, U. (2019). Effects of buyer-supplier relationship on social performance improvement and innovation performance improvement. *International Journal of Applied Management Science*, *11*(1), 21–35. https://doi.org/10.1504/IJAMS.2019.096657

Bandura, A. (2001). Social Cognitive Theory : An Agentic Perspective To be an agent is to intentionally make things happen by one 's actions. Agency embodies the endowments, belief systems , self-regulatory capabilities and distributed structures and functions through whi. *Annu. Rev. Psychol.*, *52*, 1–26.

Bandura, A. (2014). Social cognitive theory of moral thought and action. In *Handbook of moral behavior and development* (pp. 69–128). Psychology press.

Bass, B. (2020). *Advantages and disadvantages of green manufacturing businesses*.

Beauchamp, M. R., Crawford, K. L., & Jackson, B. (2019). Social cognitive theory and physical activity: Mechanisms of behavior change, critique, and legacy. *Psychology of Sport and Exercise*, *42*, 110–117. https://doi.org/10.1016/J.PSYCHSPORT.2018.11.009

Begum, S., Ashfaq, M., Xia, E., & Awan, U. (2022). Does green transformational leadership lead to green innovation? The role of green thinking and creative process engagement. *Business Strategy and the Environment*, *31*(1), 580–597. https://doi.org/10.1002/BSE.2911

Boubker, O., Arroud, M., & Ouajdouni, A. (2021). Entrepreneurship education versus management students' entrepreneurial intentions. A PLS-SEM approach. *The International Journal of Management Education*, *19*, 100450. https://doi.org/10.1016/j.ijme.2020.100450

Burger, K., Mortimer, J., & Johnson, M. K. (2020). Self-esteem and self-efficacy in the status attainment process and the multigenerational transmission of advantage. *Social Science Research*, *86*(February 2019), 102374. https://doi.org/10.1016/j.ssresearch.2019.102374

Cai, L., Sampene, A. K., Khan, A., Agyeman, F. O., John, W., & Brenya, R. (2022a). The dynamic nexus between biocapacity, renewable energy, green finance, and ecological footprint: evidence from South Asian economies. *International Journal of Environmental Science and Technology*, *0123456789*. https://doi.org/10.1007/s13762-

022-04471-7

Cai, L., Sampene, A. K., Khan, A., Oteng-Agyeman, F., Tu, W., & Robert, B. (2022b). Does Entrepreneur Moral Reflectiveness Matter? Pursing Low-Carbon Emission Behavior among SMEs through the Relationship between Environmental Factors, Entrepreneur Personal Concept, and Outcome Expectations. *Sustainability*, *14*(2), 808.

Chen, R., & Cao, L. (2023). How do enterprises achieve sustainable success in green manufacturing era? The impact of organizational environmental identity on green competitive advantage in China. *Kybernetes*, *ahead-of-print*.

Chen, S., Jiang, W., & Li, X. (2021). Effect of Employees ' Perceived Green HRM on Their Workplace Green Behaviors in Oil and Mining Industries : Based on Cognitive-Affective System Theory. *Sustainability*.

Cheng, J., Bai, H., & Hu, C. (2022). The relationship between ethical leadership and employee voice: The roles of error management climate and organizational commitment. *Journal of Management & Organization*, *28*(1), 58–76.

Daily, B. F., Bishop, J. W., & Govindarajulu, N. (2009). A conceptual model for organizational citizenship behavior directed toward the environment. *Business & Society*, *48*(2), 243–256.

Darvishmotevali, M., & Altinay, L. (2022). Green HRM, environmental awareness and green behaviors: The moderating role of servant leadership. *Tourism Management*, *88*(July 2021), 104401. https://doi.org/10.1016/j.tourman.2021.104401

Davis, M. C., Unsworth, K. L., Russell, S. V, & Galvan, J. J. (2020). Can green behaviors really be increased for all employees? Trade-offs for "deep greens" in a goal-oriented green human resource management intervention. *Business Strategy and the Environment*, *29*(2), 335–346.

Dumont, J., Shen, J., & Deng, X. (2017). Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values. *Human Resource Management*, *56*(4), 613–627.

Elshaer, I. A., Sobaih, A. E. E., Aliedan, M., & Azzaz, A. (2021). The effect of green human resource management on environmental performance in small tourism enterprises: mediating role of pro-environmental behaviors. *Sustainability*, *13*(4), 1956.

