

The Role of Green HRM on Environmental Performance: Mediating Role of Green Ambidexterity and Green Behavior and Moderating Role of Responsible Leadership

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ABSTRACT

The purpose of this research is to explore the influence of Green HRM (GHRM) on environmental performance (EP). There has been a noticeable lack of focus on concurrently examining green ambidexterity (GA), GHRM, green behavior (GB), and their combined impact on EP in the lens of Human Capital theory. The purpose of this study is to investigate the interrelationship between GHRM and EP through serial mediation of GA and GB with a moderating role of responsible leadership (RL) in the relationship of GHRM and GA. A variance-based structural equation modeling (PLS-SEM) was applied to 570 sample of hotels. The results indicate that GHRM facilitates the development of green ambidexterity, and green behavior among employees in the way that they contribute to improving EP. The outcomes of this research offer valuable contributions to the existing literature on GHRM and GA, along with providing practical insights for managers in hotels.

KEYWORDS

Green human resource management; Environmental performance; Green ambidexterity; Environmental performance; Responsible leadership; Hotel industry; Pakistan

1. Introduction

In recent times, many countries have opened up to acknowledge significant threats to the natural environment (Malik *et al.*, 2021). Therefore, environmental excellence and its impact on the lives of individuals are gradually more crucial for global policymakers and academia. Organizations are creating threats to the natural environment and stakeholders are too concerned about it (Alzgoool, 2019). This all has negative outcomes regarding the environmental performance of organizations. Therefore, organizations are looking into such issues and concerns, tending to produce the products and striving to offer services that have little, or no harm to the natural environment (Khurshid & Darzi, 2016). For this

purpose, environment safety legislation is being highly developed to take care of the environment globally (Saeed *et al.*, 2019). International treaties have been increasingly developed to control environmental degradation (Hartmann *et al.*, 2018; Fernando *et al.*, 2019). More precisely, various industries were under constraint to reduce environmental dangers by Kyoto Protocol (2005) and the Paris agreement (2015) (Gupta *et al.*, 2019). This becomes the main reason that global understanding of environmental safety has been dramatically promoted.

The environment is an essential component of the hospitality and tourism industry. Neglecting or ignoring the environment causes devastating consequences for tourism specifically (Chou *et al.*, 2012). However, it is observed that within the service industry one of the least sustainable economic sectors of the world is the tourism sector (Úbeda - García *et al.*, 2022). In the tourism industry hotels are considered a substantial part (Han & Yoon, 2015). Nonetheless, the hotel sector has the power to either encourage environmental deterioration and destruction or manage them in a way that preserves the environment and strengthens the neighborhood (Abdel-Maksoud *et al.*, 2016). Consequently, green ambidexterity and green behavior novel concepts prevailed and forced the organizations to attain their objectives while considering their natural environment and society.

Green ambidexterity has been the talk of the town across corporate and scholarly discussions during the last few years. Organizations have understood the competitive world and realized that businesses could no longer sustain and survive their performance (Tan & Nasurdin, 2011) without concentrating on the idea of green ambidexterity to carry out both exploration and exploitation in the green business environmental performance. Green exploratory activities focused on new knowledge, skills, and environmental information to generate novel green products, processes, or services and green markets (Úbeda-García *et al.*, 2022). And green exploitative activities are the application of current processes, abilities, and environmental knowledge to enhance existing green processes, products and services (Chen *et al.*, 2014) for the successful achievement of environmental performance. While green behaviors are clarified as natural social behavior of the employees (Chou, 2014), workers in an organisation are required to engage in these environmentally friendly behaviours in response to the organization's policies and initiatives pertaining to green human resource management (Dumont *et al.*, 2017).

In recent studies, researchers have deemed green human resource management (GHRM) practices as key component to accomplishing environmental management (Jabbour & de Sousa Jabbour, 2016; Chaudhary, 2019). Organizations must consider the green aspects of HRM to overcome environmental concerns. The inclusion of green aspects in HRM in the policy-making process and strategies will have positive signs for the organization's future in regard to its sustainability (Rani & Mishra, 2014). However, GHRM comprises endeavours and activities like recruitment, training, compensation and performance management (PM) which have optimistic consequences in the environment i. e., environmental performance (Kramar, 2014; Nisar *et al.*, 2024). Environmental performance is explained as the results obtained through the pro-environmental measures of the hotels to decrease the negative impact (Kim *et al.*, 2019).

Additionally, activities of green HRM may not straightly validate the consequences of environmental performance and demand an appropriate mechanism to incorporate both ideas (Dumont *et al.*, 2017; Ren *et al.*, 2020). However, earlier research has deemed GHRM and how it relates with work outcomes of employees and green behavior (Dumont *et al.*, 2017; Nisar *et al.*, 2024). In green and environmental management, the role of GHRM practices is generally known but barely considered in academic literature. Employee attitudes and behaviours regarding environmental performance (Ali *et al.*, 2021) and sustainable business practises (Dumont *et al.*, 2017) are poorly understood. Few scholars or prior research have investigated the mechanism through which GHRM inspires green employees' behavior to achieve environmental performance (Nisar *et al.*, 2024). Employees assert that their green actions significantly encourage other employees to adopt eco-friendly practises. Furthermore, there

aren't many studies in the hotel industry that describe how green organisational ambidexterity and GHRM affect environmental performance (Úbeda -García *et al.*, 2022). Responsible leadership is a novel concept that is still not much explored in HRM literature.

Moreover, regardless of the fact that leadership plays a vital role in environment preservation, literature is yet scarce regarding the indication that contacts green HRM and environmental performance through responsible leadership. Contrary to this leader with negative behavior affect the performance and innovative work behavior of employees badly (Mehmood *et al.*, 2023). Additionally, it is emphasised that human resources management influences employee behaviour via an underlying mechanism (Boxall *et al.*, 2016; Ansari *et al.*, 2021). More precisely, it produces the employee's green behavior and environmental agenda implementation and remains ignored (Farooq *et al.*, 2021; Nisar *et al.*, 2024). Though, GHRM in the context of developed countries is predominant (Gupta, 2018; Bangwal *et al.*, 2017; Dumont *et al.*, 2017; Chen *et al.*, 2015; Renwick *et al.*, 2013), in underdeveloped countries this perspective is still ignored. For instance, in Pakistan tourism industry is getting improved day by day and the government is focusing on projects and policies of green initiatives.

