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## Citation

SHOAIB, Muhammad, Ayesha NAWAL, Roman ZÁMEČNÍK, Renata KORSAKIENĖ, and Asad Ur REHMAN. Go green! Measuring the factors that influence sustainable performance. *Journal of Cleaner Production* [online]. vol. 366, Elsevier, 2022, [cit. 2023-03-22]. ISSN 0959-6526. Available at https://www.sciencedirect.com/science/article/pii/S0959652622025513

## DOI

https://doi.org/10.1016/j.jclepro.2022.132959

## Permanent link

https://publikace.k.utb.cz/handle/10563/1011165

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# Go green! Measuring the factors that influence sustainable performance

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**ABSTRACT**

This study examines the GHRM practices and the transformational leadership specific to environmental sustainability of Pakistan's dairy industry. It also investigates the mediating role of pro-environmental behaviour in the relationship of GHRM practices, The environmental-specific transformational leadership, and sustainable behavior. Additionally, the study examines the moderating role of the pro-environmental attitude between GHRM practices and The environmental-specific transformational leadership. The target population consists of employees working in dairy organizations of Pakistan. A simple random sampling technique was used for data collection. A survey questionnaire method was used to collect data; after data screening a total of 430 responses were subjected to SEM for analysis. The findings indicated that the GHRM practices play a significant role in improving employee environmental and sustainable behavior. The environmental-specific transformational leadership positively affects the pro-environmental behaviour of employees, but its impact on sustainable performance is insignificant. In addition, GHRM practices and environmental-specific transformational leadership have been shown to indirectly contribute to sustainable performance through environmental behavior. The proenvironmental attitude moderates the effect of GHRM practices and environmental-specific transformational leadership on pro-environmental behavior, and pro-environmental behavior leads to sustainable performance. This study is one of the rare attempts to examine the integrated impact of GHRM practices and environmental-specific transformational leadership on pro-environmental behavior and sustainable performance in the domain of environmental management. It explicitly offers insights into the literature by developing a mechanism to improve sustainable performance through GHRM practices and environmental-specific transformational leadership in the dairy industry. The findings of this study have postulated that a package of GHRM practices and environmental-specific transformational leadership is needed to build pro-environmental behavior and foster sustainable performance. It can help managers in their effort to build environmental friendly behavior under the lens of a pro-environmental attitude that facilitates sustainable performance. Aligned to cope with the increasing environmental concerns of the dairy

industry, this study proposes that managers would support specific transformational environmental leadership along with green discipline by raising pro-environmental behaviour under the lens of a pro-environmental attitude for the implication of environmental policies to achieve sustainable performance of dairy firms.

*Keywords*: GHRM practices, Environmental-specific transformational leadership, Pro-environmental behaviour Pro-environmental attitude, Sustainable performance

## 1. Introduction

Sustainability offers both challenges and opportunities; therefore, food and dairy organizations are obligated to redesign strategies for sustainable performance (**Origin Green, 2020**). Organizations implement Green Human Resource Management (GHRM) practices to promote environmental sustainability, energy conservation, emission reduction, system reengineering, waste management, and recycling **(Molina-Azorin et al., 2021**) that uplift their economic and social performance as well (**Mousa and Othman, 2019**). GHRM is vital to achieving the goal of sustainable performance (**Bombiak and Marciniuk-Kluska, 2018**) as human resource is a lever to accelerate green and sustainability-oriented initiatives, while sustainable performance is the focal point of GHRM practices (**Jabbour and Renwick, 2020)**. A positive environmental attitude towards human resources and an enduring sense of responsibility for the environmental implications of their activities contribute to attaining sustainable performance (**Bombiak and Marciniuk-Kluska, 2018**). Therefore, the researchers focused on GHRM as a contemporary construct due to its potential to develop employee environmental-friendly behaviours (**Joyce and Vijai, 2020**). Substantial contributions of human resources in achieving sustainable performance have been well recognized, but former researchers mostly emphasized different HRM practices to implement a green approach for sustainability (**Labella-Fernandez & Martnez-del Ro, 2019**).

Previously, numerous researchers, i.e. (**Shoaib et al., 2021; Sharma and Gupta, 2020; Mousa and Othman, 2019; Shaban, 2019; Yong et al., 2018**), focused on green intellectual capital, green hiring, green training, green performance management, green rewards, and investigated their impact on different aspects of performance. However, the prospect of work-life balance as an element of green HRM has scarcely been addressed. **Muster and Schrader (2011)** proposed the notion of "green work-life balance" and convincingly argued that it may be investigated under the GHRM framework. But there is barely any evidence in the literature that green work-life balance is addressed as one of the indicators of GHRM practices (**Ari et al., 2020**). Considering this gap in the literature, this study considered green work-life balance as an essential dimension of GHRM practices. Seven GHRM practices are considered, namely: green recruitment & selection (GR&S), green training & development (GT&D), green participation & empowerment (GI&E), green performance-based rewards (GPR), green career growth opportunities (GCGO), green teamwork (GT) and green work-life balance (GWLB) to examine their impact on sustainable performance.

Furthermore, the role of leaders in stimulating pro-environmental behaviors (PEBs) among employees is evident from prior literature (**Jennifer Robertson and Carleton, 2017**). Transformational leadership with a specific emphasis on environmental sustainability has received more attention to encourage pro-environmental behaviour (**Li et al., 2020**). Furthermore, environmental attitude and values contribute to the implementation of green practices for sustainable development (**Graves and Sarkis, 2018**), yet employees' pro-environmental attitude of employees (PEA) is considered to influence environmental behavior and sustainable performance of employees. However, developing countries do not adequately focus on the proper implementation of green and environmental-specific practices

for sustainable performance **(Gupta, 2018).** Numerous studies have claimed that GHRM deserves more attention in the context of developing countries **(Nisar et al., 2021)**. Conferring this gap in the literature, the present study intends to examine the influence of seven GHRM practices; green recruitment & selection (GR&S), green training & development (GT&D), green involvement & empowerment (GI&E), green performance-based rewards (GPR), green career growth opportunities (GCGO), green teamwork (GT) and green work-life balance (GWLB), and environmental-specific transformational leadership (ETL) on the sustainable performance of dairy industry considering PEB as mediator and PEA as moderator. The study proposed that PEB mediates the impact of GHRM practices and environmental-specific transformational leadership on sustainable performance, while PEA moderates the effect of GHRM practices and environmental-specific transformational leadership on PEB.

The dairy industry is a significant contributor to the Pakistani economy, with a 11.1% contribution to GDP and 58.9% to the agricultural sector, which provides jobs to the 42.3% population (**Burki and Khan, 2019)**. The gross value added to the dairy industry has increased from USD 7.61 billion in 2017 to USD 7.90 billion in 2018, indicating a 3.8% growth rate (**SBP, 2019)**. Pakistan is accredited as the third largest milk producing country, with a capacity to produce approximately 60 billion liter milk annually **(Pakistan Economic Survey, 2020)**. The growth of the population and the changes in dietary preferences rapidly increased the demand and consumption of dairy products. Consequently, investors are attracted to large-scale milk processing and modern corporate dairy farming to produce higher than natural production **(Pakistan Economic Survey, 2019**).

Along with substantial growth, the dairy industry has an adverse impact on natural resources, including water, soil, climate, air, land, and biodiversity (**Tahir et al., 2019)**. Solid waste and pollutants dumped into soil crust, rivers, and lakes emit organic matter, pathogens, and gas that directly harm the natural environment. Although carbon dioxide, nitrous oxide and methane gases emitted from animal waste indirectly affect climate change (**Khan et al., 2020**). The meat and dairy industries produced up to 37% of global emissions. From 2015 to 2017, combined dairy industry were aroused up to 11% **(Sharma, 2020**). In Pakistan, preurban production and commercialized large-scale processing structures are the main sources of environmental degradation **(Burki and Khan, 2019)**. Inadequate waste management of dairy processing facilities resulted in unchecked greenhouse gas emissions, soil, and water contamination. Besides approximately 35% of preurbanized production, the grazing needs to be reached by 38%, which is another critical threat to the natural ecological resources **(Umm-e-Zia and Rome, 2011)**.

Mounting pressure from government/nongovernment bodies and community stakeholders compelled organizations to act proenvironmentally by imbibing ethical and socially responsible practices for sustainable performance **(Adebayo et al., 2020)**. In response to the heightened pressure, organizations are shifting from a traditional profit-oriented approach to a balanced approach that simultaneously heeds the economic, social and environmental goals **(Saeed et al., 2018)**. However, due to lack of awareness, dairy-related environmental degradation has received little attention in Pakistan. Furthermore, consideration of sustainable performance in Pakistan's dairy industry is remarkably limited **(Tahir et al., 2019)**. Thus, there is a pressing need to consider the environmental footprints of the dairy industry and its impact on sustainability **(Liebe et al., 2020)**.

The present study offers several theoretical contributions. First, it attempts to cover the gap of inadequate GHRM studies in developing countries (**Zaid et al., 2018**), specifically in the emerging Asian countries **(Geng and Aktas, 2017)**. It adds insight to the literature by offering empirical evidence on the implementation of GHRM practices in the dairy industry of Pakistan. GHRM orientation significantly influence sustainable performance **(Mousa and Othman, 2019**), but GHRM in the dairy

industry of Pakistan is rarely addressed (**Shoaib et al., 2021**). To our knowledge, barely any study examined the implication of GHRM practices in achieving sustainable performance in the dairy industry. Second, along with GHRM practices, this study investigates the role of environmental-specific transformational leadership (ETL) style on the pro-environmental behavior and sustainable performance. Li et al. (2020) studied the effect of environmental-specific transformational leadership on PEB. They stated that the impact of environmental-specific transformational leadership on economic, environmental, and financial performance should be examined, as performance is the ultimate objective to encourage employees' pro-environmental behaviour (**Li et al., 2020)**.