Ercantan, O., & Eyupoglu, S. (2022). How Do Green Human Resource Management Practices Encourage Employees to Engage in Green Behavior ? Perceptions of University Students as Prospective Employees. *Sustainability*.

Fatoki, O. (2021). Environmental orientation and green competitive advantage of hospitality firms in south Africa: Mediating effect of green innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(4). https://doi.org/10.3390/joitmc7040223

Fawehinmi, O., Yusliza, M. Y., Zulkifli, W., Kasim, W., Mohamad, Z., Abi, M., & Abdul, S. (2020). Exploring the Interplay of Green Human Resource Management, Employee Green Behavior, and Personal Moral Norms. *SAGE Open*. https://doi.org/10.1177/2158244020982292

Fornell, C., & Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research*, *18*(3), 382. https://doi.org/10.2307/3150980

Foster, B., Muhammad, Z., Yusliza, M. Y., Faezah, J. N., Johansyah, M. D., Yong, J. Y., Saputra, J., Ramayah, T., & Fawehinmi, O. (2022). *Determinants of Pro-Environmental Behaviour in the Workplace*. *1983*.

Guo, Y., Wang, L., & Chen, Y. (2020). Green Entrepreneurial Orientation and Green Innovation : The Mediating Effect of Supply Chain Learning. *SAGE Open*. https://doi.org/10.1177/2158244019898798

Hair, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, *109*, 101–110. https://doi.org/10.1016/J.JBUSRES.2019.11.069

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*, *40*(3), 414–433. https://doi.org/10.1007/s11747-011-0261-6

Hair, J., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial Management & Data Systems*.

Hameed, R., Mahmood, A., & Shoaib, M. (2022). The Role of Green Human Resource Practices in Fostering Green Corporate Social Responsibility. *Frontiers in Psychology*, *13*, 792343.

Hameed, Z., Naeem, R. M., Hassan, M., Naeem, M., Nazim, M., & Maqbool, A. (2021). How GHRM is related to green creativity? A moderated mediation model of green transformational leadership and green perceived organizational support. *International Journal of Manpower*. https://doi.org/10.1108/IJM-05-2020-0244

Harman, H. H. (1976). *Modern factor analysis*. University of Chicago press.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115-135.

Huang, S. Y. B., Ting, C. W., & Li, M. W. (2021). The effects of green transformational leadership on adoption of environmentally proactive strategies: The mediating role of green engagement. *Sustainability (Switzerland)*, *13*(6). https://doi.org/10.3390/su13063366

Huang, W. Z. & L. (2022). The impact of green transformational leadership, green HRM, green innovation and organizational support on the sustainable business performance: evidence from China. *Economic Research-Ekonomska Istrazivanja*, *0*(0), 1–21. https://doi.org/10.1080/1331677X.2022.2047086

Hussain, I., Nazir, M., Khan, Q., & Shah, S. (2021). *Linking Green Human Resource Practices and Environmental Performance : The Role of Green Innovation as Mediator and Environmental Strategy as Moderator*. *3*(2), 1–15.

Iqbal, S., Akhtar, S., Anwar, F., Kayani, A. J., Sohu, J. M., & Khan, A. S. (2021). Linking green innovation performance and green innovative human resource practices in SMEs; a moderation and mediation analysis using PLS-SEM. *Current Psychology*, *1*(10), 1–18. https://doi.org/10.1007/S12144-021-02403-1

Irani, F., Kiliç, H., & Adeshola, I. (2022). *Impact of green human resource management*

practices on the environmental performance of green hotels. https://doi.org/10.1080/19368623.2022.2022554

Islam, M. A., Hack-Polay, D., Haque, A., Rahman, M., & Hossain, M. S. (2022). Moderating role of psychological empowerment on the relationship between green HRM practices and millennial employee retention in the hotel industry of Bangladesh. *Business Strategy & Development*, *5*(1), 17–29.

Karatepe, T., Ozturen, A., Karatepe, O. M., Uner, M. M., & Kim, T. T. (2022). Management commitment to the ecological environment, green work engagement and their effects on hotel employees' green work outcomes. *International Journal of Contemporary Hospitality Management*.

Katou, A. A., Budhwar, P. S., & Patel, C. (2014). Content vs. process in the HRM-performance relationship: An empirical examination. *Human Resource Management*, *53*(4), 527–544.