Thus, this study intends to add up knowledge for contemporary researchers by investigating the relationship of GHRM and environmental performance. However, with the lens of Human Capital Theory, the environmental performance goals of hotels through a mechanism mediated by green behavior and green ambidexterity in Pakistan is unexplored. Therefore, current research is a sound effort by researchers to cover the theoretical and contextual gaps in the literature. Employees of the hotel industry have a strong belief in green exploitation that encourages them to utilize the maximum of their existing skills and capabilities and, green exploration enhances them to explore new opportunities. This green ambidexterity inspires them to put maximum effort into green activities and finally generate the needed green behavior that eventually leads to the outcome of environmental performance. The major grace and innovativeness of current research is that this study extended the knowledge and application of the leadership literature regarding the role of GHRM toward environmental performance through the moderating role of responsible leadership (RL) as regarding this relationship empirical investigation is insufficient. In the context of Pakistan, the hotel industry is facing numerous issues, thus considered as the target population in current research. This research is novel in its nature and contributed to the extension in theory of the human capital by highlighting GHRM strategies that might contribute to ambidexterity and organizational environmental performance rather than behavior reinforcement.

2. Hypothesis development

2.1 Green HRM and environmental performance

The "green human resource management" (GHRM) term was devised by Renwick *et al.* (2008), and is mostly described as encompassing the HRM-related concerns and issues of environmental management (Renwick *et al.*, 2013). Simultaneously, researchers have considered GHRM as a novel aspect of research with the objective of exploring the environmental management of an organization through the implementation practices of HRM (Jackson & Seo., 2010; Jabbour *et al.*, 2015). Although, previous studies by Milliman and Clair (1996), Renwick *et al.* (2013), and Guerci *et al.* (2016) stated that since the mid-90s, human resource management (HRM) had been deemed a significant factor in enhancing environmental performance. Green HRM in the current scenario has greater significance as it helps organizations to improve the systematic process in favour of the natural environment (Mwita, 2019). Although the ultimate goal of every business firm is to maximize profits and to increase earnings day by day nowadays in the case of the natural environment and its destruction is a major concern for environmental stakeholders, thus organizations must have a greater level of care in this regard (Chancellor *et al.*, 2011). Moreover, Green practices of HRM stipulate an organization's resolution of expending every employee's crossing point to instigate activities of environmental performance,

enhance the sustainable activities and awareness of employees, consequently, enhance the employee's awareness towards issues of environmental (Fayyazi *et al.*, 2015).

Practices of green HRM have similar practices, for instance, traditional HRM practices like performance appraisal, compensation, recruitment, selection, training, and development (Guerce *et al.*, 2016). In precise, green hiring (e.g., employees hiring with general sensitivity and proficiencies towards the environment), green involvement and training (e.g., engaging employees and developing skills and capabilities in green behaviors toward the environment), and green compensation and performance management (e.g., evaluating the performance of employees by considering behaviors and rewarding green behaviors) have been related with higher environmental performance (Yusoff *et al.*, 2020). However, practices of green HRM have to bring the abilities needed for the continual progress of environmental performance (Jabbour & Santos, 2008).

Arulrajah *et al.* (2016), argued that green HRM practices are the program, processes, and techniques that are accomplished in the organization to reduce environmental negative effects or upsurge positive environmental effects. The aforementioned findings of research studies and as per the above literature GHRM is a vital aspect and must be part of policies and strategies of organizations currently. GHRM is helpful to attain environmental performance in numerous ways. Therefore, in light of past studies, the hypothesis in current research is:

H1: Green HRM has a positive effect on environmental performance.

2.2 Green HRM and green ambidexterity

The ability to explore and exploit concurrently is called ambidexterity (Mom *et al.*, 2019; Ghani *et al.*, 2018; Gupta *et al.*, 2006). Ambidexterity has flourished as the latest novel research concept in the recent years (Ghani, 2017; O'Reilly & Tushman, 2013; Raisch *et al.*, 2009). Thus, recent consideration has been paid to the notion of organizational ambidexterity in the area of management (Úbeda-García *et al.*, 2022). O'Reilly and Tushman (2013) stated that the foundations of this novel construct are associated with adaptation of organization, such as technological and environmental changes entail structural adjustments to ensure organizational achievements over time.

Moreover, exploration is concerned with things like risk-taking, flexibility, experimentation, and innovation (Raisch & Birkinshaw, 2009; Mom *et al.*, 2019). It may involve ideas captured by terms for instance search, change, improvement, and innovation (Dixon *et al.*, 2014; Mom *et al.*, 2019). Exploitation describes the capability of an organization to identify and follow opportunities, learn and acquire knowledge, modify abilities and assets for ideal performance, and decrease risks in recent markets (Martini *et al.*, 2013; Wang & Rafiq, 2014). The natural environment has been fluctuating at an ever-increasing rate and complexity in recent years, so businesses are finding that having dynamic capabilities helps them obtain a competitive edge. On the other hand, dynamic capabilities, according to O'Reilly and Tushman (2008), represent organisational capacities to exhibit and allow the utilisation of current capacities as well as the creation or investigation of potential future capacities.

No research has been done on the topic of green ambidexterity in the hotel industry in the field of environmental management, despite the fact that it has become a hot topic in the fields of knowledge management, strategic management, and organisational management (Úbeda-García *et al.*, 2020; Birkinshaw & Gupta, 2013; O'Reilly & Tushman, 2013). Only a small number of studies have been noted that look into the role of sustainability in improving performance in ambidextrous coalitions (Russo & Schena, 2021).

Little research has been done to explain the relationship between GHRM and the capacity to simultaneously create exploratory and exploitative green activities—also known as green ambidexterity—because previous studies had not given much attention to this trending topic (Úbeda-García *et al.*, 2022). Thus, our research intends to explore this novel concept of green ambidexterity and implies Tushman and O'Reilly (1996) and March (1991) to explain it as the capability to reconcile and integrate both the green activities of exploitation and exploration in the environment. Therefore, the

aforementioned findings of research studies and as per the above literature GHRM is helpful to attain green ambidexterity. Therefore, considering past studies the hypothesis in current research is:

H2: Green HRM has a positive effect on green ambidexterity.