Third, this study broadens the understanding of the impact of GHRM and ETL on sustainable performance by adding mediation and moderator constructs. Prior studies focused mainly on investigating the direct effect of GHRM practices on environmental performance without referring to the mechanism of its impact (**Longoni and Guerci, 2018). Alkerdawy (2018)** suggested that the effect of GHRM and ETL on sustainable performance should be investigated through some intervening constructs. Therefore, PEB is proposed to mediate the effect of GHRM and ETL on sustainable performance. Although PEA is proposed to moderate the effect of GHRM practices and ETL on PEB. Finally, the present study is among the few studies to examine the simultaneous effect of GHRM practices and ETL on sustainable performance with the mediating role of PEB and the moderating role of PEA. One of the overarching objectives of this study is to examine the relationship between PEA (within-person), GHRM practices, and ETL (between--person) constructs in predicting PEBs for sustainable performance at work. Using this multilevel approach, the present study expands contemporary theorizing in HRM, organizational behaviour, and psychology. The conceptual framework of this study offers much better intuitions that, along with GHRM practices, environmental-specific transformational leadership encourages employee pro-environmental behavior that ultimately leads to sustainable performance. Lastly, the development of an integrated conceptual model offering valid mechanisms and insights to achieve sustainable performance in the dairy industry is a valuable contribution of this study.

## 2. Theoretical framework and development of hypotheses

### *2.1. Social cognitive theory (SCT)*

Social cognitive theory (SCT), from the seminal work of **Bandura (1986)**, provides an underpinning foundation to this study. SCT entailed three essential elements: personal factors, environmental factors, and behaviour. The attitudes, knowledge, learnings, experiences, and surrounding environment of individuals shape their behaviours. Employees learn behaviours and cognitive strategies in the workplace setting by observing colleagues, co-workers, and leaders **(Green and Piel, 2009)**. The learned behaviours, concentrating on specific goals, eventually become self-regulated behaviors. Due to environmental issues, the most crucial component of corporate operations is sustainable development. To achieve sustainability, organizations make greater use of human resources. Green HRM is a critical component of an organization's sustainability compliance since it affects the organization's connection with the external environment, which has an impact on organizational yield, environment, and society **(Saifulina et al., 2020)**. Green HRM has been highlighted as a key factor influencing green behaviour and practices among employees **(Dumont et al., 2017)**. The theoretical foundation was built on the idea of caring about how people are managed in green human resources management and the impact of this strategy on performance outcomes, supports the findings. This theory hypothesized that organizations equipped its employees with green-based unique skills, increases their enthusiasm, and gives them more opportunity to practice green behaviours,

consequently the organization will be able to achieve better sustainable performance **(Akanmu et al., 2020)**. Organizations that go beyond what is legal in terms of environmental standards may be more motivated to invest in green practices besides R&D, which not only leads to the development of innovative goods and services that improve their ability to grow and survive but also substantially enhance social and ecological impact. This results in high market performance, increased client happiness, a strong brand, and favorable attitudes toward it from stakeholders, allowing it to easily achieve sustainable performance and survival for as long as possible. Furthermore, an organization' s dedication to green HRM may have a beneficial impact on its potential to achieve long-term success in social responsibility as a result of its commitment to carrying out its responsibilities to its workforce **(Agudelo et al., 2019; Sameer, 2021)**.

Managing human resources with a green agenda is critical for developing employee engagement in environmental sustainability objectives inside the firm **(Ababneh, 2021)** and facilitate better alignment of corporate sustainability objectives with external partners **(Almemari et al., 2021)**. GHRM practices such as green recruitment & selection, green training & development, green involvement & empowerment, green performance assessment, and green performance-based rewards encourage employee pro-environmental behaviours **(Nisar et al., 2021)**, and found persuasive for sustainable performance **(Saifulina et al., 2020; Malik et al., 2021).**

Employees' environmental behavior are nonrewarding discretionary activities within an organization that are geared toward environmental sustainability. Indeed, employees are the ones who put the organization's sustainability policies into action **(Dumont et al., 2017a,b).** As employee behaviors typically determine the effectiveness of environmental efforts of organizations, more attention has been paid to examine how leadership styles influence subordinate behaviors **(Han et al., 2019; Mi et al., 2019)**. Subordinates are less likely to proactively implement unrewarded and unrequested environmental behaviors on the job unless they have a stronger moral identity **(Xiao et al., 2021)**. Meanwhile, leaders' environmental-specific behaviors positively influence employees' environmental conduct **(Li et al., 2020)**. Employees' norms, attitudes, and concerns regarding sustainability direct their behaviours towards sustainable performance. Environmental attitudes and values influence pro-environmental behaviors, while environmental behavior and perceived benefits to oneself or others are an essential driver of sustainable performance **(Font and Jones, 2016).**

The ultimate theoretical perspective of SCT is based on the association between personal goals, cognitions, and affecting contextual elements of employees. Conferring the central tenet of the social cognitive perspective, GHRM practices substantially regulate desired behaviours among employees. Key behavioural factors of SCT, that is, self-efficacy, behavioural capability, expectations, observational learning, selfcontrol, and reinforcements, underpinned by GHRM practices to regulate fruitful behaviours for sustainable performance. Green training & development elaborate employees' understanding and skills to perform environmentally friendly behaviors, while green involvement & empowerment instill self-efficacy and belief in controlling situations. Green performance-based rewards and assessments reinforce the environmental behaviours of employees leading to sustainable performance. Likewise, green career growth opportunities, green teamwork, and green work-life balance fortified sustainable performance by instilling environmentally conscious behaviors among employees. Additionally, inspirational motivation of leaders, intellectual stimulation, and individualized consideration positively influence employee proenvironmental behaviors.

*2.2. Theoretical background*

Although sustainable performance at both micro- and macroeconomic levels is gaining substantial attention, its association with green human resource management is still a topic of interest **(Yong et al., 2019)**. Green management and its drivers have been recognized as essential constructs by groundbreaking organizations around the world. Commitment to sustainable practices forms the bases of resource allocation and ensures the conditions to promote prosperity for now and in the long run. It is now widely accepted that by adopting support for green practices, employees in any organization can work toward sustainable practices **(Suleman, 2021)**. In recent years, there has been a surge in interest in Green HRM as a concept, indicating HRM' s enormous potential in popularizing the concept of sustainable balance and pointing to a variety of practical eco-practices **(Yu et al., 2020: Rubel et al., 2021)**. Employees participating in a variety of favorable activities are critical to business greening **(Shen et al., 2018)**. Green Human resource management is an indisputably effective tool for promoting green behaviors, especially when sustainable performance is the main focus of organizations **(Ercantan and Eyupoglu, 2022)**. Green behavior of employees refers to a certain type of pro-environmental behavior in work environments that employees engage in **(Tian and Robertson, 2019)**. Environmental-specific leaders serve as role models to reinforce pro-environmental attitudes and behaviors among employees. In essence, environmental leaders can influence employees' opinions of green policies and practices by developing and promoting ethical standards to help achieve sustainable performance **(Peng and Lee, 2019)**. The effect of environmental-specific transformational leadership on employee pro-environmental behavior is well researched, it would be remarkable to address the role of environmental-specific leadership in sustainable performance by nurturing employee pro-environmental behavior **(Saleem et al., 2020)**.

*2.3. GHRM practices and sustainable performance*

GHRM is an environmental-related HRM to reduce pollution and ensure the sustainability of natural resources **(Nisar et al., 2021)**. Numerous studies recognized different GHRM practices and indicators **(Shen et al., 2019; Sabiu et al., 2019)**. Yong et al. **(2019)** stated that green recruitment, green training, green performance appraisal system, and green rewards are the most widely acknowledged GHRM practices. Recruitment and selection of those employees who have awareness of green issues, training to enhance their green competencies, green performance appraisal standards, and green performance-based rewards are among the critical indicators of GHRM **(Pham et al., 2019; Abor-amadan, 2020)**. The present study focused on seven GHRM practices, namely green recruitment & selection (GR&S), green training & development (GT&D), green involvement & empowerment (GI&E), green performance-based rewards (GPR), green career growth opportunities (GCGO), green teamwork (GT) and green work-life balance (GWLB) as essential GHRM indicators. The reason to select these practices is their suitability with the context and objectives of the study, such as green training, green performance-based rewards, green career growth opportunities, green work-life balance reinforce pro-environmental behaviours among employees for sustainable performance **(Ari et al.,2020)**.

The sustainable performance paradigm has emerged to mitigate the jeopardized environmental impacts of economic activities by replacing cumbersome methods with environmental-friendly practices (**Bombiak and Marciniuk-Kluska, 2018; Zeeshan-Ullah and Puhakka, 2021)**. Sustainable performance, along with a focus on economic objectives, obliged organizations to take into account social and ecological concerns by implementing sustainable value-oriented and socially-responsible business management (**Jabłonski, 2016)**. Thus, sustainable performance means a combination of economic, ecological/environmental and social performance **(Goran et al., 2018)**.

HRM practices play an essential role in achieving organizational environmental and sustainability objectives **(Jabbour and Renwick, 2020).** Organizations with a strategic focus on training the workforce to boost green practices are better able to establish green capabilities aimed at minimizing waste and pollution-causing activities **(Amrutha and Geetha, 2020)**. GHRM practices are vital to facilitate the execution and maintenance of the environmental management system that enables organizations to attain economic objectives **(Bon et al., 2018)**. Sustainable performance is contingent on bettering teamwork efforts, workforce training, performance assessment based on environmental objectives, and organizational culture **(Jabbour and Santos, 2008**). Environmentally responsible teamwork results in substantial waste reduction and effective corporate environmental performance **(Roscoe et al., 2019)**. Employee participation in green teams contributes to greater environmental awareness and ecologically sustainable performance in this regard. This has also a strong influence on financial performance **(Harb and Ahmed, 2019; Jirawuttinunt and &Limsuwan, 2019; Agyabeng-Mensah et al., 2020a a)**. Meanwhile, GHRM practices essentially contribute to the efficient dissemination of green culture **(Yusoff et al., 2020)**. GHRM practices have become a source of competitive advantage for organizations that ultimately enhanced triple bottom line; economic, environmental and social performance **(Zaid et al., 2018; Mousa and Othman, 2019)**. GHRM practices positively influence ecological, economic, and socially responsible outcomes **(Lon-goni and Guerci, 2018)**. Green HRM, in fact, plays a critical role in integrating the organization's sustainability initiatives in the hopes of developing skills, motivation, values, and trust among employees in order to achieve and maintain the triple bottom line (people, planet and profit) **(Adel, 2021; Paulet et al., 2021)**. Organizations incorporate green human resources management approaches to mitigate the impact of manufacturing processes and industrial waste on the environment with the aim of improving the organization' s environmental management plan and sustainable performance. Taking into account the above discussion, this study intends to analyze the impact of GHM practices on sustainable performance. Suppose that hiring employees based on green knowledge, implementing green training programs, green empowerment, and forming green teams lead to sustainable performance. Green performance-based rewards, green performance appraisal management, and green career growth opportunities are noteworthy to reinforce pro-environmental behaviours for sustainable development. Thus, the hypothesis is formulated as follows:

**H1.** GHRM practices (GR&S, GT&D, GI&E, GPR, GCGO, GT and GWLB) have a positive impact on sustainable (economic, environmental, and social) performance.