Khan, A., Li, C., Shahzad, M., & Sampene, A. K. (2022). Green effectual orientations to shape environmental performance through green innovation and environmental management initiatives under the influence of CSR commitment. *Environmental Science and Pollution Research*. https://doi.org/10.1007/s11356-022-22263-x

Khan, P. A., Johl, S. K., & Akhtar, S. (2021). Firm Sustainable Development Goals and Firm Financial Performance through the Lens of Green Innovation Practices and Reporting: A Proactive Approach. *Journal of Risk and Financial Management*, *14*(12), 605.

Khan, P. A., Johl, S. K., & Akhtar, S. (2022). Vinculum of Sustainable Development Goal Practices and Firms ' Financial Performance : A Moderation Role of Green Innovation. *Sustainability (Switzerland)*.

Kim, Y. J., Kim, W. G., Choi, H. M., & Phetvaroon, K. (2019). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. *International Journal of Hospitality Management*, *76*(March 2018), 83–93. https://doi.org/10.1016/j.ijhm.2018.04.007

Lange, F. (2022). Behavioral paradigms for studying pro-environmental behavior : A systematic review. *Behavior Research Methods*, *0123456789*. https://doi.org/10.3758/s13428-022-01825-4

Latif, B., Ong, T. S., Meero, A., Abdul Rahman, A. A., & Ali, M. (2022). Employee-Perceived Corporate Social Responsibility (CSR) and Employee Pro-Environmental Behavior (PEB): The Moderating Role of CSR Skepticism and CSR Authenticity. *Sustainability (Switzerland)*, *14*(3). https://doi.org/10.3390/su14031380

Li, X., Liu, Z., & Wuyun, T. (2022). *Environmental Value and Pro-environmental Behavior Among Young Adults : The Mediating Role of Risk Perception and Moral Anger*. *13*(February), 1–11. https://doi.org/10.3389/fpsyg.2022.771421

Lindblom, A., Lindblom, T., & Wechtler, H. (2020). Dispositional optimism, entrepreneurial success and exit intentions: The mediating effects of life satisfaction. *Journal of Business Research*, *120*, 230–240. https://doi.org/10.1016/J.JBUSRES.2020.08.012

MacInnes, S., Grün, B., & Dolnicar, S. (2022). Habit drives sustainable tourist behaviour. *Annals of Tourism Research*, *92*, 103329.

Makhloufi, L., Belaid, F., Laghouag, A. A., & Meirun, T. (2022). *Impact of green*

entrepreneurship orientation on environmental performance: The natural resource-based view and environmental policy perspective. *August 2021*, 425–444. https://doi.org/10.1002/bse.2902

Manley, S. C., Jr, J. F. H., Jr, R. I. W., & Mcdowell, W. C. (2021). *Essential new PLS-SEM analysis methods for your entrepreneurship analytical toolbox*. 1805–1825.

Mansoor, A., Farrukh, M., Lee, J. K., & Jahan, S. (2021). Stimulation of employees' green creativity through green transformational leadership and management initiatives. *Sustainability (Switzerland)*, *13*(14), 1–14. https://doi.org/10.3390/su13147844

Manuti, A., Giancaspro, M. L., Molino, M., Ingusci, E., Russo, V., Signore, F., Zito, M., & Cortese, C. G. (2020). " Everything Will Be Fine ": A Study on the Relationship between Employees ' Perception of Sustainable HRM Practices and Positive Organizational Behavior during COVID-19. *Sustainability*.

Meirun, T., Makhloufi, L., & Hassan, M. G. (2020). Environmental outcomes of green entrepreneurship harmonization. *Sustainability (Switzerland)*, *12*(24), 1–27. https://doi.org/10.3390/su122410615

Meissner, R. (2022). eThekwini's green and ecological infrastructure policy landscape: research paradigms, theories and epistocrats. *International Environmental Agreements: Politics, Law and Economics*, *0123456789*. https://doi.org/10.1007/s10784-021-09557-0

Mi, L., Qiao, L., Xu, T., Gan, X., Yang, H., Zhao, J., Qiao, Y., & Hou, J. (2020). Promoting sustainable development: The impact of differences in cultural values on residents' pro-environmental behaviors. *Sustainable Development*, *28*(6), 1539–1553.