2.3 Green ambidexterity and green behavior of employees

Green behavior of employees is defined as natural social behavior (Chou, 2014). Employees' pro-environmental behavior, also labelled as green behavior of employees, is grounded on their conscious interest and efforts related to the environment such as managing and reducing waste, recycling materials, energy consumption, and other similar acts that can eradicate hazards related to the environment (López-Mosquera *et al.*, 2015; Al-Swidi *et al.*, 2021). Although, Green behaviors of employees correspond to both voluntary (happily carry out the green activities) and non-voluntary behaviors (have to carry out the green activities as a retort to the GHRM initiatives and organizational policies related to the environment) (Dumont *et al.*, 2017). Ababneh (2021) explained how green policies and employee behavior relate to each other. She asserted that there may be specific circumstances that force an organisation to adopt a compliance approach and assume that its employees will carry out their responsibilities in accordance with the organization's policies. It is also explained as an environmentally friendly series of activities that assist in attaining the purpose of shielding and protecting the environment.

Concentrating on green ambidexterity, either exploitative or exploratory green activities, is connected to processes, services, and products, for protection of environments; a progressive way in which firms incessantly introduce and implement green activities of employees such as pollution prevention, energy saving, and environmental quality development environmental performance (Chen *et al.*, 2006) to ultimately accomplish economic gains (Chen & Chang, 2013; Chen, 2008). In this case, "green ambidexterity" can be defined as the process by which the hotel sector incorporates environmental risks and challenges into its policies while also fortifying its competitive advantage by encouraging environmentally conscious employee behavior (Chen *et al.*, 2006).

Though, with growing concerns related to the environment, the organizational researcher, experts, and scholars are currently gradually paying attention to the topic of green ambidexterity and how it enhances and encourages the positive behavior of employees to explore and exploit green activities towards the environment. Generally, green ambidexterity acts as a motive state for compulsory and employee's voluntary green behaviors. Following hypothesis is formulated based on synthesis of literature:

H3: Green ambidexterity has a positive effect on employees' green behavior.

2.4 Green behavior and environmental performance

Employees of an organization are considered a vital part of that organization to achieve its drive in the direction of being green. Employees do so by executing green behaviors (Gill *et al.*, 2021). There is empirical evidence that employees' green behaviors boost environmental performance (Nisar *et al.*, 2024). Likewise, Ansari *et al.* (2021) claimed that environment-oriented behaviors of employees for instance, avoid the unnecessary use of lifts, to minimize waste dual side paper printing, by switching off preservation of the energy mostly required electrical appliances, and enchanting environment preservation-associated initiatives. One could argue that employees who practice green practices tend to perform well in terms of the environment. Organizations that continuously work on going green and emphasize environment maintenance and preservation experience a winning situation, as such types of green strategies retain the employees motivated to concerning environmental preservation eventually improving the environmental performance (Winston, 2009).

Additionally, the motivation of employees toward green behavior in an organization is influenced by issues for instance support of an organization towards employees' environmental efforts, their own concerns about the environment, a positive commitment to the organization, efforts and initiatives to attain environmental goals, social responsibilities related to an organization to environmental behavior,

and the over-all amount of time they spend on the organization (Ar, 2012; Junsheng *et al.*, 2020). Therefore, empirical evidence directs this study to assume that the green behaviors of employees may intervene and increase environmental performance. In light of literature, this study proposes that:

H4: Green behavior has a positive effect on environmental performance.

2.5 Green HRM and employee's green behavior

Numerous studies have reported that HRM if handled appropriately, has positive impacts on green sustainability at the organizational level (Roscoe *et al.*, 2019). Fawehinmi *et al.* (2020) also found that GHRM can help organizations provide more awareness to employees and finally, this can enhance employee green behaviors. Therefore, HRM and GHRM both have substantial effects on employee outcomes and especially on employees' behavior and GHRM affects the employees' green behavior in both ways i.e., directly and indirectly (Dumont *et al.*, 2017; Yong *et al.*, 2019). Aboramadan (2022) reported that employees in higher education can play a vital role in making people aware of the GHRM. If GHRM is practiced in instates of higher education it may have positive outcomes for employees' green behavior in the presence of green work engagement.

Li *et al.* (2023) in their research found that GHRM is an influential factor for green in-role behaviors of employees only when spiritual leadership acts as a moderator. Therefore, GHRM is also helpful in increasing the in-role behaviors of employees under spiritual leadership or friendly supervision. In recent years organizations have now focused on using green aspects in various aspects because now the only way to increase the sustainability of an organization is to be environment friendly and by taking care of all the concerned stakeholders (Ribeiro *et al.*, 2022). Tuan (2022) revealed that green human resource management is very essential to enhance employees' green behavior and responsible leadership can help the organizations to do so. Furthermore, it has been found that responsible leadership can play an interactive role in bringing a sense of responsibility among the employees of the hospitality industry for the environment.

Hence, by concluding the above literature GHRM practices are of utmost requirement in all the industries and organizations to increase the employees' green behavior regardless of the nature of any organization. So, in the current study it has been hypothesized that:

H5: Green HRM has a positive effect on employee's green behavior.

2.6 Mediating role of green ambidexterity and employee's green behavior

Green HRM practices aid organizations in being productive and enable them to step forward towards the preservation of the environment and encourage green behavior of their employees (Ansari *et al.*, 2021). GHRM practices are comprehensively trying to determine green obligations, objectives, aims, and planning the green practices concerning environment management. However, the environmental concern between the management will assist the adoption of green approaches such as green behavior of employees in the setting of an organization, and is an efficient approach for improvement of firm's performance (Dibrell *et al.*, 2008). Likewise, in many organizations, environmental concern between high-level management has become a part of the culture that broadens initiatives for green activities and opportunities for higher environmental performance.

Accordingly, this study asserts that when an organisation hires people with green psychology, provides them with environment-related training and development, and ensures that an organisation maintains a discipline, those people will eventually develop the green ambidexterity that leads to green behavior. Improved environmental behaviors can also result from efficient staff members who possess the knowledge and skills to investigate and take advantage of opportunities, as well as from the organization's established protocols and processes. Therefore, considering past studies the mediating hypotheses in current research are:

H6: Green behavior will significantly mediate the association between green ambidexterity and environmental performance.

H7: Green behavior will significantly mediate the association between green HRM and

environmental performance.