### *2.4. ETL and sustainable performance*

Environmental-specific transformational leadership (ETL) style is a managerial practice that emphasizes environmental issues, intended to encourage environmentally friendly actions of organizations and employees' environmentally-friendly actions (**Graves et al., 2013; Robertson, 2018**). The ETL style encompasses four behavioral components: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration **(Schmitt and Belschak, 2016)**. The pressure of environmental concerns compelled organizations to strive for sustainable performance and required organizational leaders to be proactive toward natural ecological systems **(Wu and Wang, 2015**). Organizations' goals of environmental sustainability and transformation for sustainable performance arouse the need to practice environmental-specific leadership **(Vila-Vazquez et al., 2018)**. **Jian et al. (2020)** stated that environmental-specific leaders have the ability to encourage internal and external entities to achieve sustainability goals. Compared to other leadership styles, ETL has stronger environmental concerns and implements environmental values in all organizational processes to achieve sustainable performance **(Su et al., 2020)**. Because environmental-specific

transformational leaders choose to take the necessary actions and act in a way that improves the natural environment, their behavior has an impact on organizational sustainable performance. They also act as role models for their followers, who are likely to imitate their leaders' actions **(Omarova and Jo, 2022)**. Environmental-specific transformative leadership focuses on encouraging followers by requiring them to participate in job tasks in order to reduce the negative environmental repercussions of organizational operations. As a result of protecting environmental quality, environmental transformational leadership can help businesses achieve sustainable performance (**Cop et al., 2021)**.

**Dubey et al. (2015)** asserted that environmental leaders increase organizational environmental performance and positively contribute to quality management. In addition to environmental aspects, ETL is positively associated with other organizational outcomes in addition to environmental aspects, such as better corporate identity, improved organizational reputation, employee motivation, greater productivity **(Kim and Stepchenkova, 2018)**, increased market performance, and socially responsible financial gains socially-responsible image **(Su et al., 2020)**. Sustainable performance and organizational success require transformative leadership focused on the environment. ETL is a critical component in increasing sustainable performance; it has a considerable impact on employees' environmentally friendly behaviour and is favourably related to the appropriateness of their perceptional values. Employees inspired with intellectual simulation, individualized consideration, and idealized influence are more likely to engage in accountable behaviours with a focus to attain sustainable performance. Thus, the present study formulates the hypothesis that:

**H2**. ETL has a positive impact on sustainable (economic, environmental, and social) performance.

### *2.5. GHRM practices and PEBs of employees*

Employees who support environmental initiatives and foster environmentally friendly practices are termed pro-environmental behaviours (**Shen et al., 2019; Zhang et al., 2020**). PEB, also known as employee green behaviors (EGB) or green workplace behaviors (GWB), promotes organizations' environmental sustainability goals by putting conscious efforts to reduce destructive effects of business activities on the natural environment. These behaviours can be assessed by optimal paper use, avoiding electricity wastage, and recycling the materials **(Ones et al., 2015)**. Due to more appropriateness and suitability with the dairy industry context, this study considers three PEBs: in-role environmental behavior, extra-role environmental behaviour **(Dumont and Deng, 2016)**, and green innovative work behaviour **(Aboramadan, 2020).**

To shape the PEBs of employees, organizations need to strategize the initiative of GHRM practices **(Nalini and Alexander, 2019; Hewapa-thirana and Gamage, 2020).** HRM and behavioral literature indicate that HRM practices influence workplace behaviours and attitudes (Becker and Huselid, 2006). HRM helps the organization to achieve its environmental goals. As a result of embracing GHRM practices, the organization sends a clear message to its employees that it places high importance on environmental and ecological values. Employees, on the other hand, are more likely to respond positively to perceive GHRM practices since they are motivated to develop themselves **(Ali et al., 2022)**. Implementing GHRM practices such as green-based recruitment, giving green training, and recognizing and rewarding green behaviour also encourages and gives opportunities for employees to participate in pro-environmental initiatives **(Omarova and Jo, 2022).** The favorable perspectives of the employees about GHRM may drive them to engage in pro-environmental employment behavior, mitigating the negative environmental impact of business activities. Although all components of corporate operations must be environmentally friendly and sensitive, environmental HRM initiatives

are critical, as the impacts and influences on managers and employees are stronger than the opposing functions (**Lu et al., 2020).**

Thus, GHRM practices refine the PEBs of employees in personal and professional life by instilling environmental consciousness. Implementation and adherence to GHRM practices promote in-role, extrarole, and innovative green behaviours among employees **(Dumont and Deng, 2016). Saeed et al. (2019)** argued that green staffing, green training, green performance evaluation, green rewards system, and green empowerment are positively linked to PEB of employees. This study intends to obtain insights that certain GHRM practices encourage pro-environmental behaviors. Green recruitment & staffing is a vital element of GHRM practices as organizations appoint employees who experience a sense of responsibility and accountability towards sustainability. Green training & development instill employees with green knowledge, the relevance of green initiatives, waste reduction, and energy efficiency, and play a crucial role in motivating and shaping employee behaviour toward environmental stewardship and participation in green activities. Green performance-based rewards and green career growth opportunities are vital for attracting, retain and encouraging employees' participation in green activities through monetary and non-monetary prizes and advantages. Moreover. Green involvement, empowerment, and establishment of green teams indicate managerial support and autonomy for environmental-friendly behaviours. On the basis of the above discussion, it is hypothesized that:

**H3.** Green HRM practices (GR&S, GT&D, GI&E, GPR, GCGO, GT, and GWLB) have a positive impact on PEB of employees.

*2.6. ETL and employees' PEBs*

ETL emphasizes sustainable development by incorporating environmental values among employees and reifying the sustainability objectives of organizations into self-driven environmental behaviours **(Jennifer Robertson, 2018)**. Environmental-specific transformational leadership is attributed as a manifestation of transformational leadership in which leader's activities are geared at fostering pro-environmental initiatives and green behaviours **(Marashdah and Albdareen, 2020)**. Pro-environmental behaviours can be driven by ETL, which focuses on instilling a green vision in the workforce. Environmentally inspired motivation, environmental idealized influence, environmental individualized consideration, and environmental intellectual stimulation are some of the ways that leaders can help people contribute to environmental behaviours at work **(Peng et al., 2020).** First, by their own passion and optimism, leaders motivate people to overcome psychological failures and external obstacles, as well as their enthusiasm for green innovation. Second, leaders participate in environmental sustainability activities, which inspires employees to follow suit and embrace green innovation. Third, leaders motivate employees to think for themselves and critique some antiquated environmental management techniques. Leaders can invite staff to participate in green innovation efforts and provide them with the opportunity to question traditional thinking by doing so. In general, leaders put an emphasis on the competence and contribution of employees to ecological sustainability, assisting subordinates in developing environmental skills, and directing employees to creatively solve environmental challenges **(He et al., 2021; Zhu et al., 2022)**.

The ETL style is more likely to encourage the PEBs of employees beyond the formal job requirements. Environmental leaders demonstrate intellectual stimulation, inspirational motivation, individualized consideration, and idealized influence behaviours to stimulate PEBs among employees **(Li et al., 2020).** Environmental-specific transformational leaders have a strong relationship with their followers, they can persuade their subordinates to engage in pro-environmental workplace activities. As a result,

rather than feeling forced to participate in environmentally beneficial activities, followers are more likely to find them worthwhile and important. As a result, employees who are motivated by environmental transformational leaders will urge others to practice green behavior and implement pro-environmental policies **(Omarova and Jo, 2022). Saleem et al. (2020)** found a positive influence of ethical leadership on pro-social and ethical behavior of subordinates. Environmentally concerned ethical leaders reduce unethical conduct of employees and significantly develop desired workplace outcomes by influencing employees' behaviours **(Afsar et al., 2020)**. **Graves et al. (2013**) stated that when leaders adopt the ETL style and participate in environment protection activities, subordinates get motivation with greater PEBs and vice versa. Leaders act as role models. Exemplary leadership with environmentally responsible behaviors significantly influences employees to behave pro-environmentally **(Wesselink and Ringersma, 2017)**. Drawing on literature, environmental-specific transformational leadership has tremendous inspiring attributes that direct employee environmentally friendly behavior. This is due to the fact that employees can learn leaders' behavioural patterns through observation, which helps to promote the internalization of environmental protection values and then motivates employees to engage in comparable environmentally friendly actions. Therefore, this study hypothesized that.