Tang, M. F., Walsh, G., Daniel, L., Markus, F. & Li Q. H. (2018). Title Green Innovation, Managerial Concern and Firm Performance: An Empirical Study. *Business Strategy and the Environment*, 39–51.

Muhammad, Q., Qasim, A., Nisar, A., Zain, R., Qammar, R., & Abbass, K. (2022). Greening the workforce in higher educational institutions: The pursuance of environmental performance. *Environmental Science and Pollution Research*, *0123456789*. https://doi.org/10.1007/s11356-022-19888-3

Muisyo, P. K., & Qin, S. (2021). Enhancing the Firm's green performance through green HRM: The moderating role of green innovation culture. *Journal of Cleaner Production*, *289*, 125720.

Niazi, U. I., Nisar, Q. A., Nasir, N., Naz, S., Haider, S., & Khan, W. (2023). Green HRM, green innovation and environmental performance: the role of green transformational leadership and green corporate social responsibility. *Environmental Science and Pollution Research*, 45353–45368. https://doi.org/10.1007/s11356-023-25442-6

Nisar, Q. A., Haider, S., Ali, F., Jamshed, S., Ryu, K., & Gill, S. S. (2021). Green human resource management practices and environmental performance in Malaysian green hotels: The role of green intellectual capital and pro-environmental behavior. *Journal of Cleaner Production*, *311*(May), 127504. https://doi.org/10.1016/j.jclepro.2021.127504

Ogbonnaya, C., & Aryee, S. (2021). HRM Practices, Employee Well-Being, and Organizational Performance. In *Handbook on Management and Employment Practices* (pp. 1–23). Springer.

Ojo, A. O., Tan, C. N. L., & Alias, M. (2022). Linking green HRM practices to

environmental performance through pro-environment behaviour in the information technology sector. *Social Responsibility Journal*, *18*(1), 1–18. https://doi.org/10.1108/SRJ-12-2019-0403

Paillé, P., Mejía-morelos, J. H., Amara, N., Norrin, H., Paillé, P., Mejía-morelos, J. H., Amara, N., Norrin, H., & Paill, P. (2022). Greening the workplace through supervisory behaviors : assessing what really matters to employees to employees. *The International Journal of Human Resource Management*, *33*(9), 1754–1781. https://doi.org/10.1080/09585192.2020.1819857

Paillé, P., & Valéau, P. (2021). *" I Don't Owe You, But I Am Committed ": Does Felt Obligation Matter on the Effect of Green Training on Employee Environmental Commitment ?* https://doi.org/10.1177/1086026620921453

Peng, J., Yin, K., Hou, N., Zou, Y., & Nie, Q. (2020). How to facilitate employee green behavior: The joint role of green transformational leadership and green human resource management practice. *Acta Psychologica Sinica*, *52*(9), 1105.

Pham, N. T., Tučková, Z., & Phan, Q. P. T. (2019). Greening human resource management and employee commitment towards the environment: An interaction model. *Journal of Business Economics and Management*, *20*(3), 446–465. https://doi.org/10.3846/jbem.2019.9659

Rauthmann, J. F., Sosnowska, J., Moeller, J., Obschonka, M., & Goethner, M. (2019). Entrepreneurial Passion and Personality: The Case of Academic Entrepreneurship. *Frontiers in Psychology / Www.Frontiersin.Org*, *1*, 2697. https://doi.org/10.3389/fpsyg.2018.02697

Rehman, S. U., Kraus, S., Shah, S. A., Khanin, D., & Mahto, R. V. (2021). Analyzing the relationship between green innovation and environmental performance in large manufacturing firms. *Technological Forecasting and Social Change*, *163*, 120481. https://doi.org/10.1016/j.techfore.2020.120481

Ren, S., Jiang, K., & Tang, G. (2022). Leveraging green HRM for firm performance: The joint effects of CEO environmental belief and external pollution severity and the mediating role of employee environmental commitment. *Human Resource Management*, *61*(1), 75–90. https://doi.org/10.1002/hrm.22079

Ren, S., Tang, G., & Jackson, S. (2018). Green human resource management research in emergence: A review and future directions. *Asia Pacific Journal of Management*, *35*. https://doi.org/10.1007/s10490-017-9532-1