Because ambidexterity is a dynamic capability, modern organisations are adaptive systems that collaborate with their surroundings continuously, rearranging their structure to better suit their goals and resolve conflicts that arise from their activities (Nosella *et al.*, 2012). While green exploratory activities focus on novel knowledge, skills, and information to build new green products, green markets, and green processes or services, green exploitative activities apply current environmental abilities, knowledge, and processes to develop existing green processes, services, or products (Chen *et al.*, 2014). As a result, ambidexterity is a useful addition to the dynamic capabilities perspective since it clarifies the advantages and disadvantages of managerial choices involving promotion, chance discovery, and internal activity reconfiguration (Birkinshaw *et al.*, 2016).

It has been stated that the green behavior of employees is an aggregation of a wide range of employees' behaviors exhibiting their performance of adhering to the HRM green initiatives and environmental policies of the organization (Dumont *et al.*, 2017). There could be certain conditions where green ambidexterity follows a compliance approach of green exploration and green exploitation that expects employees to perform routine green tasks designed to keep quality systems of organization in mind and green HRM policies for power consumption, hazard control, printing, safely disposing and recycling of materials to save the environment and boosting environmental performance.

Past studies have not paid attention to this hot topic. Thus, our research takes the initiative to explore this novel concept of green ambidexterity and green behavior. It is proposed that green ambidexterity with green behavior may further predict environmental performance comprehensively. Therefore, considering past studies the hypothesis in current research is:

H8: Green ambidexterity will significantly mediate the relationship between GHRM and green behavior.

H9: Green ambidexterity and green behavior will sequentially mediate the association between GHRM and environmental performance.

2.7 Moderating role of responsible leadership

A responsible style of leadership concentrates on issues of responsibility, for instance, appropriate trust-building, sustainable development, moral decision-making and green action choices (Pless & Maak, 2012). Responsible leadership style is different from other styles of leadership in that responsible leaders reflect leadership as a stakeholder-leader association although previous forms of leadership consider leadership as a follower-leader dyadic equation. This research goes abroad from a relational point of view where responsible leadership is considered the art of developing and maintaining good relationships with all related stakeholders (Maak & Pless, 2006). Responsible leadership is a relational phenomenon, established through social collaboration with stakeholders while retaining them (Freeman & Auster, 2011).

The contemporary environment of business has triggered the requirement for responsible leaders as challenges of globalization encountering organizations call for more responsibility on leaders for equitable and better stakeholder management. However, responsible leadership is noticed as a style of leadership where a leader behaves as a stakeholder's weaver associations and responds to together practical leadership challenges and existing gaps in theory (Maak & Pless, 2006; Groves., 2011).

Scholars have noted that the style of leadership considerably impacts on outcomes of the organizations (Boal & Hooijberg, 2000). Additionally, they claimed that distinct styles of leadership impact on performance of the organizations (Carter & Greer, 2013). Theoretical objectivity in a responsible style of leadership indicates that a responsible leader has a positive impact on performance (Maak, 2007). However, our research suggests a responsible leadership style as a moderator. Therefore, this style of leadership has been given significant consideration in academic management discussions and has developed as a key theme in scholarships of contemporary management (Miska *et al.*, 2014). Thus, it has gotten much attention in recent years and has become a particular and crucial leadership

style.

Responsible leadership plays a critical role in shaping ethical, sustainable, and inclusive GHRM practices. By promoting ethical behavior, cultural sensitivity, sustainability, employee well-being, and the development of global competencies, leaders can create a positive organizational culture and drive long-term success in today's globalized business environment. To more effectively integrate responsible leadership into GHRM practices, organizations should embed ethical principles into HR policies and procedures, prioritize stakeholder engagement, and demonstrate a commitment to continuous improvement.

Further, current research to examine how GHRM effects on responsible leadership and how responsible leadership impact on green ambidexterity is also a point of interest. The presence of GHRM policies and practices and the presence of responsible leadership enable employees to utilize maximum activities related to green exploration and exploitation in their routine tasks. In such a case every activity of employees will be beneficial for the organizational and natural environment. The moderating role of responsible leadership between GHRM and green ambidexterity has also its own importance in covering the theoretical and contextual gaps in the literature. Therefore, it is hypothesized that:

H10: Responsible leadership will positively moderate the relationship between green HRM and green ambidexterity such that association will be strong for higher level of green ambidexterity as responsible leadership impacts increases.

2.8 Theoretical background

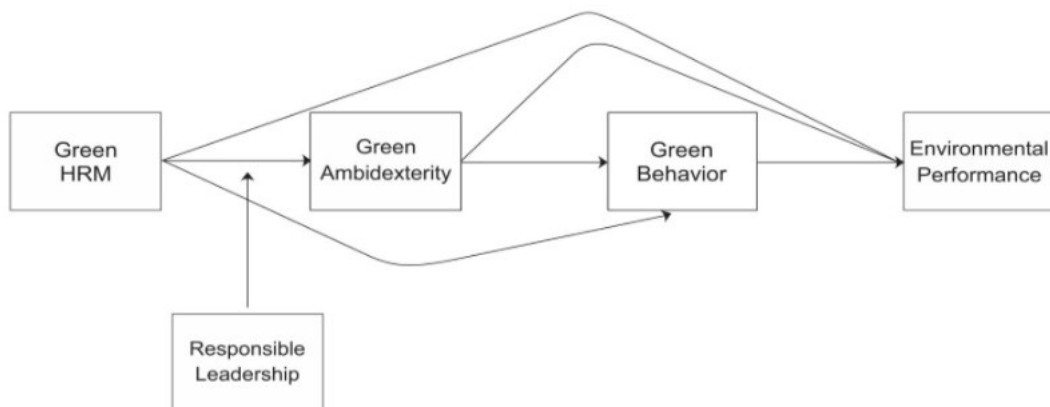


Figure 1 Research framework

3. Methodology

3.1 Measurement

All of the study's constructs were taken from earlier research in order to gather data for the current investigation. Construct measurements items are ranked from 1 (Not at all) to 5 (Frequently, if not always). The appendix contains a comprehensive list of all the scales used in the research. The measuring 6 items scale for Green Human Resource Management (GHRM) adopted in the study was originally developed and used by Dumont *et al.* (2017). To measure the Green Ambidexterity (GA) we have used two dimensions scale. The first dimension is related to green exploitation and the second dimension is green exploration measured by the items scale developed by Chen *et al.* (2014) Sheng and Chien (2016). This second-order construct consists of two first-order reflective constructs (green exploration and green exploitation). To measure Responsible leadership (RL), 6-item scale was originally developed by Chen and Chang (2013). Finally, we have a dependent variable in the current study i.e., Environmental Performance (EP). The dependent variable is measured with a 7-item scale

adopted from Kim *et al.* (2019).