**H4**. The ETL style has a positive impact on the PEB of the employees.

### *2.7. Employee PEBs and sustainable performance*

The challenge of sustainable development is rooted in human behaviours toward the environment (**Thondhlana and Hlatshwayo, 2018)**. Scholars and policy makers claimed that encouraging PEB reduces environmental issues **(Dornhoff et al., 2019)**. PEB serves as a foundation stone to transform organizational sustainable development strategies into practices. Employees with environmental-friendly behaviors conduct activities to achieve the goal of sustainable performance, reduce pollution, and enhance efficiency through adequate recycling of used materials **(Yusliza et al., 2020)**. Employees with PEBs tempt towards low-cost projects, renewable energy, and reduced the environmental costs that ultimately increases economic performance and contribute to the triple-bottom-line. PEBs accentuated eco-friendly procurements and communicated environmental strategies with external partners, thus enhancing market share and economic gains (**Ramus and Montiel, 2005). Ones et al. (2015)** stated that employees act pro-environmentally in the following ways: work for sustainability, resource conservation, encourage others for environmental protection, take initiatives, and avoid harm. All these activities improve the overall sustainable performance of the organizations. Employees with PEBs intend to protect the environment and practically promote organizational environmental strategies. Eventually, green and environmentally friendly behaviors emerge as part of organizational culture, leading to sustainable development **(Strauss and Lepoutre, 2017)**. PEBs positively influence the natural ecosystem (**Norton and Ashkanasy, 2015)**, environmental management initiatives **(Jabbour and Renwick, 2020)**, goal of sustainable development **(Tian et al., 2020)** and enable organizations to justify social responsibilities. As there are few studies in this area, the present study is concerned with continuing to focus on the association between environmental behavior and sustainable performance of organizations in the dairy context. Therefore, the present study hypothesized that:

**H5**. Employees' PEBs positively influence sustainable performance.

*2.8 GHRM practices, PEBs of employees and sustainable performance (mediation)*

The GHRM literature revealed that there are two schools of thought. The first perspective asserted that GHRM is an accretion of HRM practices including recruitment & selection, training, performance appraisal, reward policies, and environmental management system structured for sustainable performance **(Jabbour and Jabbour, 2015).** The other perspective stated that only integrating HRM practices with an environmental management system is not sufficient. It is essential to shape employees' behaviors towards sustainable performance **(Ehnert, 2009)**. Based on these schools of thought, GHRM practices, environmental behaviours, and sustainable development are interlinked **(Khan and Muktar, 2020). Koberg and Longoni (2018)** stated that to protect the natural environment and achieving sustainable development is essential. Organizations must encourage employee participation in and practices of pro-environmental conduct **(Jabbour and Renwick, 2020)**. GHRM practices, such as training, employee involvement and environmental performance-based rewards, encourage environmental behaviors of employees **(Zibarras and Coan, 2015)**, thus protecting the ecological system and striving to reduce global warming, climate change, environmental waste, and energy and water crises **(Huo et al., 2020)**. Studies revealed that GHRM practices are positively linked with sustainable development **(Jehan et al., 2020)** and employees' environmental behaviours **(Ari et al., 2020)**. Most studies examined environmental behaviour as the final outcome and the dependent construct of GHRM practices. **Li et al. (2020)** recommended that the ultimate objective of organizations is to manage the performance by developing environmental behaviour, so the impact of PEBs on social, financial, and environmental performance should be considered. To address this gap, the present study hypothesized that:

**H6**. Employees PEB mediates the relationship between GHRM practices and sustainable performance.

*2.9. ETL, PEBs of employees and sustainable performance (mediation)*

Researchers are centralizing the role of transformational leaders in instilling environmental behaviour among employees for sustainable performance **(Jennifer Robertson and Carleton, 2017).** Environmental-specific transformational leaders focus on achieving long-term sustainable performance and encourage self-driven environmental-friendly behaviours **(Jennifer Robertson, 2018)**. Leaders, while exhibiting the ETL style, exercise different manners to develop environmental concerns among employees. First, by exerting idealized influence behaviour, leaders act as mentors by demonstrating environmental accountability, commitment, and responsibility, consequently encouraging employees to perform environmental-friendly behaviours **(Robertson and Unsworth, 2015**). Second, leaders practice inspirational motivation and intellectual stimulation to increase employee participation in innovative environmental solutions. Inspired and stimulated by leaders' behaviors, employees offset personal benefits for the sake of economic, social, and environmental sustainability **(Su et al., 2020**). The personalized consideration of leaders for subordinates is also an effective mechanism to modify the PEBs of employees, contributing to sustainable development. When employees perceive that leaders are exhibiting and encouraging environmental-friendly behaviours, they are more likely to exude environmental passion **(Li et al., 2020)**. Taking sustainable performance as an outcome of PEB, the current literature concentrates on addressing the ETL style as its antecedent **(Saeed et al., 2019; Saleem et al., 2020).** Thus, it is hypothesized that:

**H7**. Employees PEB mediates the relationship between ETL and sustainable performance.

*2.10. Moderating influence of pro-environmental attitude*

The pro-environmental attitude is the tendency of a person to be responsible towards the environment (**Hawcroft and Milfont, 2010**), which is positively linked with workplace PEBs. This prophecy is aligned with the theory of planned behaviour **(Ajzen, 1991)**, which proposed that human attitudes influence their behaviours. The research established on this notion recommended that people who have greater concerns about the natural environment are more likely to protect it (**Hinds and Sparks, 2008)**. **Bamberg and Moser (2007)** stated that within-person factors (within-person means individuals' emotional experiences about any target, termed PEA) could illuminate substantial differences in workplace behaviours **(Bissing-Olson et al., 2013)**. PEA not only influences behaviors in general, but also predicts PEB of employees at work. The leader's pollution-averting attitude positively influences his intentions to execute environmental protective behaviors, thus encouraging PEBs from employees through intellectual stimulation and idealized influence **(Cordano and Frieze, 2000).** PEA is a predictor of PEB **(Bashirun and Noranee, 2020)** and is positively interlinked with GHRM practices **(Opatha and Kottawatta, 2020).** Environmental-specific leadership instills an environmental attitude among employees **(Khuwaja et al., 2020)**. Extending this paradigm further, the current study proposed PEA as a moderator and hypothesized that:

**H8**. PEA positively moderates the impact of GHRM practices on PEB, and the impact is stronger when PEA is high than when it is low.

**H9.** PEA positively moderates the impact of ETL on PEB, and the impact is stronger when PEA is high than when it is low.

## 3. Research methodology

*3.1. Methods*

Remain aligned with a positivist paradigm; This quantitative study adopted a deductive and explanatory research approach to investigate the causal effect among constructs **(Creswell, 2013; Creswell, 2013)**. This study is cross-sectional in terms of time frame, and a survey questionnaire method was used to collect data from employees working in Pakistan' s dairy organizations. For data collection, ten dairy products manufacturing organizations operating in five districts of Punjab province were randomly selected. Five districts of Punjab province, namely: Sahiwal, Faisalabad, Lahore, Multan, and Rawalpindi were considered for data collection because, in these districts, dairy organizations have both; horizontal and vertical integration units **(Khan et al., 2020). AjmalLi and Aslam (2016)** also selected these districts in their study to collect data on Pakistan's dairy sector. The study proposed that numerous aspects need to be well thought out before determining the sample size, such as multivariate normality, missing values, the complexity of model, estimation techniques, and average error of variance of the reflective factors **(Hair et al., 2010)**. Therefore, to obtain the adequate sample size for multivariate data analysis (SEM), we used the sampling calculation formula, i.e. a number of items or statements x 5 = sample size recommended by **(Hair et al., 2014)**. Therefore, all the study constructs contained (82) elements x 5 = 410 are required to analyze the multivariate data. But to remove the nonresponses bias, this study distributed 820 questionnaires. Before data collection, an invitation letter was sent to the HR department of the organizations chosen to seek approval and refer to respondents. Due to covid-19, employees work on rotation policy, so the online survey questionnaire method was deemed more appropriate to take responses of respondents. The data collection process was completed from February 2020 to May 2020. In ten selected organizations, 820 questionnaires were sent and 549 responses were received with a 67% response rate. After the

data cleaning process and the removal of influential outliers, 430 responses were valid for data analysis.

*3.2. Variables and measures*

The multiitem measuring instruments used in this study were validated in previous studies. The constructs were measured on a 10-point interval rating scale ranging from 1 (strongly disagree) to 10 (strongly agree). On the basis of various methodological and statistical investigations, scaled development or adoption process is discussed. This study applies SAFE (scale adoption framework for evaluation) as the development or adoption approach. The following pertinent aspects of scale adoption, i.e., first to define the construct, relevant theory with construct, clarity of linkage between construct and theory, scale validation and scale reliability **(K. Green et al., 2008)**. A scale of GHRM practices comprised of seven dimensions, namely green recruitment & selection (GR&S), green training & development (GT&D), green involvement & empowerment (GI&E), green performance-based rewards (GPR), green career growth opportunities (GCGO), green teamwork (GT) and green work-life balance (GWLB). A scale developed by **Tang et al. (2017)** was used to measure GR&S (3 items), GT&D (3 items), GPR (7 items) and GI&E (5 items). A four-item scale was adapted from the work of **Muster and Schrader (2011)** to measure the GWLB dimension. Career growth opportunities are one of the essential components of GHRM practices **(Ren et al., 2018).** However, a preponderance of previous empirical studies did not incorporate it as a component of GHRM (**Yong et al., 2019; Pham et al., 2019)**. In this study, a career growth developed by **Hirschi et al. (2018)** was adapted in this study to measure GCGO. Considering the green context, the words 'GHRM practices' were added in three scale items. The Team Effectiveness Audit Tool (TEAT) instrument developed by **Bateman and Bingham (2002)** was adapted to evaluate the green teamwork. TEAT was developed to analyze the productivity and quality of the team in all organizational aspects. However, according to the context of this study, the six-item TEAT instrument was adapted to assess the productivity of green teamwork.

A Five-item scale developed by **Graves et al. (2013)** was used to address ETL. The PEB construct encompassed three dimensions; in-role, extra-role, and innovative environmental behaviours. In-role and extra-role behaviors were measured using a **Bissing-Olson et al. (2013)** scale, entailing three items for each dimension. Although innovative environmental behaviour was measured with a five-item scale developed by **Scott and Bruce (1994)**. The pro-environmental attitude was measured with a 15-item New Ecological Paradigm (NEP) Scale developed by **Dunlap and Van Liere (1978)**. Sustainable performance is comprised of three dimensions; Environmental performance, economic performance, and social performance. A total of eight items were used to measure environmental performance. Four items were taken from the work of **Zhu et al. (2013),** two items were taken from **Longoni and Guerci (2018)**, while two items were taken from the work of **Rawashdeh (2018) and Alkerdawy (2018)**. Measure Eco. Performance three items were taken from **W. Green et al. (2008)**, while four items were taken from Longoni and **Guerci (2018), Rawashdeh (2018), Zhu et al. (2022), and Zaid et al. (2018)**. Social performance was measured using five items. Three items were taken from, while two items were taken from the work of **Zaid et al. (2018) and Rawashdeh (2018).**

Statistical control variables.

This study controlled the experience and qualification of participants in data analysis because these variables may be associated with environmental behavior and sustainable performance. For example, participants who have more experience and qualification are more likely to influence their pro-environmental attitude and understanding of sustainable performance. Consequently, the relationship

between control variables, experience, and qualification can be stronger for participation at a higher level of hierarchy and higher qualification.