Reyes-santiago, R., Pii, P., Date, R., Date, A., Production, C., Reyes-santiago, R., & Production, C. (2019). Accepted Manuscript. *Journal of Cleaner Production*. https://doi.org/10.1016/j.jclepro.2019.04.245

Riva, F., Rabiul Mohammad Rubel, B., & Magrizos, S. (2021). Investigating the link between managers ' green knowledge and leadership style, and their firms ' environmental performance : The mediation role of green creativity. *Business Strategy and the Environment*, *February*, 3228–3240. https://doi.org/10.1002/bse.2799

Robertson, J. L., & Carleton, E. (2018). Uncovering how and when environmental leadership affects employees' voluntary pro-environmental behavior. *Journal of Leadership & Organizational Studies*, *25*(2), 197–210.

Roemer, E., & Schuberth, F. (2021). HTMT2 – an improved criterion for assessing discriminant validity in structural equation modeling. *Industrial Management & Data*, *121*(12), 2637–2650. https://doi.org/10.1108/IMDS-02-2021-0082

Roxas, H. 'Banjo, & Marte, R. (2022). Effects of institutions on the eco-brand orientation of millennial consumers: a social cognitive perspective. *Journal of Consumer Marketing*, *September*. https://doi.org/10.1108/JCM-11-2020-4262

Sabokro, M., Masud, M. M., & Kayedian, A. (2021). The effect of green human resources management on corporate social responsibility, green psychological climate and employees' green behavior. *Journal of Cleaner Production*, *313*(November 2020). https://doi.org/10.1016/j.jclepro.2021.127963

Saeed, B. Bin, Afsar, B., Hafeez, S., Khan, I., Tahir, M., & Afridi, M. A. (2019). Promoting employee's proenvironmental behavior through green human resource management practices. *Corporate Social Responsibility and Environmental Management*, *26*(2), 424–438. https://doi.org/10.1002/csr.1694

Saleem, M., Qadeer, F., Mahmood, F., Han, H., Giorgi, G., & Ariza-montes, A. (2021). *Inculcation of Green Behavior in Employees : A Multilevel Moderated Mediation Approach*. 1–21.

Sami, R., Daboub, A., Al-madadha, A., & Al-adwan, A. S. (2024). International Journal of Innovation Studies Fostering firm innovativeness : Understanding the sequential relationships between human resource practices, psychological empowerment, innovative work behavior, and firm innovative capability. *International Journal of Innovation Studies*, *8*(1), 76–91. https://doi.org/10.1016/j.ijis.2023.12.001

Sampene, A. K., Li, C., Khan, A., Agyeman, F. O., & Opoku, R. K. (2022). Yes! I want to be an entrepreneur: A study on university students' entrepreneurship intentions through the theory of planned behavior. *Current Psychology*. https://doi.org/10.1007/s12144-022-03161-4

Sampene, A. K., Li, C., Wiredu, J., Agyeman, F. O., & Brenya, R. (2023). *Examining the nexus between social cognition, biospheric values, moral norms, corporate environmental responsibility and pro-environmental behaviour. Does environmental knowledge matter ?*

Sampene, A., Li, C., Agyeman, F., & Brenya, R. (2021). Analysis of the BRICS countries' pathways towards a low-carbon environment. *BRICS Journal of Economics*, *2*(4), 77–102. https://doi.org/10.38050/2712-7508-2021-4-4

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. john wiley & sons.

Shahriari, M., Tajmir Riahi, M., Azizan, O., & Rasti-Barzoki, M. (2022). The effect of green organizational culture on organizational commitment: The mediating role of job satisfaction. *Journal of Human Behavior in the Social Environment*, 1–18.

Sharif, S., Yousaf, H. Q., Shaikh, S., Mirza, F., & Gantulga, U. (2022). Hotels' experience of green environment management and innovation performance: stewardship of multiple green drivers. *Journal of Environmental Planning and Management*, 1–28.

Shikwambana, L., Mhangara, P., & Kganyago, M. (2021). Assessing the relationship between economic growth and emissions levels in South Africa between 1994 and 2019.

Sustainability (Switzerland), *13*(5), 1–15. https://doi.org/10.3390/su13052645

Shoaib, M., Abbas, Z., Yousaf, M., Zámečník, Roman, & Saqib, J. A. & S. (2021). The role of GHRM practices towards organizational commitment: A mediation analysis of green human capital. *Cogent Business and Management*, *8*(1). https://doi.org/10.1080/23311975.2020.1870798

Singh, S. K., Del Giudice, M., Chiappetta Jabbour, C. J., Latan, H., & Sohal, A. S. (2022). Stakeholder pressure, green innovation, and performance in small and medium-sized enterprises: The role of green dynamic capabilities. *Business Strategy and the Environment*, *31*(1), 500–514.