3.2 Sample design and data collection

Researchers have collected data from hotels serving in different major cities of Punjab, Pakistan. Pakistan Hotels and Restaurants Act 1976 restricts the hotels serving in Pakistan for green practices. Lower employees and managers working in these hotels were requested to complete the self-report questionnaire focusing on Green HRM practices, Green Behavior, Responsible Leadership, and Environmental Performance. To ensure that employees had a good understanding of the organization's operations, the study included only those who had been with the organization for a minimum of six months. This decision was based on the recognition that it typically takes a couple of months for new employees to become acclimated to their workplace. Major cities were selected as the Punjab Food Authority (PFA) continuously check the quality of food, ingredients, and arrangements for cleanliness and fine such hotels that do not comply with the standards.

Data was collected with the help of a self-administered questionnaire employing a convenience sampling technique. Researchers have designed a team for the purpose of data collection. Before questionnaire distribution, surveyors have conveyed the purpose of data collection to respondents with the prior consent of the respondents. In this study, a dyadic unit of analysis was employed, with measurements of green human resource management (GHRM) and the environmental performance (EP) of the hotels conducted at the organizational level. Data about responsible leadership, green behaviors of employees, and green ambidexterity was collected from individual employees by gathering information from the corresponding hotels' lower-level employees. A total of 650 questionnaires were given out to hotel staff members who held managerial and lower-level positions. Collected responses were carefully assessed and total 570 complete responses were picked for further data analysis, while 80 questionnaires were discarded due to incomplete responses with a valid response rate 87%, which is greater than the typical response rate in research on hospitality conducted through surveys (Ali *et al.*, 2021). The majority of the sample workers were male with minimum qualification intermediate.

4. Analysis

In this study, we utilized Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze both the measurement and structural models. The objective was to predict and elucidate the proposed relationships within the framework based on the underlying theory. We employed Smart PLS 3, a well-regarded and advanced statistical method in the social sciences (Ali *et al.*, 2018), to analyze our collected dataset.

4.1 Data normality

One of the advantages of PLS-SEM is its flexibility regarding data normality. Unlike traditional parametric methods, PLS-SEM does not necessitate the assumption of data normality, as pointed out by Hair *et al.* (2017). Typically, data normality is vital for inferential statistics (Hair *et al.*, 2007). To assess the normality of our dataset, we conducted checks using Skewness, Kurtosis, and histogram plots. The results indicated that our data exhibited a normal distribution falling within the range of -2 to +2, as per Munro (2005). Therefore, we proceeded with subsequent analysis using PLS-SEM.

4.2 Common method bias

Common Method Bias (CMB) can be a concern when data is collected from a single source. To mitigate this potential issue, this study adopted a dyadic approach, gathering data from two distinct sources: managerial position workers and lower-level staff. Following the recommendations of Kock (2015), the study conducted a full collinearity test and examined the Variance Inflation Factors (VIFs). The VIFs are indicators used to identify the presence of collinearity, which can be associated with CMB. The study's conclusions supported Kock's (2015) suggestion that all constructs' VIF values were less than 3.3. This suggests that the research was not significantly contaminated by common

method bias. Thus, it can be said that there was no issue with Common Method Variance (CMV) in this investigation.

4.3 Descriptive statistics

Descriptive statistics and correlation analyses were performed using SPSS v-20. The outcome of Pearson Correlation showed moderate and strong correlation between the constructs (Turney, 2022) presented in Table 1.

Table 1 Descriptive statistics and correlation analysis

Construct	Mean	Std. Deviation	EP	GHRM	GAETN	GAERN	GB	RL
EP	3.966	0.678	1					
GHRM	4.002	0.679	0.667**	1				
GAETN	3.964	0.717	0.631**	0.579**	1			
GAERN	4.011	0.686	0.553**	0.495**	0.633**	1		
GB	3.928	0.701	0.656**	0.663**	0.669**	0.568**	1	
RL	3.949	0.761	0.632**	0.723**	0.573**	0.541**	0.637**	1

EP: environmental performance; GHRM: green human resource management; GAETN: green ambidexterity explorative; GAERN: green ambidexterity exploitative; GB: green behavior; RL: responsible leadership.

4.4 Measurement model assessment

The measurement model of the research shows that the convergent validity of the model is within acceptable criteria. Researchers have evaluated the convergent validity of the model using loadings, AVE, and CR. Figure 2 and the results presented in Table 2 show that the factor loadings meet the minimum criteria of 0.60. CR value also exceeds the recommended value of 0.70 and all AVE values exceed 0.50 (Hair *et al.*, 2016).