A pretest was conducted to assess validity of the instrument. Three expert academics specializing in HRM were asked to evaluate content validity, face validity, the flow of scale items, wording, and format. According to suggestions, minor amendments were made to the questionnaire. A pilot test was conducted with 50 respondents in the second step to ensure validity and internal consistency. Respondents were asked to think aloud and provide feedback. The purpose was to ensure that the researcher and participants perceived the instrument in a similar way. The results of the pilot test ensured the validity and reliability of the measuring instrument. GHRM achieved a 0.93 value for Cronbach alpha. ETL earned 0.88, PEB gained 0.89, pro-environmental attitude generated 0.91 and sustainable performance achieved the 0.94 value for Cronbach alpha.

### *3.3. Common method biases*

Common method variance (CMV) may arise due to utilizing selfreported data collection measures from the same respondent group (**Podsakoff and Organ, 1986**). This study collected cross-sectional data from the same respondents for dependent and independent constructs. Therefore, Harman' s single-factor test checks the amount of spurious variance. A principal component analysis (PCA) for all items of the measurement instrument extracted nine factors with eigenvalue >1, accounting for 56.37% of the total variance. Although the first unrotated factor detained only 39.11% variance. Single-factor accounts for less than 50% variance, indicating that common-method bias does not affect the data.

## 4. Data analysis and results

### *4.1. Demographic data of the participants*

A total of 430 valid responses were considered for data analysis. Demographic characteristics of respondents were measured in terms of gender, age, qualification, and experience. Of the 430 participants, 76% (327) were male and 24% (103) were female. When calculating the age category, 35% (152) of the participants were under the age group of 30 years. The majority of the participants, 49% (211), were in the age category of 31-40 years, while 10% (45) were in the age group of 41-50 years, and only 5% (22) of the participants were over 50 years old. In terms of qualification, 45.8% (197) participants are holders of bachelor's degrees, 53.25% (229) participants had master's degrees, and only 1% (4) participants had a Ph.D. The majority of participants, 25.6% (110) and 38.1% (164) have 1-5 and 6-10 years of experience, respectively. While 15.6% (67) of the participants have experience up to 1 year, 11.6% (50) have 11-15 years of experience, 11.6% (50) of the individuals have 16-20 years of experience, and 9.1% (39) of the participants have more than 20 years of experience working in the dairy industry (see **Table 1**).

### *4.2. Non-response bias test*

Two measure the non-response bias, we run a paired-sample t-test in IBM-SPSS-25. The total sample of 430 was divided into two sets of 215 earlier and 215 late re p-values for all variables being not significant for both early and late responses, which showed that there are no significant differences. So it is explained that there is no significant difference in the target population who responds or does not respond. Therefore, the study did not require to collect further data and the research model

performed analyses on an available data set; also the results are gener-alizable to the general population.

*4.3. Endogeneity test*

The issue of endogeneity has been broadly argued in business studies, particularly with regard to various regression and panel models **(Ebbes et al., 2011; Park and Gupta, 2012; Rossi, 2014).** But rare research investigations report endogeneity in multivariate SEM data analysis. On the contrary, various studies address endogeneity in factor-based SEM **(Bollen et al., 2014; Kirby and Bollen, 2009)**. Endogeneity issues are linked to various roots, such as variance of the common method, measurement error, simultaneous causality, and latent heterogeneity **(Papies et al., 2016; Sande and Ghosh, 2018)**. It was mainly due to omitted variables associated with one or more independent and dependent variables that are part of the regression model **(Rossi, 2014).** Therefore, omitting these variables persuades association among the error terms of the conforming independent and dependent variables **(Wooldridge, 2015)**. Due to this problem, exogenous variables explain the variance in the dependent variable and cause an error in the model.

The simplest way to address endogeneity or least reducing is to stipulate a set of control variables (Bernerth and Herman, 2016). But selection or induction of control variables frequently assuages the sustainability of endogeneity issues **(Papies et al., 2016).** Along with the selection of control variables, the study needs to address endogeneity by applying a statistical approach. One of two broad statistical methods studies applied the IV approach **(Papies et al., 2016).**

Application of this approach required IV associated with GHRM and ETL also, it needs to be unassociated with the omitted determinants of sustainable performance. So, it remained unassociated with the PEB error term. We used the experience as IV in the implications of the IV approach.

**Table 1** Demographic Profile of the respondents.

| Sr No. | Demographics | Respondents | % |
|---|---|---|---|
| 1 | Gender | 327 | 76 |
| | Male | 103 | 24 |
| | Female | | |
| 2 | Age | 152 | 35 |
| | Below 30 | 211 | 49.5 |
| | 31————40 | 45 | 10.5 |
| | 41————50 | 22 | 5 |
| | Above 50 | | |
| 3 | Qualifications | 197 | 45.8 |
| | Bachelors | 229 | 53.2 |
| | Masters | 4 | 1 |
| | PhD. | | |
| 4 | Experience | 110 | 25.6 |
| | 1————5 Years | 164 | 38.1 |
| | 6————10 Years | 67 | 15.6 |
| | 11———15 Years | 50 | 11.6 |
| | 16———20 Years | 39 | 9.1 |
| | Above 29 years | | |

Furthermore, the weakID test F value compares the value of R2 extracted at the first step with or without IV. **Table 4**; presents that IV induction significantly increases the value of the R2 first step when the study measured GHRM and ETL as endogenous, as proven by WeakID test values greater than a threshold value of 10. Furthermore, the Wu-Hausman test shows a p-value of 0.211. The Gaussian

curve in **Table 3** implies that our findings are consistent with previous research that theoretically and empirically validates the endogeneity issue regarding PEB and sustainable performance. Therefore, results revealed that in the context of empirical endogeneity that does not effect change, any findings are drawn from our model, also form a theoretical perceptive **(Hult et al., 2018) (Table 5)**.

**Table 2** Non-response bias test.

| Variable | Response | N | Mean | Std. Deviation | t-statistics | Sig. (2-tailed) |
|---|---|---|---|---|---|---|
| GHRM | Early | 430 | 9.0506 | .84839 | −1.145 | 0.122 |
| | Late | 430 | 8.7622 | 1.03303 | −.545 | 0.592 |
| ETL | Early | 430 | 8.8933 | .94195 | .251 | 0.983 |
| | Late | 430 | 9.2341 | .88953 | .975 | 0.376 |
| PEB | Early | 430 | 9.0543 | .89968 | .499 | 0.676 |
| | Late | 430 | 8.9176 | .90897 | −1.142 | 0.234 |
| PEA | Early | 430 | 8.7622 | 1.01100 | 1.267 | 0.291 |
| | Late | 430 | 8.9195 | .91837 | −.281 | 0.911 |
| SP | Early | 430 | 9.0618 | .85426 | 1.156 | 0.245 |
| | Late | 430 | 9.2715 | .81683 | −.645 | 0.531 |

*4.4. Analytical approach*

SEM was used for data analysis; a two-step model development process was used as per the recommendation of **Hair et al. (2014).** First, CFA was executed to validate the measurement model. Second, the structural model was developed to test the hypothesis and determine causal path coefficients. By adding measurement and structural models in one analysis, SEM offers a better approach to empirically examine theoretical models (**Hair et al., 2014).** Moreover, SEM allowed one to examine the mediation effect simultaneously rather than performing regression analysis individually **(Sarstedt & Hwang, 2020)**.

4.4.1. Construct validity and reliability

CFA was executed to validate the measurement model by assessing the unidimensionality, reliability, and validity of constructs. To ensure unidimensionality, every measured variable is supposed to be narrated with only a single construct, and items of latent constructs should have acceptable factor loading (above 0.060) for their respective constructs **(Hair et al., 2014)**. The reliability of the measurement model was assessed through composite reliability (CR). To ensure convergent validity, the average variance extract (AVE) was calculated, indicating the average percentage of variance between latent constructs explained by elements of the measurement model. The validity of the structure was confirmed when the fitness indices of all the structures met the required criteria. Every SEM program has slightly different sets of fitness indices. However, for each category of models, at least one fitness index is recommended to use **(Hair et al., 2017)**. In this study, the ChiSq/df values, RMSEA, CFI, TLI, and NFI were obtained to indicate the fitness of the model. To obtain a good fit, the values of CFI, TLI and NFI should be higher than 0.90, $p < 0.005$, while RMSEA up to 0.08 is acceptable.

In general, the measurement model of this study indicated a good fit with Chisq/df = 1.828; ($x^2$ = 206.521/df. = 113), $p < 0.001$, RMSEA = 0.048, CFI = 0.971, TLI = 0.966, and NFI = 0.939 **(Hair et al., 2014)**. However, six elements of GHRM practices (GPR1, GPR6, GI&E4, GT4, GT5, GT6), four elements of sustainable performance (ECOP1, ECOP7, ENP3, ENP8), and three elements of the pro-

environmental attitude (PEA6, PEA9, PEA15) were eliminated due to model fit discrepancies. Table 2 shows that all factor loadings are above 0.60, AVE >0.50 and CR > 0.60 meet the threshold **(Fornell and Larcker, 1981)**. Discriminant Validity was calculated by taking the square root of AVE values. To ensure discriminant Validity, the degree of correlation between constructs should not exceed 0.85 **(Kline, 2017)**. As shown in **Table 6**, the discriminant Validity values are higher than the amount of correlation between the constructs and less than 0.85, indicating that the elements of the measurement model are not redundant.