Singh, S. K., Giudice, M. Del, Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological Forecasting and Social Change*, *150*(May 2019), 119762. https://doi.org/10.1016/j.techfore.2019.119762

Soewarno, N., Tjahjadi, B., & Fithrianti, F. (2019). *Green innovation strategy and green innovation The roles of green organizational identity and*. *57*(11), 3061–3078. https://doi.org/10.1108/MD-05-2018-0563

Song, S., Hossin, M. A., Yin, X., & Hosain, M. S. (2021). Accelerating green innovation performance from the relations of network potential, absorptive capacity, and environmental turbulence. *Sustainability (Switzerland)*, *13*(14). https://doi.org/10.3390/su13147765

Song, W., Ma, Y., Fan, X., & Peng, X. (2023). Corporate environmental ethics and employee's green creativity? The perspective of environmental commitment. *Corporate Social Responsibility and Environmental Management*.

Sovacool, B. K., Axsen, J., Sorrell, S., Policy, S., Businees, S., & Kingdom, U. (2020). Energy Research & Social Science Promoting novelty, rigor, and style in energy social science : Towards codes of practice for appropriate methods and research design. *Energy Research & Social Science*, *45*(October 2018), 12–42. https://doi.org/10.1016/j.erss.2018.07.007

Stajkovic, A. D., & Luthans, F. (2003). Social Cognitive Theory and Self-Efficacy: Implications for Motivation Theory and Practice. *Motivation and Work Behaviour*, *1986*, 126–139.

Steg, L., Keizer, K., Buunk, A. P., & Rothengatter, T. (2017). *Applied social psychology*. Cambridge University Press.

Stephen Ibidunni, A., Martins Ogundana, O., & Okonkwo, A. (2021). *Entrepreneurial Competencies and the Performance of Informal SMEs: The Contingent Role of Business Environment*. https://doi.org/10.1080/15228916.2021.1874784

Suganthi, L. (2019). Examining the relationship between corporate social responsibility, performance, employees' pro-environmental behavior at work with green practices as mediator. *Journal of Cleaner Production*, *232*. https://doi.org/10.1016/j.jclepro.2019.05.295

Cameron, S., Hough, C., Green, K. (2021). The Impact of Ethics Environment, Organizational Commitment, and Job Satisfaction on Organizational Performance. *Journal of Business and Management*, *27*(1), 53–78.

https://doi.org/10.6347/JBM.202103_27(1).0003

Sun, X., Askary, A. El, Meo, M. S., & Zafar, A. (2022). Green transformational leadership and environmental performance in small and medium enterprises. *Economic Research-Ekonomska Istraživanja*, *0*(0), 1–19. https://doi.org/10.1080/1331677X.2021.2025127

Taherdoost, H. (2017). Validity and Reliability of the Research Instrument ; How to Test the Validation of a Questionnaire / Survey in a Research. *International Journal of Academic Research in Management (IJARM)*, *September*. https://doi.org/10.2139/ssrn.3205040

van Staden, L. J. (2022). The influence of certain factors on South African Small and medium-sized enterprises towards export propensity. *Development Southern Africa*, *39*(3), 457–469. https://doi.org/10.1080/0376835X.2021.2019573

Veerasamy, U., Joseph, M. S., & Parayitam, S. (2023). Green Human Resource Management and Employee Green Behaviour: Participation and Involvement, and Training and Development as Moderators. *Https://Doi.Org/10.1177/23220937221144361*. https://doi.org/10.1177/23220937221144361

Vicente-Molina, M. A., Fernández-Sainz, A., & Izagirre-Olaizola, J. (2018). Does gender make a difference in pro-environmental behavior? The case of the Basque Country University students. *Journal of Cleaner Production*, *176*, 89–98.

Wang, H., Khan, M. A. S., Anwar, F., Shahzad, F., Adu, D., & Murad, M. (2021). Green Innovation Practices and Its Impacts on Environmental and Organizational Performance. *Frontiers in Psychology*, *0*, 3316. https://doi.org/10.3389/FPSYG.2020.553625

Wang, N., Zhang, J., & Zhang, X. (2022a). How to Improve Green Innovation Performance : A Conditional Process Analysis. *Sustainability (Switzerland)*.