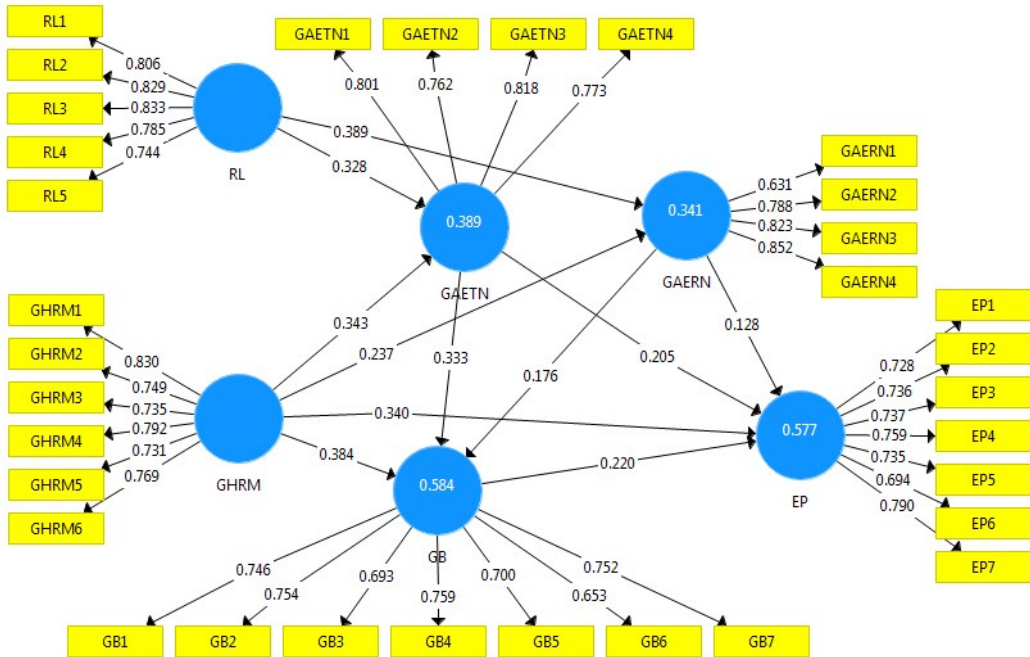


Figure 2 Measurement model

Table 2 Reliability and validity of constructs

Lower order construct	Higher order construct	Items	loadings	VIF	α	rho_A	CR	AVE
EP		EP1	0.728	1.698	0.863	0.865	0.895	0.548
		EP2	0.736	1.838				
		EP3	0.737	1.747				
		EP4	0.759	1.674				
		EP5	0.735	1.707				
		EP6	0.694	1.563				
		EP7	0.790	2.176				
GAETN		GAETN1	0.801	1.621	0.797	0.799	0.868	0.622
		GAETN2	0.762	1.567				
		GAETN3	0.818	1.756				
		GAETN4	0.773	1.508				
GAERN		GAERN1	0.631	1.356	0.784	0.818	0.858	0.605
		GAERN2	0.788	1.600				
		GAERN3	0.823	1.571				
		GAERN4	0.852	2.013				
GB		GB1	0.746	1.678	0.848	0.851	0.885	0.523
		GB2	0.754	1.744				
		GB3	0.693	1.490				
		GB4	0.759	1.726				
		GB5	0.700	1.499				
		GB6	0.653	1.433				
		GB7	0.752	1.750				
GHRM		GHRM1	0.830	2.106	0.861	0.864	0.896	0.590
		GHRM2	0.749	1.671				
		GHRM3	0.735	1.662				
		GHRM4	0.792	1.904				
		GHRM5	0.731	1.600				
		GHRM6	0.769	1.785				
RL		RL1	0.806	1.892	0.859	0.864	0.899	0.640
		RL2	0.829	2.012				
		RL3	0.833	2.054				
		RL4	0.785	1.771				
		RL5	0.744	1.629				
GA		GAETN	0.919	1.745	0.791	0.797	0.905	0.827
		GAERN	0.900	1.747				

Notes: VIF, variance inflation facto; α , Cronbach alpha; CR, composite Reliability; AVE, average variance extracted.

4.4.1 Discriminant validity

To assess the discriminant validity HTMT ratio was proposed by Henseler *et al.* (2016) as an advance criterion to find the discriminant validity of the constructs of the study. Table 3 presents all the values of the HTMT ratio of the constructs. Discriminant validity of the constructs has been established through the collected data set as all the values meet the minimum criteria of 0.90 recommended by Malhotra and Segars (2001).

Table 3 Heterotrait-Monotrait ratio (HTMT)

Construct	EP	GAERN	GAETN	GB	GHRM	RL
EP						
GAERN	0.669					
GAETN	0.760	0.799				
GB	0.766	0.695	0.813			
GHRM	0.774	0.600	0.698	0.779		
RL	0.733	0.657	0.692	0.746	0.842	

Structural Equations Modeling (SEM) is a strong measuring technique, used to examine relationships in this study. For this, smartPLS (v 3.29) is used to examine the measurement model and structural model. First of all, the results of the measurement model (Table 2) showed that the factor loading of all constructs is in a good range; the lowest loading of EP is 0.694 and the highest loading is 0.79. The loadings of GAETN are 0.762, 0.773, 0.801, and 0.818; loadings for GAETN range from 0.631 to 0.852. The minimum loading for GB is 0.653 and the maximum is 0.759. The range of GHRM loading is from 0.731 to 0.830. RL ranges from 0.744 to 0.833. All the above-mentioned variables are lower-order constructs. GA is a higher-order construct with loadings of 0.900 and 0.919. All the constructs have factor loading above 0.40 which shows that no need to remove any item (Vinzi *et al.*, 2010). The variance inflation factor (VIF) values for all constructs showed that there is no issue of multicollinearity, less than 5 is preferred (Gareth *et al.*, 2013). The composite reliability (CR) and Cronbach's alpha values are above 0.7, showing suitable constructs' reliability. The rho-A values are between Cronbach's alpha and composite reliability values (Hair *et al.*, 2014). According to Henseler *et al.* (2015), the Heterotrait-Monotrait (HTMT) correlation ratio with values below 0.85 was used to evaluate the discriminant validity which is confirmed. R2 values represent the change in dependent variables due to all independent variables. The R2 values for GAETN, GAERN, GB, and EP are 0.389, 0.341, 0.584, and 0.577, respectively.

A most useful feature of PLS-SEM is its ability to measure hierarchical-component models (HCM), also known as higher-order or second-order constructs (Becker *et al.*, 2012). Sarstedt *et al.* (2019) proposed evaluating the measurement model using a disjoint two-stage approach in PLS-SEM. The measurement model of PLS-SEM determines the construct's validity and reliability (Ramayah *et al.*, 2011). Furthermore, GAETN and GAERN (lower-order constructs) represent dimensions of GA that combine to generate reflective higher-order constructs. Rather of a repeated indications technique, the study used a discontinuous two-stage strategy.

4.5 Structural model assessment

After the complete evaluation of the measurement model, researchers assessed the structural model of the study. Through t values, path coefficients, and standard errors the significance of the structural model of the study was assessed. The hypotheses concerning the direct and indirect relationships of the study were analyzed through the Bootstrap method with SMART-PLS.