**Table 3** Results of the Gaussian copula approach.

| | Original model | | Gaussian copula Model 1 (endogenous variables: GHRM) | | Gaussian copula Model 2 (endogenous variables: ETL) | | Gaussian copula Model 3 (endogenous variables: PEB) | |
|---|---|---|---|---|---|---|---|---|
| Variable | Value | p-value | Value | p-value | Value | p-value | Value | p-value |
| GHRM | 0.335 | <0.01 | 0.339 | <0.01 | 0.368 | <0.01 | 0.379 | <0.01 |
| ETL | 0.432 | <0.01 | 0.432 | <0.01 | 0.467 | <0.01 | 0.432 | <0.01 |
| PEB | 0.546 | <0.01 | 0.546 | <0.01 | 0.578 | <0.01 | 0.587 | <0.01 |
| cGHRM | | | 0.007 | 0.876 | | | | |
| cETL | | | | | 0.032 | 0.453 | | |
| cPEB | | | | | | | 0.042 | 0.076 |

| | Gaussian copula Model 4 (endogenous variables: GHRM, ETL) | | Gaussian copula Model 5 (endogenous variables: GHRM, PEB) | | Gaussian copula Model 6 (endogenous variables: ETL, PEB) | | Gaussian copula Model 7 (endogenous variables: GHRM, ETL, PEB) | |
|---|---|---|---|---|---|---|---|---|
| Variable | Value | p-value | Value | p-value | Value | p-value | Value | p-value |
| GHRM | 0.301 | 0.000 | 0.342 | 0.000 | 0.349 | 0.000 | 0.357 | 0.000 |
| ETL | 0.467 | 0.000 | 0.435 | 0.000 | 0.455 | 0.000 | 0.476 | 0.000 |
| PEB | 0.554 | 0.000 | 0.596 | 0.000 | 0.612 | 0.000 | 0.636 | 0.000 |
| cGHRM | 0.017 | 0.723 | 0.008 | 0.690 | | | 0.042 | 0.456 |
| cETL | 0.039 | 0.274 | | | 0.039 | 0.438 | 0.023 | 0.518 |
| cPEB | | | 0.042 | 0.089 | 0.051 | 0.067 | 0.044 | 0.069 |

**Table 4** Results of the IV approach.

| Endogenous Variable | Co-efficient | | | R2 Values | | WeakID test | | Wu-Hausman Test |
|---|---|---|---|---|---|---|---|---|
| | GHRM | ETL | PEB | First stage without IV | First stage with IV | F-value | Significant | p-value |
| GHRM | 0.078 | 0.509 | 0.467 | 0.496 | 0.577 | 49.567 | yes | 0.211 |
| ETL | 0.128 | 0.278 | 0.466 | 0.431 | 0.577 | 87.744 | yes | 0.211 |
| PEB | 0.089 | 0.087 | 1.224 | 0.299 | 0.577 | 16.678 | yes | 0.211 |

4.4.2. Data analysis

All the assessed variance inflation factor (VIF) values range from 1.112 to 1.866, which is below the required threshold level of 3.0, thus measuring that multicollinearity will not affect (see **Table 6)** (see **Fig. 1**). The structural model analysis indicated an acceptable range of model fit indices with ChiSq/df = 1.828, probability value = 0.000, RMSEA = 0.048, CFI = 0.972, NFI = 0.939, RFI = 0.927 and TLI = 0.966. The proposed hypotheses (**H1-H5**) were examined and presented in **Table 4**. All hypotheses were accepted except **H2**. GHRM practices have a significant positive effect on sustainable performance (β= 0.216, p < 0.028). Both GHRM practices (β = 0.256, p < 0.000) and ETL (β = 0.544, p < 0.000) are statistically significant with PEB. Although PEB has a significant positive effect on sustainable performance (β = 0.512, p < 0.013). However, the effect of ETL on sustainable performance (β= 0.301, p < 0.087) is not statistically significant, so **H2** is not supported (**see Fig. 2**.).

4.4.2.I. Mediation test. The Bootstrapping Maximum Likelihood Estimation (MLE) method with 1000 bootstrap samples and a 95% confidence interval was used to examine the mediational effect of PEB.

The direct effect of GRHM and sustainable performance is significant ($\beta = 0.216$, $p < 0.028$), while the indirect effect is also significant ($\beta = 0.256*.512 = 0.131$, $p< 0.005$). Thus, **H6** is supported as PEB partially mediates the relationship between GHRM practices and sustainable performance. A direct effect of ETL on sustainable performance is not significant ($\beta = .301$, $p < 0.087$), but the indirect effect is significant ($0.544*.521 = 0.283$, $p< 0.005$), so **H7** is supported and PEB fully mediated the relationship between ETL and sustainable performance (see **Table 7**).

4.4.2.2. Moderation test. The moderation effects of the metric variable were tested using interaction effects using SPSS. For the first moderation effect, we tested the main direct effects of an independent variable (GHRM practices) and the moderating variables (PEA) on the dependent variable (PEB). First, the direct effect of the GHRM practices on PEB is statistically significant ($F = 11.867$, $p < 0.001$), and the interaction effect between the GHRM practices and PEA (GHRM practices x PEA) on PEB is also statistically significant ($\beta= 0.119$, $t = 2.329$, $p < 0.05$). Since significant interaction effects were attained, we further test for simple effects to explore the nature of interactions. For this purpose, we follow the suggestions of Aiken and West (1991). The data set for the moderator variable was divided into low and high groups using dummy variables. Then we tested the GHRM practices on PEB at both low and high levels of PEA. As expected, GHRM practices positively affected PEB when employees have a high level of PEA ($\beta = 0.234$, $t = 4.192$, $p < 0.001$). Although GHRM practices were negatively related to PEB when employees had a low level of PEA ($\beta = — 0.176$, $t = — 3.159$, $p < 0.001$). Furthermore, we tested the differences between the two levels (low and high) of PEA. The difference in slopes was also significant in the case of PEA ($t = 3.79$; $p < 0.001$). Therefore, **H8** was supported.

For the first moderation effect, we tested the main direct effects of an independent variable (ETL) and the moderating variables (PEA) on the dependent variable (PEB). First, the direct effect of ETL on PEB is statistically significant ($F = 12.543$, $p < 0.001$), and the interaction effect between ETL and PEA (ETL x PEA) on PEB is also statistically significant ($\beta = 0.101$, $t = 2.007$, $p < 0.05$). Since significant interaction effects were attained, we further test simple effects to explore the nature of interactions. For this purpose, we followed the suggestions of Aiken and West (1991). The data set for the moderator variable was divided into low and high groups using dummy variables. Then we tested the ETL on PEB at both low and high levels of PEA. As expected, ETL had a positive effect on PEB when employees have a high level of PEA ($\beta = 0.213$, $t = 4.158$, $p < 0.001$). However, ETL was negative related to PEB when employees have a low level of PEA ($\beta = — 0.165$, $t = —3.427$, $p < 0.001$). Furthermore, we tested the differences between the two levels (low and high) of PEA. The difference in slopes was also significant in the case of PEA ($t = 4.711$; $p < 0.001$). Thus, **H9** was supported.

**Table 5** Factor loadings, AVE, and CR values.

| Construct | Sub-dimension | Indicator | Factor loading | AVE> 0.50 | CR > 0.60 |
|---|---|---|---|---|---|
| GHRM practices | GR&S | GR&S1 | .87 | .74 | .89 |
| | | GR&S2 | .91 | | |
| | | GR&S3 | .81 | | |
| | GT&D | GT&D1 | .83 | .65 | .84 |
| | | GT&D2 | .94 | | |
| | | GT&D3 | .63 | | |
| | GPR | GPR2 | .86 | .66 | .90 |
| | | GPR3 | .85 | | |
| | | GPR4 | .68 | | |
| | | GPR5 | .81 | | |
| | | GPR7 | .87 | | |
| | GI&E | GI&E1 | .87 | .81 | .94 |
| | | GI&E2 | .94 | | |
| | | GI&E3 | .93 | | |
| | | GI&E5 | .86 | | |
| | GWLB | GWLB1 | .81 | .66 | .88 |
| | | GWLB2 | .93 | | |
| | | GWLB3 | .86 | | |
| | | GWLB4 | .62 | | |
| | GCGO | GCGO1 | .73 | .71 | .88 |
| | | GCGO2 | .94 | | |
| | | GCGO3 | .86 | | |
| | GT | GT1 | .81 | .59 | .81 |
| | | GT2 | .86 | | |
| | | GT3 | .62 | | |
| Environmental-specific Transformational leadership | | ETL1 | .77 | .71 | .92 |
| | | ETL2 | .72 | | |
| | | ETL3 | .89 | | |
| | | ETL4 | .95 | | |
| | | ETL5 | .88 | | |
| Pro-Environmental. Behaviour | In-role behaviour | INRol1 | .94 | .81 | .93 |
| | | INRol2 | .91 | | |
| | | INRol3 | .86 | | |
| | Extra-role behaviour | EX1 | .86 | .75 | .90 |
| | | EX2 | .81 | | |
| | | EX3 | .93 | | |
| | Innovative Env. behaviour | INN1 | .75 | .60 | .88 |
| | | INN2 | .81 | | |
| | | INN3 | .75 | | |
| | | INN4 | .76 | | |
| | | INN5 | .82 | | |
| Sustainable Performance | Eco. Performance | ECOP2 | .92 | .80 | .95 |
| | | ECOP3 | .91 | | |
| | | ECOP4 | .92 | | |
| | | ECOP5 | .88 | | |
| | | ECOP6 | .84 | | |
| | ENV. Performance | ENP1 | .88 | .66 | .92 |
| | | ENP2 | .87 | | |
| | | ENP4 | .86 | | |
| | | ENP5 | .72 | | |
| | | ENP6 | .79 | | |
| | | ENP7 | .77 | | |
| | Social Performance | SP1 | .78 | .87 | .91 |
| | | SP2 | .82 | | |
| | | SP3 | .81 | | |
| | | SP4 | .87 | | |
| | | SP5 | .81 | | |
| Pro-Environmental Attitude | | PEA1 | .82 | .72 | .96 |
| | | PEA2 | .76 | | |
| | | PEA3 | .88 | | |
| | | PEA4 | .86 | | |
| | | PEA5 | .89 | | |
| | | PEA7 | .88 | | |
| | | PEA8 | .96 | | |
| | | PEA10 | .82 | | |
| | | PEA11 | .76 | | |
| | | PEA12 | .78 | | |
| | | PEA13 | .88 | | |
| | | PEA14 | .87 | | |

**Table 6** Discriminant validity.

| Construct | Mean | SD | VIF | GHRM | PEA | ETL | PEB | SP |
|---|---|---|---|---|---|---|---|---|
| GHRM | 8.882 | 0.912 | 1.404 | .80 | | | | |
| PEA | 8.836 | 0.827 | 1.866 | .44 | .84 | | | |
| ETL | 9.072 | 0.806 | 1.112 | .62 | .66 | .84 | | |
| PEB | 8.775 | 0.926 | 1.726 | .66 | .52 | .54 | .71 | |
| SP | 8.756 | 0.870 | 1.124 | .68 | .72 | .32 | .55 | .88 |