Wang, N., Zhang, J., Zhang, X., & Wang, W. (2022b). How to Improve Green Innovation Performance: A Conditional Process Analysis. *Sustainability*, *14*(5), 2938. https://doi.org/10.3390/su14052938

Wang, X., Van der Werff, E., Bouman, T., Harder, M. K., & Steg, L. (2021). I Am vs. We Are: How Biospheric Values and Environmental Identity of Individuals and Groups Can Influence Pro-environmental Behaviour. *Frontiers in Psychology*, *12*(February), 1–11. https://doi.org/10.3389/fpsyg.2021.618956

Wang, Y., & Yang, Y. (2021). Analyzing the green innovation practices based on sustainability performance indicators : a Chinese manufacturing industry case. *Environmental Science and Pollution Research*, 1181–1203.

Waqas, M., Honggang, X., Ahmad, N., Khan, S. A. R., Ullah, Z., & Iqbal, M. (2022). Triggering sustainable firm performance, supply chain competitive advantage, and green innovation through lean, green, and agile supply chain practices. *Environmental Science and Pollution Research*, *29*(12), 17832–17853. https://doi.org/10.1007/s11356-021-16707-z

Wiredu, J., Yang, Q., Labaran, U., & Kwasi, A. (2023). Energy transition in Africa : The role of human capital, financial development, economic development, and carbon emissions. *Environmental Science and Policy*, *146*(April), 24–36. https://doi.org/10.1016/j.envsci.2023.04.021

Xia, Y., Liu, Y., Han, C., Gao, Y., & Lan, Y. (2022). How Does Environmentally Specific Servant Leadership Fuel Employees ' Low-Carbon Behavior ? The Role of

Environmental Self-Accountability and Power Distance Orientation. *International Journal of Environmental Research and Public Health*.

Xiao, J., Zhen, Z., Tian, L., Su, B., Chen, H., & Zhu, A. X. (2021). Green behavior towards low-carbon society: Theory, measurement and action. *Journal of Cleaner Production*, *278*. https://doi.org/10.1016/j.jclepro.2020.123765

Yahya, S., Khan, A., Farooq, M., & Irfan, M. (2022). Integrating green business strategies and green competencies to enhance green innovation: evidence from manufacturing firms of Pakistan. *Environmental Science and Pollution Research*, *29*(26), 39500–39514. https://doi.org/10.1007/s11356-021-18430-1

Yuan, B., & Li, J. (2023). Understanding the Impact of Environmentally Specific Servant Leadership on Employees' Pro-Environmental Behaviors in the Workplace: Based on the Proactive Motivation Model. *International Journal of Environmental Research and Public Health*, *20*(1). https://doi.org/10.3390/ijerph20010567

Yusoff, Y. M., Nejati, M., Kee, D. M. H., & Amran, A. (2020). Linking green human resource management practices to environmental performance in hotel industry. *Global Business Review*, *21*(3), 663–680.

Zhang, J., Cheng, M., Wei, X., Gong, X., & Zhang, S. (2019). Internet use and the satisfaction with governmental environmental protection: Evidence from China. *Journal of Cleaner Production*, *212*, 1025–1035. https://doi.org/10.1016/j.jclepro.2018.12.100

Zhang, W., Xu, B. S., & Xu, F. (2020). Promoting green product development performance via leader green transformationality and employee green self-efficacy: The moderating role of environmental regulation. *International Journal of Environmental Research and Public Health*, *17*(18), 1–17. https://doi.org/10.3390/ijerph17186678

Zhou, S., Zhang, D., Lyu, C., & Zhang, H. (2018). Does seeing "mind acts upon mind" affect green psychological climate and green product development performance? The role of matching between green transformational leadership and individual green values. *Sustainability (Switzerland)*, *10*(9). https://doi.org/10.3390/su10093206

Zhu, J., Tang, W., Zhang, B., & Wang, H. (2022). Influence of Environmentally Specific Transformational Leadership on Employees' Green Innovation Behavior—A Moderated Mediation Model. *Sustainability (Switzerland)*, *14*(3). https://doi.org/10.3390/su14031828