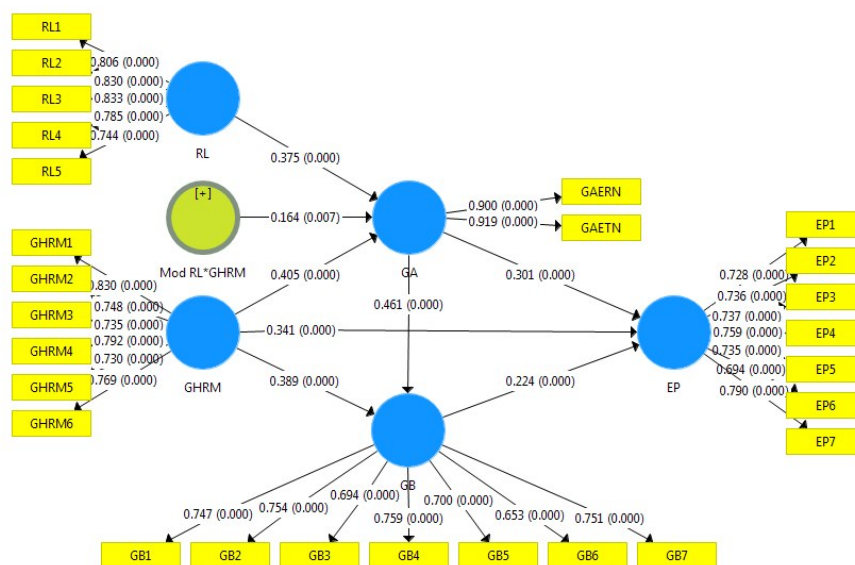


Figure 3 Structural model

This research focused on examining the connections among GHRM, RL, GA, GB, and EP. The study found that GHRM positively impacts EP ($\beta=0.592$, $t=12.306$, $p=0.000$). Hypothesis H2 evaluates whether GHRM positively and significantly impacts GA. The result revealed that GHRM significantly and positively impacts GA ($\beta=0.405$, $t=5.266$, $p=0.000$). The result revealed that GA positively and significantly impacts GB ($\beta=0.461$, $t=6.987$, $p=0.000$). The study also found that GA significantly impacts EP ($\beta=0.404$, $t=6.900$, $p=0.000$). In Addition, the study revealed that GB impacts EP significantly ($\beta=0.2241$, $t=3.851$, $p=0.000$).

Table 4 Path coefficients of total effects

Constructs	β	SD	T Statistics	P Values	Confidence interval	
					2.50%	97.50%
GHRM -> EP	0.592	0.048	12.306	0.000	0.489	0.676
GHRM -> GA	0.405	0.077	5.266	0.000	0.253	0.556
GA -> GB	0.461	0.066	6.987	0.000	0.329	0.588
GA -> EP	0.404	0.058	6.900	0.000	0.285	0.517
GB -> EP	0.224	0.058	3.851	0.000	0.113	0.339

After completing the direct relationships analysis, the indirect relations (mediation and moderation) were performed by following Hays (2009). To check the indirect effects (5000 subsample) Bootstrapping was performed (refer to Table 5).

Moreover, mediation analyses were performed and the study shows that GB partially mediates between the relationship of GA and EP ($\beta=0.103$; $t=3.119$; $LL=0.046$; $UL=0.175$). The results revealed that GB mediates between the relationship of GHRM and EP ($\beta=0.087$; $t=3.256$; $LL=0.042$; $UL=0.147$). In addition, GA mediates between GHRM and GB ($\beta=0.187$; $t=3.896$; $LL=0.112$; $UL=0.300$). Moreover, GA also mediates between GHRM and EP ($\beta=0.122$; $t=3.178$; $LL=0.064$; $UL=0.213$).

Table 5 Mediation analysis

Constructs	β	SD	T Statistics	P Values	Confidence interval	
					2.50%	97.50%
GA -> GB -> EP	0.103	0.033	3.119	0.002	0.046	0.175
GHRM -> GB -> EP	0.087	0.027	3.256	0.001	0.042	0.147
GHRM -> GA -> GB	0.187	0.048	3.896	0.000	0.112	0.300
GHRM -> GA -> EP	0.122	0.038	3.178	0.001	0.064	0.213

Further, a moderation analysis was also performed to check RL moderates between GHRM and GA. The result found that RL positively moderates the positive relationship between GHRM and GA. The value of R² was 0.368 with the exclusion of RL, but with the inclusion of the moderating variable (RL), the value of R² changes to 0.478, which means with the moderating variable, a positive change of 11% occurs in the endogenous construct. Further, slope analysis is performed to understand the moderating effect in a better way (see Figure 4). It showed that at higher RL, the impact of GHRM on GA is much stronger than low level of RL. In conclusion, higher RL makes the relationship of GHRM and GA stronger.

Table 6 Moderation analysis

Constructs	β	SD	T Statistics	P Values	Confidence interval	
					2.50%	97.50%
Mod RL*GHRM -> GA	0.164	0.061	2.703	0.007	0.038	0.275

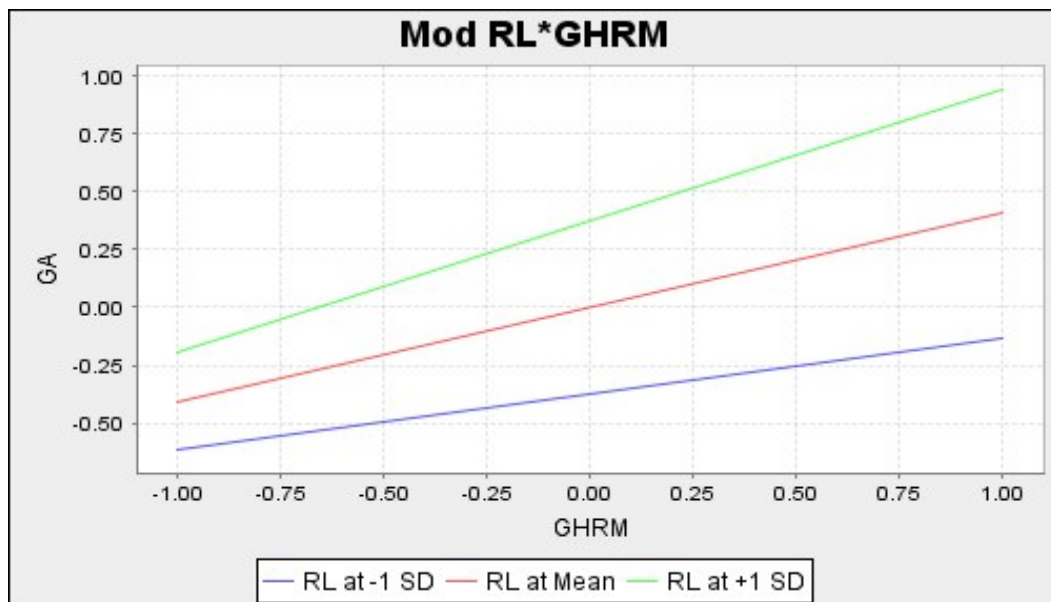


Figure 4 Slope analysis

Some researchers advocate for the calculation of the f^2 value. The f^2 explained how much endogenous construct is impacted by exogenous construct (Götz *et al.*, 2010). f^2 values for small, medium, and large are 0.02, 0.15, and 0.35, respectively (Cohen, 1998). The blindfold procedure in smartPLS yields the Q^2 value (Geisser, 1974; Stone, 1974), which measures a model's predictive relevance. Q^2 should ideally be greater than zero (Chin, 1998). The results explained the predictive relevance of the study model. The predictive relevance and effect size is given (see Table 7).