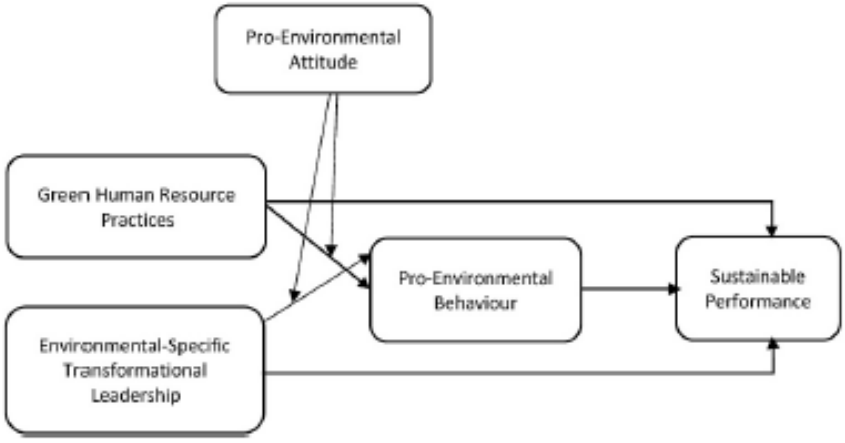


**Fig. 1.** Conceptual framework of the study.

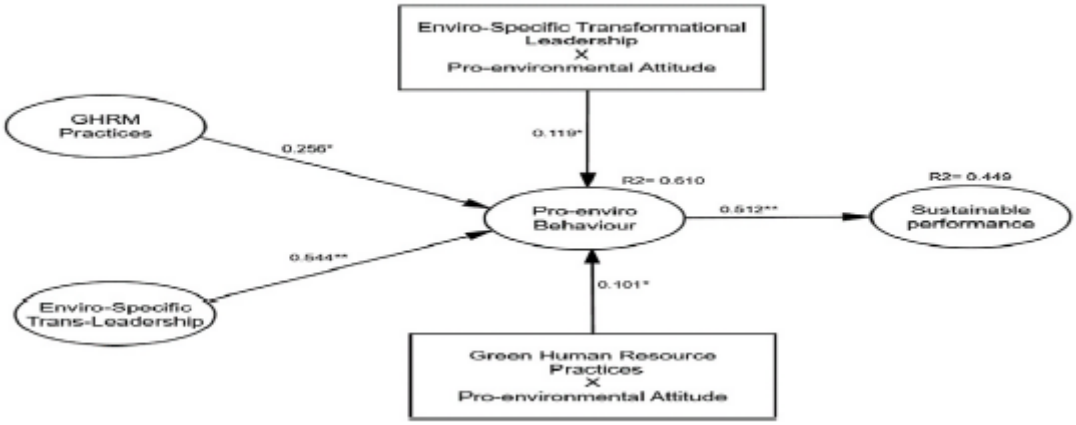


**Fig. 2.** Confirmation of the research model.

*Note: n = 430, *, **, ***, Significant at 5%, 1%, 0.1%, respectively.*

**Table 7** Structural model and path coefficients.

| Hypothesis | Estimation | S.E. | C.R. | P-value | Decision |
|---|---|---|---|---|---|
| GHRM→Sustainable performance | .216 | .098 | 2.203 | .028 | Supported |
| ETL → Sustainable performance | .301 | .176 | 1.713 | .087 | Not Supported |
| GHRM → PEB | .256 | .062 | 4.118 | *** | Supported |
| ETL → PEB | .544 | .094 | 5.807 | *** | Supported |
| PEB → Sustainable performance | .512 | .206 | 2.491 | .013 | Supported |

## 5. Discussion

This study investigated the impact of GHRM practices and environmental-specific transformational leadership on sustainable performance in the context of the Pakistani dairy industry, considering the mediating influence of PEB of employees and the moderating role of PEA. The study results are consistent with the hypotheses. Regarding the association between GHRM practices and sustainable performance, the first hypothesis proposed that GHRM practices have an impact on sustainable performance. The results confirmed that GHRM practices have a significant effect on sustainable performance, the findings are consist with previous studies **(Pham et al., 2019; Aboramadan, 2020; Ari et al., 2020)**. Thus, first is supported, and the findings deliberated that in order to accomplish sustainable performance, organizations have to incorporate green practices in HRM policies. Organizations should emphasize green-based recruitment & selection for employee appointment and green training programs to develop employees' skills. Meanwhile, employees should be encouraged and empowered to opt for green practices by making green behaviors a basis for performance evaluation and reward distribution. The formation and sustainment of green teams inspire employees to adopt a green work-life balance that ultimately leads to the development of pro-environmental behaviors. Green HRM practices implemented by organizations excel in the environmental, economic, and social performance of organizations that aim to achieve sustainable performance. Green staffing approach, green training programs, green performance management system, green work-life balance, green empowerment, and the establishment of green teams facilitate environmental and socially responsible practices and accelerate economic performance.

The second hypothesis proposed the relationship between environmental-specific transformational leadership on sustainable performance. However, the results indicated that the impact of environmental-specific transformational leadership on sustainable performance is not statistically significant. Environmental leadership did not directly influence financial, economic, and social performance. Although the direct effect of environmental-specific transformational leadership on sustainable performance is not significant, this finding is also consistent with previous studies (**Kim and Stepchenkova, 2018; Jian et al., 2020; Su et al., 2020)**. Findings may be inconsistent due to the increased emphasis of organizations and the readiness of employees for environmental-friendly actions. Because idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration lack due to the existence of firms in developing countries. But it contributes to nourishing pro-environmental behaviours among employees. Tailored and environmentally specified leaders indirectly contribute to sustainable performance by encouraging environmental-friendly behavior of employees.

The third hypothesis was developed to propose the relationship between GHRM practices and employee pro-environmental behavior. The result disclosed that Green HRM practices have a positive impact on employee 'environmental behavior', the findings are consistent with previous studies **(Saeed et al., 2019; Nalini and Alexander, 2019; Hewapathirana and Gamage, 2020).** Organizations implementing green recruitment policies, green training, green-based performance assessment, and rewards are more likely to encourage pro-environmental behavior among employees. The next hypothesis hypothesized the relationship between environmental-specific transformational leadership and pro-environmental behavior. Empirical analysis revealed a positive effect of environmental-specific transformational leadership on employee pro-environmental behavior, findings are consistent with previous studies **(Li et al., 2020; (Afsar et al., 2020; Saleem et al., 2020)**. Environmental leaders emphasize sustainable performance by integrating environmental values among employees and reifying sustainable goals into self-driven environmental behaviors. Meanwhile, the results disclosed that pro-environmental behavior substantially affects sustainable performance. Pro-environmental behavior serves as a framework for transforming sustainable development strategies into practices in organizations, and findings are consistent with previous studies **(Dornhoff et al., 2019; Yusliza et al., 2020; Jabbour and Renwick, 2020; Tian et al., 2020).** Employees who practice environmental-friendly behaviours engage in actions which facilitate to achieve the aim of long-term financial, economic, and social performance. The results of the mediating hypothesis revealed that pro-environmental behavior partially mediates the relationship between GHRM practices and sustainable, as both the indirect and direct effects between these constructs are significant **(Jabbour and Jabbour, 2015; Khan and Muktar, 2020; Jabbour and Renwick, 2020)**. However, pro-environmental behavior fully mediates the effect of environmental-specific transformational leadership on sustainable performance **(Jennifer Robertson and Carle-ton, 2017; Saeed et al., 2019; Saleem et al., 2020; Li et al., 2020)**. As the indirect effect of environmental-specific transformational leadership on sustainable performance is not significant, so pro-environmental behaviour fully mediates their link. Lastly, the study measures the moderating effect of PEA, as Pro-Environmental Attitude is a person's inclination to be responsible towards the environment (**Hawcroft and Milfont, 2010)**. The findings revealed that a higher level of PEA positively influences the relationship of GHRM practices with PEB **(Bashirun and Noranee, 2020; Opatha and Kottawatta, 2020)**. Furthermore, moderating analysis revealed that higher levels of PEA positively influence the relationship of ETL and PEB **(Khuwaja et al., 2020).**

In addition, civil society also has an important role in environmental governance and performance, particularly in the implementation of environmental policies. As members of civil society, nongovernmental organizations (NGOs) advocate for ecological concerns and play a vital role in sustainable environmental governance **(Karlsson-Vinkhuyzen et al., 2017)**. Most nongovernmental bodies, community stakeholder organizations, and NGOs raise awareness about specific policies or causes to advocate environmental sustainability, while some activists involve in debates and campaigns about pressing issues of ecological sustainability. Activists are desperate for transformations in social and ecological policies and have the potential to bring sustainability issues to the national agenda and enact revisions to current environmental change laws for sustainability **(Torney, 2019).** Knowledge of sustainable development is imperative to increase awareness of issues and adaptive capacity. Thus, nongovernmental bodies have been involved in giving knowledge to organizations, communities, the media, and government officials through training and workshops **(Omukuti, 2020).** A review of literature indicated that nongovernmental organizations play the role of advocates, activists, researchers, representatives, trainers, information providers, and watchdogs. All these bodies are influential by generating information not only for the public, but also for organizations and policymakers **(Haris et al., 2021).**

*5.1. Comparative analysis with previous studies*

The evaluation of relevant studies on green HRM policies and practices leads us to believe that businesses can strengthen their environmental and social performance in a sustainable way by better understanding and expanding the scope and depth of such activities. Although green HRM is a newly emerging paradigm, organizations must recognize its value to better align their strategic goals with environmentally responsible HR practices **(Adel Ali Yassin Alzyoud, 2021)**. The use of green approaches to human resource management contributes to enhancing the impact of social responsibility on long-term performance. This is attributed to the reason that GHRM practice assists organizations in fulfilling their social responsibility towards society by contributing to the achievement of performance outcomes that represent the organization' s social responsibility objectives, such as reducing loss, improving productivity, and providing quality services. By aiming to safeguard the natural environment from upheaval, loss, or harm, the green approach also improves the organization' s environmental and financial performance.