Table 7 Effect size (f^2) of the model and predictive relevance (Q^2)

Construct	EP	GAETN	GAERN	GB	GHRM	RL	Q^2
EP							0.308
GAETN	0.043			0.131			0.517
GAERN	0.020			0.040			0.482
GB	0.048						0.298
GHRM	0.140	0.091	0.040	0.223			
RL		0.083	0.108				

5. Conclusion and discussion

The current study explores how GHRM practices impact environmental performance. The research also focuses on the mediation role of green ambidexterity and green behavior. The proposed relationships are tested using data from hotels in Pakistan. Pakistan hotel industry is facing numerous issues and hopefully this research will contribute to enhance the productivity of the hotel industry. Managers can implement GHRM practices to highlight their efforts among all the stakeholders. The collected data set was analyzed with PLS-SEM. The empirical results show that GHRM practices of hotels promote green ambidexterity and green behavior in employees and these green behaviors of employees contribute towards the environmental performance of the hotels. The findings are consistent with the previous research that organizations' environmental practices influence organizational commitment (Paillé *et al.*, 2013), on employee behaviors and environmental practices (Qasim *et al.*, 2022). Lopez-Gamero *et al.* (2009) found that environmental management practices positively affect environmental performance. Daily *et al.* (2009) suggest that ecofriendly behaviors or green behavior must be studied. So, the present study has worked on integrating organizational and individual

behaviors to find their impact on environmental performance. Previously few studies have found the mediating role of green ambidexterity and green behavior in the relationship between GHRM and EP.

The study has found green ambidexterity and green behavior as significant mediators between GHRM and EP. Results support the Hypothesis showing the mediating relationship.

5.1 Theoretical and practical implications

The theory is strengthened by this study. It started by offering evidence to support the Green HRM's influence on the hotel's EP. Gaining an understanding of green human resource management practises and how they impact employees' green behaviours is crucial for improving environmental performance. There hasn't been much prior research on the connection between employee green behaviour and an organization's environmental performance. It is noteworthy that the study attempted to explain how GHRM affects environmental performance by taking into account green behaviours and the motivated mental state (Green ambidexterity). The current study has contributed to the body of knowledge by addressing employee green behaviours as a result of GHRM, although the majority of previous research has focused on them as an outcome variable of organisational commitment. Nonetheless, by addressing them as a result of GHRM practises through the mediation of green ambidexterity and green behaviour, the current study has contributed to the body of knowledge. According to social capital theory, the research has expanded our understanding of the relationship between environmental performance and GHRM. The study offered empirical proof of the mechanism by which a person's surroundings and personality traits influence their propensity to engage in particular behaviors. This study also adds to the understanding of how GHRM practices, through green ambidexterity and green behavior, improve environmental performance. When a hotel adopts GHRM procedures, it shows its workforce that it supports such environmentally friendly behavior, which ultimately inspires them to engage in green behavior. Further study on GHRM, particularly in the hotel industry, has also been recommended by earlier studies (Bohdanowicz *et al.*, 2011; Yoon *et al.*, 2016; Kim *et al.*, 2019). It was noted that there were previously relatively limited studies available that examined the existence of GHRM, its outcomes, and the contrast between hotels that are green and those that are not. Given that hotels' adopted policies encourage staff to care about the environment and operate responsibly, the study has practical value in that it demonstrates the importance of hotels paying close attention to environmental issues. Employees are said to be more involved in environmental management practises if they care about environmental issues. By setting up effective training and demonstrations, these environmental problems can be brought to the attention of employees. Such issues can be communicated via newsletters, etc.

The study has shown that the relationship between the GHRM and employee green behavior is mediated by green ambidexterity. It is advised that hotel management give employees the possibilities they need to feel comfortable taking green initiatives because people's beliefs determine their behavior. By giving their staff green incentives and tying their pay to how much they engage in green behaviors, hotel managers can instil confidence in their staff members. The hotel's management should also place a strong emphasis on green HRM practices, such as green hiring practices, training programs, and incentive programmers, to encourage workers to act sustainably and eventually improve EP. Similarly, this, increasing the understanding and expertise of those working in the hospitality industry can boost employee confidence in their ability to meet environmental goals. Employees should receive training on environmental behaviors in order to increase their motivation for doing so because doing so positively affects their attitudes (Torabi *et al.*, 2021). Furthermore, hotels must provide their employees with training opportunities that enhance their environmental awareness, as this will boost their self-efficacy and produce better EP.

5.2 Limitations and future directions

There are several restrictions that could be the focus of further research. This study focused on a narrow geographic area that might be broadened in a later investigation. Expanding the geographical

scope can enhance understanding of the basic research framework. Data were collected using a purposive sampling method, so future research may take into account probability sampling to have a deeper understanding of the subject. Probability sampling will make it possible to gather data with greater accuracy while reducing respondents' and hotels' selection bias. Cluster sampling may be used in future studies to compare provincial hoteling practices. The use of cluster sampling will make it easier for future research to take into account Pakistan's large hotel sector. The internal elements that can increase ambidexterity and green behavior were not examined in this study. Therefore, future studies can add the individual factors that can increase the green ambidexterity and green behavior of employees. Future research can adopt new theories such as conservation of resource theory (COR) and social cognitive theory (SCT) to study the suggested impacts of the study.

The results may vary across other industries or countries due to cultural differences, acceptance of to GHRM practices and Environmental Performance. Thus, the studies may be conducted in other areas and industries to confirm the usefulness of responsible leadership style and the role of green ambidexterity and green behavior in improving environmental performance. To enhance the generalizability of the results a detailed investigation of GHRM practices in other regions and industries are required in other developing countries. Further studies can also consider different GHRM practices as individual variables such as green performance management appraisal, green training and development, green rewards and compensations on environmental performance.

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Competing interests

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