Some outcomes of this study are consistent with previous studies, while others are in contrast. For example, the result indicating significant effect of GHRM practices on sustainable performance is similar to the findings of (**Mousa and Othman, 2019; Almemari et al., 2021; José-Moleiro Martins et al., 2021)**. **Mousa and Othman (2019)** considered three GHRM practices namely; green hiring, green training & involvement, and green performance management, and measured the impact of each dimension on economic performance, social performance, and environmental performance. The results indicated that the bundle of GHRM practices has a substantial positive influence on economic, social and environmental performance. Similarly, the work of **Almemari et al. (2021)** revealed the positive impact of GHRM practices on economic, social, and environmental performance. **Ababneh (2021)** analyzed the role of GHRM in achieving sustainable performance. These studies emphasized that effective implementation of GHRM practices such as green talent acquisition, green learning and development, green performance assessment, and compensation empower the organization to attain sustainable performance as it generates green awareness, aptitude, and skills among employees who operate all activities. However, unlike previous studies, this study considered seven dimensions of GHRM and measured the cohesive impact on pro-environmental behavior of employees leading to sustainable performance. In addition, the results of this study revealed the positive influence of GHRM practices and environmental-specific transformational leadership on pro-environmental behaviors. These results are comparable to the findings of **Morgan and Rayner (2019). Jain and D'lima (2018)** examined how GHRM practices nurture pro-environmental behavior among the workforce within the organization, indicating that it is possible to lead the organization toward sustainable development with environmental awareness and the courage to earn as much as possible without compromising the quality of the environment **(Gopinath et al., 2021).**

The results show that the hypothesis about the relationship between environmental-specific transformational leadership and employee PEB is also supported. These findings are consistent with the work of **Li et al. (2020). Li et al. (2020)** asserted that the impact of environmental leadership on sustainable performance should be investigated beyond the development of pro-environmental behaviors because the basic motivation of organizations behind environmental behaviors is to attain sustainable economic, social, and environmental performance. Therefore, the findings of this study that bridge the suggested gap revealed that pro-environmental behavior significantly influences organizational economic, social, and environmental performance.

Compared to previous studies, the empirical results of this study indicated that the impact of GHRM practices on sustainable performance is partially mediated by pro-environmental behavior, while proenvironmental behavior fully mediates the relationship between environmental-specific

transformational leadership and sustainable performance. The direct effect of environmental-specific transformational leadership on sustainable performance is not significant, this outcome is the unique finding of this study. Meanwhile, the proenvironmental attitude moderates the impact of GHRM practices and environmental-specific transformational leadership on proenvironmental behavior. In summary, the findings of this study indicated that GHRM practices and environmental-specific transformational leadership improve sustainable performance by encouraging environmental-friendly behavior by employees. However, employees with a higher pro-environmental attitude are more likely to behave proenvironmentally.

### *5.2. Theoretical implications*

Both theoretical and empirical implications can be found in the current investigation. It is theoretically significant since it adds significantly to the literature on organizational sustainability. This study addresses four substantial constructs of GHRM practices, environmental-specific transformational leadership, pro-environmental behavior, and sustainable performance.

From a theoretical point of view, this study offers numerous insights. Previously, the existing literature considered GHRM practices and environmental-specific transformational leadership as predictors of sustainable performance but in isolation from each other. Studies on the simultaneous impact of GHRM and environmental-specific transformational leadership to encourage employees' PEBs for sustainable performance were lacking in the prior literature. Thus, the present study bridges the gap. In addition, this study contributes to the scarce literature about the sustainable performance of the dairy industry in developing countries like Pakistan **(Shoaib et al., 2021)**. GHRM orientation significantly influenced sustainable performance **(Mousa and Othman, 2019**), but this association needed to be considered in emerging Asian countries to ensure generalizability **(Zaid et al., 2018**). Generalizability and cultural influences might cause different outcomes in other countries, so similar models need to be examined in other emerging and developed countries. In the recent era, many organizations throughout the world have embraced the GHRM approach. The identification of such techniques in businesses and other organizations could have a substantial impact in the practical endeavors and academics of human resource management. The current study broadens understanding of the impact of GHRM and ETL on sustainable performance by adding mediating and moderator constructs **(Alkerdawy, 2018)**. Mediating impact of pro-environmental behavior suggests a cohesive framework to consider GHRM practices and environmental-specific transformational leadership for sustainable performance **(Li et al., 2020).** Finally, another notable contribution is empirical evidence to examine that pro-environmental attitude as moderator enhance pro-environmental behaviours. Hence, the current study is a noteworthy addition to the literature that GHRM practices and environmental-specific transformational leadership influence sustainable performance through proper mechanism; as it expounded the underlying relationship with pro-environmental behavior as mediator and pro-environmental attitude as moderating constructs to enhance sustainable performance.

### 5.3. Practical implications

From a practical point of view, this study offers numerous implications for the sustainable performance of dairy organizations by guiding managers to incorporate sustainable strategic objectives with GHRM practices and environmental-specific transformational leadership. This link can develop employee participation and encourage environmental-friendly behaviors. Primarily, this study provides empirical

evidence to managers about the importance of GHRM practices to enhance environmental, social, and economic performance. Dairy organizations have a twofold environmental impact. The grazing needs of dairy farming lead to the depletion of natural resources, while gas emissions from animal waste and cumbersome processing methods harm the environment. Therefore, the findings of this study suggested that saving the natural environment and addressing sustainable goals. Dairy organizations must restructure leadership and human resource activities **(ChoongNg et al., 2020)**. The recruitment and selection of individuals in environmentally friendly ways helps organizations to achieve the goal of sustainable performance **(Mousa and Othman, 2019)**. Considering sustainable performance as a criterion, training could improve the understanding, sensitivity, and responsibility of employees to act environmentally friendly by resource conservation, waste reduction and recycling (**Jia et al., 2018**). Career growth opportunities, appraisal, and green performance-based rewards stimulate green creativity and eco-friendly behaviours among employees. Managers could form green teams to implement sustainable environmental strategies and solve environmental problems at work. Organizations need to create a Green work-life balance that reconciles professional and personal life values to encourage behaviour and sustainable performance.

Second, the results of the study asserted the relative importance of environmental-specific transformational leadership to improve PEBs, leading to sustainable economic, social, and financial performance. Leaders as mentors could exhibit environmental sustainability concerns to develop PEBs by encouraging employees to come up with creative ideas, innovative solutions for environmental issues, instill preferences to work for collective benefits beyond individual interests, and transmit environmental values among employees, consequently leading to sustainable performance. Thus, this study could facilitate leaders in developing pro-environmental behaviour, as empirical outcomes indicated the contribution of ETL and GHRM practices to PEB. The results also revealed that PEA moderates the impact of GHRM practices and ETL on PEB. Dairy organizations should simultaneously appoint a workforce with a passion for achieving economic, social, and environmental objectives. To achieve the objective of sustainable performance, this study suggests that HR managers should implement green practices and environmental-specific leadership, leading to instilling proenvironmental behaviors among employees. Although the current study has been carried out in the dairy context of Pakistan, this integrated model could be employed in different sectors of other countries. There may be slight differences in outcomes due to cultural barriers, but the importance of green workforce management practices and the role of environmental-specific transformational leadership to develop proenvironmental behaviors leading to sustainable performance could not be overlooked in any organization or region. Although statistical results, theoretical insights and practical suggestions provide favorable nodes for practicing this model in different geographical regions.

### *5.4. Implications for cleaner production and policymakers*

With empirical evidence, the present study suggested that GHRM practices should be implemented to encourage environmental behavior among employees to achieve sustainability goals. Execution of GHRM practices, i.e., recruitment and selection in an environmentally friendly manner, training for environmental well-being, employees' participation in solving environmental-related problems, green work-life balance, promotion of green teams, green-based performance evaluation and career growth opportunities, leads to developing pro-environmental behaviors among employees, which consequently allow organizations to achieve sustainable social, environmental, and economic performance. The application of green activities in HRM reduces the cumbersome environmental impact of organizational activities such as less fuel consumption, gas emissions, and utilization of

natural resources. While employee attitudes and environmental considerations lead to efficiency by reducing electricity consumption, recycling, and waste management.

This study recommended that, along with GHRM practices, the role of environmental-specific transformational leadership is undeniable in achieving sustainable performance through employee proenvironmental behaviors. Individualized influence, intellectual stimulation, personalized consideration, and inspirational motivation of leaders positively impact employee pro-environmental behavior, improving sustainable performance. For the cleaner production and hygienic process of the dairy industry, this study developed a framework that helps managers endorse green and environmental-specific practices to avoid production waste and degradation of natural resources. GHRM practices, environmental-specific leadership, and pro-environmental behavior of employees enable dairy organizations to achieve better economic, social, and environmental performance by preventing production & process waste. By conferring the suggestions of this study, dairy organizations can reduce unnecessary consumption of electricity, water, fuel, and green resources. Considering the environmental footprint of dairy organizations and deliberate efforts to avoid those harmful impacts will weigh up the positive contribution of this sector in providing hygienic products, the safety of scarce resources, and the cleanliness of the society.

### *5.5. Limitations and avenues for future research*

The present study has some shortcomings. First, a study specifically addressed the dairy sector for sustainable performance. For future studies, it is suggested to consider the whole agriculture sector. Second, this study investigated internal mechanisms for sustainable performance. Future studies should address the role of forward and backward integration perspectives and their impact on sustainable performance. Third, this study used a quantitative technique for data collection; however, the future use of a mix-method approach may offer deep understanding of the matter. Moreover, investigating the role of customer green awareness would also be interesting. Finally, it is suggested to study the conceptual framework of this study in different settings and industries to improve generalizability.

## 6. Conclusions

Green HR practices, spanning from green analysis and job descriptions to green talent acquisition, green environmental training, and green performance assessment and incentives, green teams, and green work-life balance, all contribute to achieving sustainable organizational performance. This study is a notable contribution to the available literature on sustainable performance, specifically in Pakistan's dairy context, and can be examined in the context of other countries in the dairy industry. GHRM practices are statistically significant with the PEB sustainable performance of employees. Recruitment of conscientious staff, training, and performance rewards with sustainable objectives leads to encouraging PEBs among employees. Creating green teams, encouraging employee participation and creating a green work-life balance encourage environmental behavior to produce sustainable performance. Furthermore, environmental-specific transformational leadership positively influences employees' environmental behavior to improve social, economic, and environmental performance. Thus, the results of the study proved that GHRM practices and environmental-specific transformational leadership encourage pro-environmental behaviors of employees, leading to sustainable performance. While proenvironmental attitudes positively influence environmental behaviours.

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